EXHIBIT R

FAIR MARKET VALUE APPRAISAL
AUS CONSULTANTS

Fair Market Value Appraisal Report of Willistown Township (PA) Wastewater Collection and Treatment System

As of January 20, 2021

AUS Consultants

Depreciation and Valuation Group

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July 24, 2021

Ms. Sally Slook
Township Manager
Willistown Township
688 Sugartown Road
Malvern, PA 19355

RE: UVE Market Value Appraisal of Willistown Township's, PA Wastewater Collection and Treatment System

Enclosed is AUS Consultants' fair market value appraisal report for Willistown Township's wastewater collection and treatment system (System) as of January 20, 2021, prepared for Willistown Township. The report was prepared based on the 2020-2021 Uniform Standards of Professional Practices (USPAP) and is intended to meet the criteria established with Title 66 (Public Utilities) of the Pennsylvania Consolidated Statues (PA CS) Paragraph 1329 "Valuation of acquired water and wastewater systems", collectively referred to as Act 12 of the 2016 Pennsylvania legislative session (Act 12). The intended users of this appraisal are Willistown Township, PA, Aqua Pennsylvania Wastewater Inc., and the Pennsylvania Public Utility Commission.

Based on our appraisal the Fair Market Value of Willistown Township's wastewater collection and treatment system's property, plant, and equipment operating as a Pennsylvania rate regulated wastewater utility is $19,113,140 determined based on the cost, income, and market approaches to value, as detailed in the following table:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Fair Market Value Appraisal

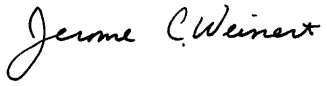
Appraisal Approach		Investor-owned Utility	Weight	Wtd Valuation Indications
Cost Approach				
Inventory of Assets				
Original Cost ($OC)		19,641,520		
Depreciated Original Cost ($OCLD)		13,524,101		
Intangible Assets (Treatment contracts)				
Cost Approach of all assets Conclusion		13,524,101		
Replacement Cost				
Replacement Cost New (COR)		49,898,907		
Depreciated Replacement Cost New (CORLD)	$	30,113,231		
External or Economic Obsolescence		38.57%	AUS Input	
Market Value of Tangible Assets	$	18,498,555		
Intangible Assets (Treatement contracts)				
Cost Approach of all assets Conclusion		18,498,555		
Cost Approach Conclusion		18,498,555	50%	9,249,278
Income Approach				
Required Rate Increases: 30% period 3, 20% period 6, 10% period 9, 6% period 12, 6% period 15, and 6% every 3rd year beginning in period 18 (Input 6)		18,235,751		
Income Approach Conclusion		18,235,751	40%	7,294,300
Market Approach				
Market Comparables (to)				
OCLD		25,011,472		
CORLD		25,695,620		
Customers		21,974,226		
Cash Flows (EBITDA)		16,073,611		
Market Financials (to)				
OCLD		28,535,853		
Market Approach Conclusion		25,695,620	10%	2,569,562
Appraisal Conclusion	$	19,113,140	100%	19,113,140
Conclusion (cost approach)	$	18,498,555		

AUS CONSULTANTS

As the purpose of this appraisal was to fulfill the requirements of Act 12 in the establishment of value for rate making of the Willistown Township's wastewater collection and treatment system's property, plant and equipment the appraisal's conclusion of $19,113,140 is consistent with the purpose of this appraisal. As the cost approach work papers detail our value conclusion by National Association of Regulatory Utility Commissioners' (NARUC) Uniform System of Accounts (USOA) for the wastewater industry account classifications and the installation year of the property this detail can be used to allocate the appraisal conclusion to establish the booked value for future accounting and rate making.

Respectfully Submitted,
AUS Consultants, Depreciation & Valuation
July 24, 2021

By: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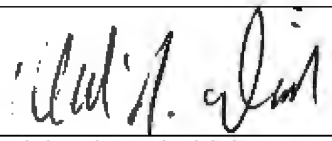	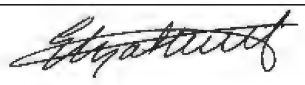
Michael J. Diedrich, ASA, P.E., CDP Certified General Appraiser Principal	Elizabeth A. Weinert Associate

ASA: Accredited Senior Appraiser in the Machinery and Equipment (Public Utilities) discipline of the American Society of Appraisers
AMA: Accredited Member Appraiser in the Machinery and Equipment (Public Utilities) discipline of the American Society of Appraisers
P.E.: Registered Professional Engineer State of Wisconsin
CDP: Certified Depreciation Professions in the Society of Depreciation Professionals

Willistown Township's (Pennsylvania) Wastewater Collection and Treatment

Fair Market Value Appraisal Report
As of January 20, 2021
for
Willistown Township, PA

AUS Consultants
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TABLE OF CONTENTS

NARRATIVE REPORT

EXECUTIVE SUMMARY ..... Page 1

PURPOSE AND SCOPE OF WORK .....Page 18
WATER/WASTEWATER INDUSTRY NATIONALLY AND IN PENNSYLVANIA WORK Page 20
WILLISTOWN TOWNSHIP, PENNSYLVANIA'S WASTEWATER FACIILITIES Page 21

APPRAISAL PROCEDURES AND RESULTS.....Page 24

Cost Approach.....Page 25
Income Approach.....Page 34
Market Approach .....Page 40
Value Conclusion.....Page 52

COMPLIANCE WITH UNIFORM STANDARD OF PROSESSIONAL APPRAISAL PRACTICES (2020-2021)

SUPPORTING EXHIBITS AND WORKPAPERS

VALUATION SUMMARY (TAB)
COST APPROACH (TAB)
Replacement Cost New
Replacement Cost New Less Depreciation
Depreciated Original Cost
Depreciation & Obsolescence
INCOME APPROACH (TAB)
Discounted Cash Flow (DCF)
Analysis of Financial Statements
MARKET APPROACH (TAB)
Comparable Sales
COST INDICES
DEPRECIATION & OBSOLESCENCE
COST OF CAPITAL / REQUIRED RETURN
Value Line Investment Survey Water Industry Market Ratio Sales analysis
2020 Stocks, Bonds, Bills, and Inflation (SBBI) Yearbook, Duff & Phelps
Report on the Quarterly Earnings of Jurisdictional Utilities for Year Ended December 31, 2019
Bureau of Technical Utility Services – Pennsylvania Public Utility Commission
VALUE LINE INVESTMENT SURVEY
WILLISTOWN TOWNSHIP'S FINANCIALS 2016-2019, BUDGET 2019, & RATES & CUSTOMERS
ENGINEER'S ASSESSMENT (TAB) – Pennoni Associates Inc.'s' Engineers Assessment of Willistown Township's Wastewater System – Inventory dated July 2021
AQUA PENNSYLVANIA-WILLISTOWN TOWNSHIP ASSET PURCHASE AGREEMENT
WILLISTOWN TOWNSHIP – AUS CONSULTANTS UVE CONTRACT

July 24, 2021

Willistown, PA
Malvern, Pennsylvania

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Depreciation and Valuation
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RE: UVE Market Value Appraisal of Willistown Township's Wastewater Collection and Treatment System

Enclosed is AUS Consultants' fair market value appraisal report of the Willistown Township's (Pennsylvania) wastewater collection and treatment system (System) as of January 20, 2021, prepared for our client Willistown Township, Pennsylvania. The report was prepared based on the 2020-2021 Uniform Standards of Professional Practices (USPAP) and is intended to meet the criteria established with Title 66 (Public Utilities) of the Pennsylvania Consolidated (PA CS) Statues Section 1329 "Valuation of acquired water and wastewater systems", collectively referred to as Act 12 of the 2016 Pennsylvania legislative session (Act 12). The intended users of this appraisal are Willistown Township, Pennsylvania, Aqua Pennsylvania Wastewater, Inc., and the Pennsylvania Public Utility Commission.

Based on our appraisal, the Fair Market Value of the Willistown Township's (Pennsylvania) wastewater collection and treatment system's property, plant, and equipment operating as Pennsylvania rate regulated wastewater utility is $19,113,140 determined based on the cost, income, and market approaches to value, as detailed in the following table:

AUS CONSULTANTS

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Fair Market Value Appraisal

Appraisal Approach		Investor-owned Utility	Weight	Wtd Valuation Indications
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Market Financials (to)				
OCLD		28,535,853		
Market Approach Conclusion		**25,695,620**	**10%**	**2,569,562**
Appraisal Conclusion	$	**19,113,140**	**100%**	**19,113,140**
Conclusion (cost approach)	$	**18,498,555**		

AUS CONSULTANTS

As the purpose of this appraisal was to fulfill the requirements of Section 1329 of the PA CS in the establishment of value for rate making of the Willistown Township's wastewater collection and treatment system's property, plant and equipment this appraisal's conclusion of $19,113,140 is consistent with the purpose of the appraisal. As the cost approach work papers detail our value conclusion by National Association of Regulatory Utility Commissioners' (NARUC) Uniform System of Accounts (USOA) for the wastewater industry account classifications and the installation year of the property, this detail can be used to allocate the appraisal conclusion to establish the booked value for future accounting and rate making.

Respectfully Submitted,
AUS Consultants, Depreciation & Valuation
July 24, 2021

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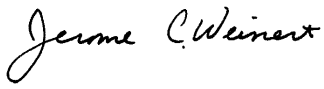	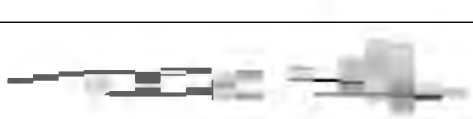
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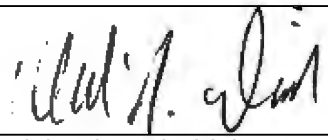	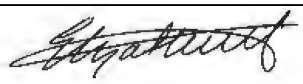
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APPRAISAL CERTIFICATION
for the Fair Market Appraisal of
The Willistown Township Pennsylvania's
Wastewater Collection and Treatment System
As of January 20, 2021
Prepared for
Pennsylvania American Water Company

AUS Consultants, Depreciation & Valuation, certifies that, to the best of its knowledge and belief:

- The statements of fact contained in this report are true and correct.

- Prior to this appraisal during the last three-year period, AUS Consultants has not previously appraised these properties.

- The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are our personal, impartial, and unbiased professional analyses, opinions, and conclusions.

- Neither AUS Consultants, Depreciation & Valuation, nor its professional staff has no present or prospective interest in the property that is the subject of this report and has no personal interest with respect to the parties involved.

- Neither AUS Consultants, Depreciation & Valuation, nor its professional staff has any bias with respect to the property that is the subject of this report or to the parties involved.

- Our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.

- Our analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice 2020-2021 Edition.

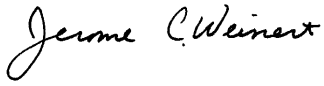
- The signers of this report have not made personal inspections of the property that is the subject of this report.

- No individuals provided significant professional assistance to the persons signing this report. However, Scott Shearer of PFM Financial Advisors, LLC provided assistance in obtaining information and data from the Willistown Township's data room and the Engineer's Assessment report prepared by Pennoni Associates Inc. which was the inventory starting point of the Cost Approach.

AUS CONSULTANTS

AUS Consultants, Depreciation & Valuation
July 24, 2021

By: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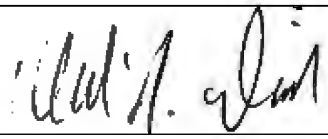	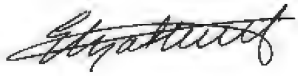
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AUS CONSULTANTS

NARRATIVE REPORT

EXECUTIVE SUMMARY

The purpose of this value appraisal is the determination of the fair market value of the property plant and equipment of the Willistown Township's wastewater collection and treatment system (System) for our client Willistown Township, Pennsylvania. The report was prepared based on the 2020-2021 Uniform Standards of Professional Practices (USPAP) and is intended to meet the criteria established with Title 66 (Public Utilities) of the Pennsylvania Consolidated Statues Paragraph 1329: "Valuation of acquired water and wastewater systems", collectively referred to as Act 12 of the 2016 Pennsylvania legislative session (Act 12) and the Pennsylvania Public Utility Commission's Final Implementation Order M-2016-2543193 adopted October 27, 2016. The intended users of this appraisal are Willistown Township, Pennsylvania, Aqua Pennsylvania Wastewater, Inc., and the Pennsylvania Public Utility Commission (PA PUC).

The value established in this appraisal was based on the definition of Market Value as:

> *"The most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress."* *The Appraisal of Real Estate, 14th Edition, page 58.*

In arriving at our opinion of value of the System's property, plant, and equipment as it is operated as an investor-owned Pennsylvania PUC rate regulated wastewater utility the cost, income, and market approaches to value were considered. Detailed explanations of each approach to value are included below in the section "Appraisal Procedures and Results". The following summarizes the data, analysis and conclusions of each of those valuation approaches.

Cost Approach - The philosophy in the cost approach to value is that the maximum value of a property's tangible assets is established by the cost to acquire or build a similar property. In this appraisal, the cost approach to value was analyzed using reproduction/replacement cost approach.

Reproduction cost and replacement cost are defined as:

> Reproduction cost – "Reproduction cost is the estimated cost to construct, as of the effective appraisal date, an exact duplicate or replica of the building [property] being appraised, insofar as possible, using the same materials, construction standards, design, layout, and quality of workmanship and embodying all the deficiencies, super-adequacies, and obsolescence of the subject improvements [property]."[1]
>
> Replacement cost – "Replacement cost is the estimated cost to construct, as of the effective appraisal date, a substitute for the building [property] being appraised using contemporary materials, standards, design and layout. When this cost basis is used, some existing obsolescence in the property may be cured. Replacement cost may be the only alternative if reproduction cost cannot be estimated"[2]
>
> In the wastewater industry the property's reproduction costs and replacement costs are quite similar; therefore, the property's cost new was determined based on its replacement cost new estimated by the trended original cost and the inventory-unit cost methods.

The trended original cost method was utilized in preparing the replacement cost new. "Trending is a method of estimating a property's replacement cost new in which an *index* or *trend factor* is applied to the property's *historical costs* to convert the known historical costs into an indication of current (appraisal date) costs. Simply put, trending reflects the movement of price over time."[3] In the trended original cost method, Willistown Township's investment in wastewater collection plant and equipment is restated to costs reflective of the appraisal date, by the application of cost trends to the property's original investment. AUS Consultants utilized the Engineer's Assessment performed by Pennoni Associates Inc. (Engineer's Assessment tab) as the starting point of the Cost Approach. Utilizing the Engineer's Assessment AUS Consultants developed the System's original cost less depreciation (OCLD) and replacement cost new less depreciation (CORLD) in property, plant and equipment as of January 20, 2021 (Cost Approach tab).

The cost trends were applied to each of the System's various investment categories (NARUC plant accounts) by original year of placement for that investment. The cost

[1] The Appraisal of Real Estate, 14th Edition. pages 569-570
[2] Ibid, page 570
[3] Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets, Third Edition. Page 50

indexes used in these studies were the Handy-Whitman Index of Public Utility Construction Costs for the water industry in the northeastern region of the United States which includes the Commonwealth of Pennsylvania, the AUS General Plant Indexes, and various United States Bureau of Labor Statistics (US BLS) indexes as detailed in the following table:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(3a)	(3b)	(3c)	(3d)	(3e)
Account Number	Description	Costing Parameters				Reproduction to Replacement Cost Factor
		Index Series	Table	Line Reference	Lookup	AUS Input
353.20	Land & Land Rights - Collection System	USBLS	PPI	1.00	USBLS1	1.00
353.30	Land & Land Rights - Pumping	USBLS	PPI	1.00	USBLS1	1.00
353.40	Land & Land Rights - Treatment	USBLS	PPI	1.00	USBLS1	1.00
354.30	Stuctures & Improvements - Pumping	HW	W-1	8.00	HWW-18	1.00
354.40	Stuctures & Improvements - Treatment	HW	W-1	15.00	HWW-115	1.00
355.30	Generating Equipment - Pumping	USBLS	PPI	4.00	USBLS4	1.00
360.21	Collection Sewers - Force - Mains	HW	W-1	44.00	HWW-144	1.00
361.21	Collection Sewers - Gravity - Mains	HW	W-1	44.00	HWW-144	1.00
361.22	Collection Sewers - Gravity - Mains Relining	HW	W-1	38.00	HWW-138	1.00
361.23	Collection Sewers - Gravity - Manholes	HW	W-1	45.00	HWW-145	1.00
363.20	Service Laterals	HW	W-1	39.00	HWW-139	1.00
364.30	Flow Measuring Devices - Pumping	HW	W-1	40.00	HWW-140	1.00
390.70	Office Furniture and Equipment	AUS	T-1	15.00	AUST-115	1.00

Using the trended original cost method, the System's investment in plant, property and equipment of $19,641,519.75 was determined to have a reproduction cost new of $49,670,307and a replacement cost new of $49,898,907 as summarized in the following table:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Replacement Cost New (RCN)

(1)	(2)	(3)	(9)	(10)	(13)	(14)	(15)	(16)
Account	Account	Asset Description	Original Cost	Costing Parameter	Cost Translator	Reproduction Cost New (RCN)	Reproduction Cost New (RCN) to Replacement Cost New (COR)	Replacement Cost New (COR)
			OC $s			RCN $s	COR $s / RCN $s	COR $s
Input	Input	Input	Input	Input	Calculation	Calculation	Input	Calculation
Eng Assmnt NARUC Code	AUS Input NARUC Code	Willistown Township Wastewater Assets Detail by Pennoni Associates, Inc. Asset Description	Eng Assmnt Original Cost	AUS Input Cost Index Table	Translator	RCN	AUS Input COR / RCN Factor	Col (14) * (15) COR
353.20	353.20	Land & Land Rights - Collection System	216.00	USBLS1	1.61	347	644.89	223,776
353.30	353.30	Land & Land Rights - Pumping	21,606.00	USBLS1	4.85	104,817	1.05	109,988
353.40	353.40	Land & Land Rights - Treatment	1,500,007.00	USBLS1	1.30	1,945,510	1.00	1,945,510
354.30	354.30	Stuctures & Improvements - Pumping	2,146,252.31	HWW-18	2.36	5,065,392	1.00	5,065,392
354.40	354.40	Stuctures & Improvements - Treatment	1,448,500.00	HWW-115	2.26	3,275,059	1.00	3,275,059
355.30	355.30	Generating Equipment - Pumping	344,586.01	USBLS4	1.17	401,787	1.00	401,787
360.21	360.21	Collection Sewers - Force - Mains	6,823,585.73	HWW-144	2.18	14,857,717	1.00	14,857,717
361.21	361.21	Collection Sewers - Gravity - Mains	3,807,421.45	HWW-144	3.97	15,110,171	1.00	15,110,171
361.22	361.22	Collection Sewers - Gravity - Mains Relining	956,037.32	HWW-138	1.15	1,096,644	1.00	1,096,644
361.23	361.23	Collection Sewers - Gravity - Manholes	1,562,320.53	HWW-145	3.19	4,989,198	1.00	4,989,198
363.20	363.20	Service Laterals	698,453.71	HWW-139	3.43	2,394,359	1.00	2,394,359
		Grand Total	19,641,519.75		2.53	49,670,307	1.01	49,898,907

The replacement cost new of the Land and Land Rights easements were determined based on the following:

Current cost of Easements

Activity	Engineer	Legal	Fees	Total
Determine the facilities for which a Easment is need	1	0	0	
Locate the Land owner for the property needing a easement	1	1	0	
Develop a diagram o the Property, the facilities, and the easement	2	0	0	
Develop the easement document	1	1	0	
Visit the property owner to obtain permission for the easement and sign the easment documentation	4	0	0	
Register the easement with the Municipal Clerk	0	1	250	
Total	9	3	250	
Labor Costs per Hour	54	100		
Total Cost	486	300	250	1,036

Replacement Cost New Less Depreciation - The replacement cost described above reflects the cost of new property; however, Willistown Township's wastewater collection system property is not new and has experienced normal depreciation and potentially functional and/or economic obsolescence. These various forms of depreciation are defined as follows:

> Normal depreciation/deterioration, akin to physical deterioration, is "loss in value caused by wear, tear, age and use."[4]
>
> Functional obsolescence is "the loss in value or usefulness of a property caused by inefficiencies or inadequacies of the property itself, when compared to a more efficient of less costly replacement property that new technology has developed."[5]
>
> Economic, or external, obsolescence is defined as "a loss in value caused by factors outside a property"[6] and is most often indicated by insufficient earning.

Based on our experience in regard to water and wastewater depreciation studies and our analysis of Willistown Township's wastewater collection system operating performance; we found that the Willistown Township's wastewater utility's property experiences normal depreciation but not any significant functional obsolescence; economic obsolescence is best evaluated after the results of the income and market approaches to values are determined (see Cost Approach Revisited).

The service lives used in the depreciation and functional obsolescence calculations were developed based on the property and its use, AUS Consultants' experience in developing depreciation studies for the water and wastewater industries and depreciation studies filed with PAWC and Aqua America rate cases. With each of their recent rate case filings PAWC and Aqua America have filed depreciation studies in support of their depreciation service lives and associated depreciation expenses

[4] The Dictionary of Real Estate Appraisal, 4th Edition
[5] Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets, Second Edition. Page 67.
[6] The Appraisal of Real Estate, 13th Edition, page 442.

contained within their revenue requirements. The depreciation studies were prepared by Gannett Fleming Rate Consultants a recognized firm in the depreciation consulting area. AUS Consultants has reviewed the PAWC and Aqua studies and selected the following depreciation parameters:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(4)		(5)	(6)	
		(4a)	(4b)		(6a)	(6b)
Account Number	Description	Iowa Survivor / Retirement Curve	Normal Service Life	Economic Obsolescence	Tax Depreciation	
			years	% of CORLD	Table	Life
353.20	Land & Land Rights - Collection System	ZNonDep	0.00	38.57%	Non-Depr	0.00
353.30	Land & Land Rights - Pumping	ZNonDep	0.00	38.57%	Non-Depr	0.00
353.40	Land & Land Rights - Treatment	ZNonDep	0.00	38.57%	Non-Depr	0.00
354.30	Stuctures & Improvements - Pumping	R4.0	55.00	38.57%	MACRS	25.00
354.40	Stuctures & Improvements - Treatment	R4.0	55.00	38.57%	MACRS	25.00
355.30	Generating Equipment - Pumping	R3.0	35.00	38.57%	MACRS	25.00
360.21	Collection Sewers - Force - Mains	R3.0	75.00	38.57%	MACRS	25.00
361.21	Collection Sewers - Gravity - Mains	R2.5	80.00	38.57%	MACRS	25.00
361.22	Collection Sewers - Gravity - Mains Relining	R2.5	60.00	38.57%	MACRS	25.00
361.23	Collection Sewers - Gravity - Manholes	R2.5	80.00	38.57%	MACRS	25.00
363.20	Service Laterals	R3.0	70.00	38.57%	MACRS	25.00
364.30	Flow Measuring Devices - Pumping	S2.0	25.00	38.57%	MACRS	25.00
390.70	Office Furniture and Equipment	R3.0	15.00	38.57%	MACRS	15.00

Normal Depreciation – The extent of the normal depreciation in the property was evaluated using age-life depreciation techniques. In age-life depreciation, the property's depreciation or condition is estimated using the following formulas:

$$\text{Depreciation (\%)} = \frac{\text{Age (years) x100\%}}{\text{Service Life (years)}}$$

$$\text{Condition (\%)} = \frac{\text{Remaining Life (years) x (100\%)}}{\text{Service Life (years)}}$$

where: the property's Service Life = Age + Remaining Life and
Remaining Life = *f*(Survival Characteristic, Service Life, and Age)

However, due to the age of some of the assets the extent of the depreciation was limited to 85% of the asset's original cost and its replacement cost new.

When the above depreciation lives are used to quantify the property's depreciation is applied to the replacement cost new (COR) of $49,898,907 the resultant COR less normal depreciation (CORLD) was found to be $30,113,231 detailed as follows:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Replacement Cost New less Depreciation (RCNLD)

(18)	(19)	(21)	(22)	(23)	(24)	(28)	(29)	(30)	(31)
Account	Description	Age at January 20, 2021 Appraisal Date	Replacement Cost New (COR)	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Normal Remaining Life	Total Life Expectancy	Condition	Preliminary Cost Approach (COR less Normal Depreciation)
		years	COR $s		years	years	years	% of COR	CORLD $s
Input	Input	Calculation	Calculation	Input	Input	Calculation	Calculation	Calculation	Calculation
Eng Assmnt	Willistown Township Wastewater Assets Detail by Pennoni Associates, Inc.		Col (16)	AUS Input	AUS Input		Col (21) + (28)	Col (28) / (29)	Col (22) * (30)
Account	Description	Age	RCN	Iowa	NL	Rem Life	Total Life	Condition	CORLD
353.20	Land & Land Rights - Collection System	22.85	223,776	ZNonDep	-	-	-	-	223,776
353.30	Land & Land Rights - Pumping	44.30	109,988	ZNonDep	-	-	-	-	109,988
353.40	Land & Land Rights - Treatment	14.50	1,945,510	ZNonDep	-	-	-	-	1,945,510
354.30	Stuctures & Improvements - Pumping	27.73	5,065,392	R4.0	45.00	20.06	47.78	45.00	2,218,402
354.40	Stuctures & Improvements - Treatment	22.50	3,275,059	R4.0	55.00	32.77	55.27	55.00	1,941,807
355.30	Generating Equipment - Pumping	10.50	401,787	R3.0	35.00	24.95	35.45	35.00	282,781
360.21	Collection Sewers - Force - Mains	24.37	14,857,717	R3.0	75.00	52.04	76.41	75.00	10,144,396
361.21	Collection Sewers - Gravity - Mains	39.95	15,110,171	R2.5	80.00	45.27	85.22	80.00	8,050,177
361.22	Collection Sewers - Gravity - Mains Relining	2.03	1,096,644	R2.5	60.00	57.89	59.92	60.00	1,059,746
361.23	Collection Sewers - Gravity - Manholes	38.82	4,989,198	R2.5	80.00	46.21	85.03	80.00	2,721,303
363.20	Service Laterals	36.39	2,394,359	R3.0	70.00	36.94	73.33	70.00	1,213,391
Grand Total		30.28	49,898,907		67.83	41.31	70.83	0.60	30,113,231

The preliminary cost approach to value of Willistown Township's wastewater system property was found to be $30,113,231.

Income Approach

The income approach to value establishes the value of the property based on its economic returns. There are two generally accepted procedures in performing an income analysis: the direct capitalization of anticipated income, and the discounted cash flow procedures.

In the direct capitalization approach, anticipated earnings are capitalized directly into value using a market-required capitalization rate. The Willistown Township's wastewater

system's operation will be moving from a municipal operation, wherein economic returns are not the primary objective of the operation to a private (investor owned) rate regulated sewer utility operation in which economic returns are one of the objectives of the operation; therefore, the direct capitalization of earnings approach was not utilized in this appraisal.

In the discounted cash flow (DCF) approach, the property's economic returns are forecast for future periods. The cash flows (debt-free after-tax net cash flows) from operations are discounted to the appraisal date using a market derived discount rate resulting in the DCF approach's income indicator of value. Use of the DCF approach allows the appraiser to address the property's historical operating experience and its migration, in future periods, to an operation as a rate regulated income taxed (local, state, and federal) operation; thus, making the DCF approach preferable in this case.

In preparing this appraisal's DCF analysis (Income Approach tab), first the results from the Willistown Township's wastewater system's operations were evaluated based on an analysis of historical operating performances over the period 2016 through 2019 (Financials tab) resulting in operating statistics such as revenues and their growth, various operating expenses stated as function of their typical drivers (revenues, plant investment, income from operations, etc.). Next, the results of future periods operations were forecast for a period of 20 years based on the migration of the Willistown Township's historical operations over time to operations of the wastewater operation similar to a public investor-owned water/wastewater utility. Finally, the resultant cash flows from future period operations of the System were discounted to the appraisal date using a market derived discount rate for a public investor-owned water/wastewater utility. The following table details the market discount rate developed using the weighted average cost of capital (WACC) of the market debt and equity:

Water and Wastewater Cost of Capital
First Quarter 2021 (0-01-2021)

As an Investor-Owned Utility

Weighted Cost of Capital (Discount Rate)

(1)	(2)	(2a)	(3)	(3a)	(4)	(4a)	(5)
	Portion of Capital AUS Input	Type of Data	Capital Cost AUS Input	Type of Data	Tax Rate	Tax affect on cost of capital	After-tax Market Capital Cost (2)*(3)*(4a)
Debt	29%	Market	2.79%	Market	28.89%	71.11%	0.58%
Equity	71%	Market	9.85%	Market	0.0%	100.0%	6.99%
Total Capital r	**100.0%**						**7.57%**
Growth (g)							**1.82%**
Rate without Growth: [(1+r)/(1+g)]-1							**5.65%**

The following table presents the results of the discounted cash flow analysis:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021
Discounted Cash Flow Analysis

Discount Rate: 7.57%
Capitalization Rate: 5.65%

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Period	Age	Revenues	O&M Expenses	Tax Depreciation	Cash Flow from Operations	Taxable Income before State & Federal Taxes	State and Federal Taxes @ 28.89%	Capital Expenditures	Change in Working Capital	Net Cash Flows	Period Present Worth Factor (PW)	PW of Cashflow	Accumulated PW of Cashflows
					(3)-(4)	(6)-(5)	(7) *28.89%			(3)-(4)-(8)-(9)-(10)		(11)*(12)	Sum (13)
1	0.5	2,659,679	1,833,318	773,554	826,361	52,807	15,256	417,347	-	393,758	0.964	379,583	379,583
2	1.5	2,659,679	1,869,985	782,619	789,694	7,075	2,044	420,814	-	366,836	0.896	328,685	708,268
3	2.5	3,457,583	1,907,385	791,937	1,550,198	758,261	219,062	424,334	43,086	863,716	0.833	719,475	1,427,743
4	3.5	3,457,583	1,945,533	801,513	1,512,050	710,537	205,274	427,902	-	878,874	0.775	681,127	2,108,870
5	4.5	3,457,583	1,984,444	811,355	1,473,139	661,784	191,190	431,525	-	850,424	0.720	612,305	2,721,175
6	5.5	4,149,100	2,024,133	821,467	2,124,967	1,303,500	376,581	435,202	37,342	1,275,842	0.669	853,538	3,574,713
7	6.5	4,149,100	2,064,616	800,818	2,084,484	1,283,666	370,851	319,482	-	1,394,151	0.622	867,162	4,441,875
8	7.5	4,149,100	2,105,908	808,887	2,043,192	1,234,305	356,591	322,486	-	1,364,115	0.579	789,823	5,231,698
9	8.5	4,564,010	2,148,026	817,198	2,415,984	1,598,786	461,889	325,541	22,406	1,606,148	0.538	864,108	6,095,806
10	9.5	4,564,010	2,190,987	825,760	2,373,023	1,547,263	447,004	328,654	-	1,597,365	0.500	798,683	6,894,489
11	10.5	4,564,010	2,234,806	834,578	2,329,204	1,494,626	431,797	331,824	-	1,565,583	0.465	727,996	7,622,485
12	11.5	4,837,851	2,279,503	843,663	2,558,348	1,714,685	495,373	335,055	14,787	1,713,133	0.432	740,073	8,362,558
13	12.5	4,837,851	2,325,093	853,018	2,512,758	1,659,740	479,499	338,345	-	1,694,914	0.402	681,355	9,043,913
14	13.5	4,837,851	2,371,595	862,653	2,466,256	1,603,603	463,281	341,698	-	1,661,277	0.373	619,656	9,663,569
15	14.5	5,128,122	2,419,027	872,580	2,709,095	1,836,515	530,569	345,119	15,674	1,817,733	0.347	630,753	10,294,322
16	15.5	5,128,122	2,467,408	771,844	2,660,714	1,888,870	545,694	348,603	-	1,766,417	0.323	570,553	10,864,875
17	16.5	5,128,122	2,516,756	778,275	2,611,366	1,833,091	529,580	352,158	-	1,729,628	0.300	518,888	11,383,763
18	17.5	5,435,809	2,567,092	784,893	2,868,717	2,083,824	602,017	355,784	16,616	1,894,300	0.279	528,510	11,912,273
19	18.5	5,435,809	2,618,434	791,709	2,817,375	2,025,666	585,215	359,487	-	1,872,673	0.259	485,022	12,397,295
20 and beyond	19.5	5,435,809	2,670,802	798,726	2,765,007	1,966,281	568,058	363,263	-	1,833,686	3.184	5,838,456	18,235,751
								7,324,623					

Age	19.5				
PW(Age) = 1/(1+Discount Rate)$^{(Age)}$	0.241				
PW to Perpetuity = 1/Capitalization Rate	13.210				
$PW_{(20and Beyond)}$ = PW to Perpetuity * PW $Factor_{(19.5)}$	3.184				

Net Plant		15,660,079			
ADIT		(2,040,733)			
Rate Base		13,619,346	0.241	3,282,262	15,679,557
Annual Plant Construction Inflation Rate		0.0422 Input			
Plant Inflation over 19.5 years		31,129,893	0.241	7,502,304	19,899,599
PP	17,500,000				
OCLD	13,524,101				
PP/OCLD	1.294				
RCNLD	30,113,231				
RCNLD/PP		1.720756057			
		23,435,572.16	0.241	5,647,973	18,045,268
Average					17,965,044

Based on the above-described discounted cash flow analysis, the Income Approach to value of the System's property operating as a rate regulated wastewater utility under the

regulation of the Pennsylvania Public Utility Commission (PA PUC) was determined to be $18,235,751. To ensure that the above-described forecast captured the entire economic returns of the property an additional 40-year period beyond the original 20-year forecast was made. This additional forecast indicated the reasonableness of the initial forecast results.

Market Approach

The market or comparable sales approach to value looks to market sales of comparable properties in order to arrive at value. In this appraisal, the market approach was addressed from a comparable sales approach of Pennsylvania water and wastewater systems and market value to book value ratios based on investor-owned water utilities' financial performance as reported in Value Line Investment Survey (January 8, 2021).

Market Sales – In the comparable sale market approach, the sales of Pennsylvania municipal water and wastewater systems to investor-owned water/wastewater utilities were used to insure comparability. As the purpose of this appraisal is to define the value of Willistown Township's wastewater collection and treatment system under Section 1329 of the PA CS the market comparable sales were limited to sales subsequent to the passage of Section 1329 in 2016. The following sales were considered:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Data

RowID	Approximate Date	Buyer	Seller	County	Type of Facility	Initial Purchase Price	Final Purchase Price[1]	Number of Total Customers	Relationship to the passage of Section 1329
1	9/1/2016	PA American Water	City of McKeesport	Allegheny	Wastewater Collection and Treatment	156,000,000	159,000,000	21,953	Post
2	8/1/2016	Aqua PA	New Garden Twp. SA	Chester	Wastewater Collection and Paid for and Owned Treatment	29,500,000	29,500,000	2,106	Post
3	11/16/2016	Aqua PA	Limerick Township	Montgomery	Wastewater Collection and Treatment System	75,100,000	64,373,378	5,434	Post
4	12/10/2017	Aqua PA	East Bradford Township	Chester	Wastewater Collection and paid for treatment Capacity	5,000,000	5,000,000	1,248	Post
5	4/20/2018	SUEZ	Mahoning	Carbon	Water Distribution System	4,734,800	4,734,800	1,186	Post
6	4/20/2018	SUEZ	Mahoning	Carbon	Wastewater Collection	4,765,200	4,765,200	1,451	Post
7	6/1/2018	Aqua PA	Cheltenham	Montgomery	Wastewater Collection	50,250,000	50,250,000	10,500	Post
8	11/14/2018	PA American Water	Steelton	Dauphin	Water Distribution and Treatment	22,500,000	21,750,000	2,325	Post
9	1/1/2017	PA American Water	Sadsbury	Chester	Wastewater Collection	9,250,000	8,600,000	998	Post
10	5/28/2018	PA American Water	Exeter	Berks	Wastewater Collection and Treatment	96,000,000	93,500,000	9,000	Post
11	10/29/2018	Aqua PA	East Norriton	Montgomery	Wastewater Collection	21,000,000	21,000,000	4,950	Post
12	9/30/2018	PA American	Kane	McKean	Wastewater Collection and Treatment	17,560,000	17,560,000	2,006	Post
13	12/10/2019	PA American	Royersford	Montgomery	Wastewater Collection and Treatment	13,000,000	13,000,000	1,596	Post
14	12/17/2019	PA American	Valley	Chester	Water Treatment and Distribution System	7,325,000	7,325,000	1,459	Post
15	12/17/2019	PA American	Valley	Chester	Wastewater Collection System	13,950,000	13,950,000	1,644	Post
16	12/31/2019	Aqua PA	Delaware County Regional Wa	Delaware	Wastewater Collection and Treatment	276,500,000	276,500,000	16,473	Post
17	4/28/2020	PA American Water	Upper Pottsgrove	Montgomery	Wastewater Collection	13,750,000	13,750,000	1,428	Post
18	9/17/2020	Aqua PA	Lower Makefield	Bucks	Wastewater Collection and Purchased Treatment Capacity	53,000,000	53,000,000	11,151	Post

In order to arrive at a measure of comparability these system sales were analyzed in relationship of the purchase price to the properties' depreciated original cost (OCLD), depreciated replacement cost (CORLD), customers, and cashflows (Market Approach tab).

Financial Market Ratios – In the market approach based on market financial ratios the market data of companies (nine) in the water/wastewater industry as reported in Value Line Investment Surveys (January 8, 2021) were analyzed. In the analysis the companies' stock (market) and debt (book value) per share are compared as a ratio to the book investment value per share.

The following table summarizes both the comparable sales and financial market ratio analysis and the Market Approach conclusion of this appraisal:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Data

Central Tendancy and Reliability Analysis

Market Sales Analysis - PP/OCLD

	Simple	Weighted	
Mean	1.7594	1.8494	
Standard Deviation	0.5882	0.5292	
Median	1.49	1.4375	
Mode	1.4418	1.4418	
Conclusion		1.8494	AUS Input
			Cost Approach - OCLD
Willistown Wastewater Collection System OCLD		13,524,101	
Market Value Indication		**25,011,472**	

Market Sales Analysis - PP/CORLD

	Simple	Weighted	
Mean	0.8087	0.8533	
Standard Deviation	0.1746	0.1493	
Median	0.8229	0.7558	
Mode	0.6918	0.6918	
Conclusion		0.8533	AUS Input
			Cost Approach - CORLD
Willistown Wastewater Collection System CORLD		30,113,231	
Market Value Indication		**25,695,620**	

Market Sales Analysis - PP/Customer

	Simple	Weighted	
Water & Wastewater Industryn			
Mean	7,963	10,962	
Standard Deviation	3,637	4,613	
Median	8,315	4,963	
Mode	7,243	7,243	
Water Tretment & Distribution			
Mean	6,123		
Standard Deviation			
Median	5,021		
Wastewater Collection & Treatment			
Mean	9,579		
Standard Deviation		-	AUS Input
Median	8,754		
Wastewater Collection			
Mean	6,507		
Standard Deviation			
Median	6,636		
Watewater Treatment Only			
Mean	3,072		
Standard Deviation			
Median	2,118		
Willistown Wastewater Collection System Customers		2,294	AUS Input
Wastewater Collection & Treatment PP/Customer		9,579	AUS Input
Collection and Treatement Customers Market Value Indic		**21,974,226**	

Financial Basis[1]

Financial Markets	Market Value per Share to Book Value per Share	
Market to Book (equity)	3.40	
Market to Book (equity and debt)	2.11	
Use (equity and debt)	2.11	AUS Input

Willistown Wastewater Collection System OCLD	13,524,101	Cost Approach - OCLD
Market Value Indication	**28,535,853**	

Treatement Only Market Value Indication

Treatment Only PP/customer	2,118	AUS Input
Treatment Only Customers	-	AUS Input
Market Value Indication Treatment Only	-	

Total Market Value Indication	**21,974,226**

Market Sales Analysis - PP/Cash Flows (EBITDA Period 1-5)

	Simple	Weighted	
Mean	17.48	15.32	
Standard Deviation	5.71	5.10	
Median	17.41	18.13	
Mode	10.68	10.68	
Forecast			
Conclusion		18.00	AUS Input
			Income Approach
Willistown Wastewater Collection System Cash Flows		892,978	
Market Value Indication		**16,073,611**	

Market Sales Analysis - PP/Cash Flows (EBITDA Period 1-13)

	Simple	Weighted	
Mean	11.62	11.45	
Standard Deviation	2.67	2.14	
Median	11.65	12.07	
Mode	9.55	9.55	
Forecast			
Conclusion		12.00	AUS Input
			Income Approach
Willistown Wastewater Collection System Cash Flows		1,168,600	
Market Value Indication		**14,023,202**	

Summary of Market Analyses

Indicators	
OCLD	25,011,472
CORLD	25,695,620
Customers	21,974,226
Cash Flows	
EBITDA Periods 1-5	16,073,611
EBITDA Periods 1-13	14,023,202
Value Line	28,535,853
Mean	21,885,664
Median	23,492,849
Conclusion	**25,695,620**

The market approach conclusion of this appraisal was determined to be $25,695,620.

Cost Approach Revisited – Before concluding this appraisal's fair market value, the preliminary cost approach conclusion of $30,113,231 needs to be reviewed in light of the above-described income and market analyses in order to evaluate if external obsolescence exists in the preliminary replacement cost new less depreciation conclusion. The appraisal literature in regard to developing a cost approach states:

> "The last step in the implementation of the cost approach is to estimate *economic obsolescence*. Economic obsolescence (sometimes called "external obsolescence") has been previously defined as the loss in value or usefulness of a property caused by factors external to the asset. These factors include increased cost of raw materials, labor, utilities (without an offsetting increase in product price); reduced demand for the product; increased competition; environmental or other regulations; or similar factors.
>
> The difficulty in measuring the full effect of economic obsolescence is one of the weaknesses of the cost approach. Because economic obsolescence is usually a function of outside influences that affect an entire business (i.e., all tangible and intangible assets) rather than individual assets or isolated groups of assets, it is sometimes measured using the income approach or by using the income approach to help identify the existence of economic influences on value. However, the cost approach can be used to measure some forms of economic obsolescence."[7]

The above-described income approach value conclusion of $18,235,751 and the market approach conclusion of $25,695,620 for the Willistown Township's future wastewater system compared to the preliminary cost approach conclusion of $30,113,231 indicates external obsolescence of 38.57% exists detailed as follows:

Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

	Column Reference in OCLD & RCNLD	Amount in $s		
Depreciated Replacement Cost (RCNLD)			18,235,751	Income
Original Cost (OC)	(9)	19,641,520	25,695,620	Market
Replacement Cost New (RCN)	(16)	49,898,907	18,500,000	Conclusion
Replacement Cost New less Depreciation (RCNLD)	(31)	30,113,231	17,500,000	Purchase Price
Intangible Assets - Treatment Contracts				
Fair Market Vaue (FMV)	(41)	18,498,555	(11,613,231)	Economic Obsolescence
			38.57%	EO %

When this economic obsolescence of 38.57% is applied to the Preliminary Cost Approach of $30,113,231 the final Cost Approach was determined to be $18,498,555 detailed as follows:

[7] Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets, Second Edition, pp. 96-97.

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Fair Market Value

(36)	(37)	(39)	(40)	(41)
Account	Description	Preliminary Cost Approach	Economic Obsolescence	Fair Market Value
		CORLD $s	% of Preliminary Cost Approach	Appraisal Date Value $s
Input	Input	Calculation	Input	Calculation
Eng Assmnt	Eng Assmnt	Col (31)	AUS Economic Obsolescence Analysis	(39) * [1.00-Col (40)]
Account	Description	Prelim CORLD	EO%	FMV
353.20	Land & Land Rights - Collection System	223,776	38.57%	137,463
353.30	Land & Land Rights - Pumping	109,988	38.57%	67,563
353.40	Land & Land Rights - Treatment	1,945,510	38.57%	1,195,128
354.30	Stuctures & Improvements - Pumping	2,218,402	38.57%	1,362,766
354.40	Stuctures & Improvements - Treatment	1,941,807	38.57%	1,192,852
355.30	Generating Equipment - Pumping	282,781	38.57%	173,712
360.21	Collection Sewers - Force - Mains	10,144,396	38.57%	6,231,703
361.21	Collection Sewers - Gravity - Mains	8,050,177	38.57%	4,945,223
361.22	Collection Sewers - Gravity - Mains Relining	1,059,746	38.57%	651,002
361.23	Collection Sewers - Gravity - Manholes	2,721,303	38.57%	1,671,697
363.20	Service Laterals	1,213,391	38.57%	745,386
	Grand Total	30,113,231	38.57%	18,498,555

Value Conclusion

The Fair Market Value of the Willistown Township's wastewater collection and treatment system's property, plant and equipment and its operation was determined to be $19,113,140 as follows:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Fair Market Value Appraisal

Appraisal Approach		Investor-owned Utility	Weight	Wtd Valuation Indications
Cost Approach				
Inventory of Assets				
Original Cost ($OC)		19,641,520		
Depreciated Original Cost ($OCLD)		13,524,101		
Intangible Assets (Treatment contracts)				
Cost Approach of all assets Conclusion		13,524,101		
Replacement Cost				
Replacement Cost New (COR)		49,898,907		
Depreciated Replacement Cost New (CORLD)	**$**	**30,113,231**		
External or Economic Obsolescence		**38.57%**	AUS Input	
Market Value of Tangible Assets	**$**	**18,498,555**		
Intangible Assets (Treatement contracts)				
Cost Approach of all assets Conclusion		**18,498,555**		
Cost Approach Conclusion		**18,498,555**	**50%**	**9,249,278**
Income Approach				
Required Rate Increases: 30% period 3, 20% period 6, 10% period 9, 6% period 12, 6% period 15, and 6% every 3rd year beginning in period 18 (Input 6)		18,235,751		
Income Approach Conclusion		**18,235,751**	**40%**	**7,294,300**
Market Approach				
Market Comparables (to)				
OCLD		25,011,472		
CORLD		25,695,620		
Customers		21,974,226		
Cash Flows (EBITDA)		16,073,611		
Market Financials (to)				
OCLD		28,535,853		
Market Approach Conclusion		**25,695,620**	**10%**	**2,569,562**
Appraisal Conclusion	**$**	**19,113,140**	**100%**	**19,113,140**
Conclusion (cost approach)	**$**	**18,498,555**		

As the purpose of this appraisal was to fulfill the requirements of Section 1329 of the PA CS in the establishment of value for rate making of the Willistown Township's property, plant and equipment this appraisal's conclusion of $19,113,140 is consistent with the purpose of the appraisal. As the cost approach work papers detail our value conclusion by National Association of Regulatory Utility Commissioners' (NARUC) Uniform System of Accounts (USOA) for the wastewater industry account classifications and the installation year of the property this detail can be used to allocate the appraisal conclusion to establish the booked value for future accounting and rate making.

PURPOSE AND SCOPE OF WORK

The purpose of this appraisal of the Willistown Township's wastewater collection and treatment system is the determination of the fair market value of the property plant and equipment of wastewater utility. The report was prepared based on the 2020-2021 Uniform Standards of Professional Practices (USPAP) and is intended to meet the criteria established with Title 66 (Public Utilities) of the Pennsylvania Consolidated Statues (PA CS) Paragraph 1329: Valuation of acquired water and wastewater systems, collectively referred to as Act 12 of the 2016 Pennsylvania legislative session (Act 12). The intended users of this appraisal are our client Willistown Township, Pennsylvania, Aqua Pennsylvania Wastewater Inc., and the Pennsylvania Public Utility Commission.

The value established in this appraisal was based on the definition of Market Value as:

> *"The most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress."* *The Appraisal of Real Estate, 14th Edition, page 58.*

In conducting this appraisal, we utilized several sources of data:

- Annual (year-ending December 31) Willistown Township (Pennsylvania) wastewater collection operational financial statements cover the period 2016 through 2019, Willistown Budgets 2020 and 2021, and customer counts and rates at year-end 2021.

- The inventory developed by Pennoni Associates Inc. (Engineer's Assessment) of the Willistown Township's wastewater system's property dated July 6, 2021.

- The Handy-Whitman (water industry) Index of Public Utilities Construction Costs for northeastern United States, AUS Consultant General Plant Cost Indexes for the period 1912 through January 1, 2021, and various cost indexes published by the United States Bureau of Labor Statistics (US BLS).

In preparing this fair market value appraisal of the System's property, plant and equipment, and its operations: the cost, income, and market approaches to value were considered. Primary reliance was placed on the cost approach for the property, plant and equipment, with the income approach and market approaches being utilized to confirm the overall value of the sewer system's operation. A detailed explanation of each approach to value is included below in the section "Appraisal Procedures and Results".

WATER/WASTEWATER INDUSTRY NATIONALLY AND IN PENNSYLVANIA AND WILLISTOWN TOWNSHIP'S WASTEWATER COLLECTION AND TREATMENT SYSTEM

Water/wastewater Industry

The water and wastewater industry in the United States consist of both municipal authorities (literally thousands) and private investor-owned companies. Of the investor owned there are nine which are large enough to be tracked by Value Line Investment Surveys, of which, two are major players in the northeast portion of the United States, American Water Works Company, Inc. and Aqua America, Inc. (on February 3, 2020, Aqua's name changed to Essential Utilities, Inc.) American and Aqua have been particularly active in the acquisition of municipal water and wastewater systems.

Pennsylvania Water / Wastewater Industry

The water and wastewater industry in Pennsylvania also consist of both municipal and investor-owned systems. Over last several years the need for infrastructure improvements has led the Pennsylvania legislature to pass legislation facilitating the acquisition of municipal water and/or wastewater systems to a private investor-owned rate regulated companies such as American Water and Aqua America. This legislation was Act 12 of the Pennsylvania legislator's 2016 legislative session (Act 12). The Act 12 legislation added a section (1329) modifying Title 66 (Public Utilities) of the Pennsylvania Consolidated Statues (PA CS) adding Section 1329: Valuation of acquired water and wastewater systems, collectively referred to as Act 12. This appraisal was developed to meet the valuation criteria established by Section 1329 and the PA PUC's subsequent Implementation Orders in the valuation of acquired water and wastewater systems.

Willistown Township's Wastewater Collection and Treatment System Facilities, its Property and Operations[8]

System Summary

Willistown Township, Chester County, PA borders Malvern, East Whiteland, and Tredyffrin Townships to the north; Newtown and Edgmont Townships in Delaware County to the south; Easttown and Tredyffrin Townships to the east; and East Goshen and Westtown Township to the west.

Willistown Township is responsible for the safe collection and transmission of an average of 1.305 million gallons per day (MGD) of wastewater generated in southeastern Pennsylvania (A map of the service areas is located in Appendix A, Figure A1). The wastewater system in the Township consists of approximately 25 miles of gravity collectors and interceptors ranging in size from 8 to 18 inches diameter, approximately 9 miles of low pressure sewer piping ranging in size from 1-1/2 to 4 inches diameter, approximately 5 miles of force mains ranging in size from 2 to 14 inches diameter, the Penn's Preserve WWTP spray field irrigation system and aeration lagoons, six Township-owned sewage pumping stations, two Township-owned booster pump stations, and one undedicated pumping station that is permitted to discharge to the Township's sewer system. Apart from the pumping station that is undedicated, the wastewater systems are owned, operated, and maintained by Willistown Township. No properties are held for future use. Wastewater from the Willistown Chase and Penn's Preserve subdivisions are conveyed to the Penn's Preserve WWTP. All other wastewater is conveyed via the Valley Creek Trunk Sewer (VCTS) through Tredyffrin and Easttown Townships to the Valley Forge Sewer Authority (VFSA) Wastewater Treatment Plant in Schuylkill Township for treatment. In addition, flows from East Whiteland Township and Malvern Borough are conveyed through Willistown to the VCTS and VFSA.

There are approximately 2,405 EDUs connected to the Township's sewer system as direct customers of Willistown Township. Of these customers, about 2,215 EDUs are

[8] Extracted from Engineer's Assessment page 4 through 5

treated by VFSA, and 190 EDUs are treated by the Penn's Preserve WWTP. There are also three intermunicipal connections in which wastewater is conveyed through the Township's sewer system via intermunicipal conveyance agreements with Willistown.

According to Willistown's 2020 Chapter 94 Report, the average annual flow for the Township was 1.305 MGD, which is 90.8% of the Township's allocated capacity of 1.438 MGD at the VFSA WWTP. The 2020 monthly average daily flow decreased by about 10% from 2019. The flow reduction is attributed to the completion of sewer system repairs. Willistown's long term (January 2015 to December 2020) monthly average daily flow is 1.228 MGD.

Drainage Areas

The Willistown sewer system has five major drainage areas in which wastewater discharges through adjacent townships to the VFSA and one drainage area in which wastewater is discharged to the Penn's Preserve WWTP.

The Tredyffrin Township 1 drainage area accounts for approximately 97% of all Willistown flow to the VCTS. Five Township-owned pump stations – Pump Station #1, Pump Station #2, Pump Station #3, Pump Station #4, and Dovecote Pump Station – two Township-owned booster pump stations – Booster Pump Station #1 and Booster Pump Station #2 – and one undedicated pump station – Devereux Pump Station – are located in this drainage area. All wastewater from this drainage area is conveyed through gravity and pressure systems to the gravity sewer on North Cedar Hollow Road, where they are metered at the Cedar Hollow meter, and then to the VCTS in Tredyffrin Township.

The Tredyffrin Township 2 drainage area connects seven unmetered EDUs to the Tredyffrin Township sewer system. All flows are conveyed through a gravity interceptor along West Central Avenue, where flows are unmetered prior to flowing into Tredyffrin's system.

The Tredyffrin Township 3 drainage area directly connects 56 unmetered EDUs to the Tredyffrin Township sewer system. All flows are conveyed through a gravity interceptor

along Plank Avenue, Paoli Pike, Richmond Drive, Wistar Road, and Cobblestone Drive, where flows are unmetered prior to flowing into Tredyffrin's system.

All wastewater flows from the Easttown Township 1 drainage area are conveyed through the gravity sewer on Weatherstone Drive to Easttown Township, where they are metered at the Pheasant Run flow meter on Pheasant Run Drive before entering the sewer system in Easttown Township.

The Easttown Township 2 drainage area directly connects one unmetered EDU to the Easttown Township sewer system. All flows are conveyed through a gravity interceptor, where flows are unmetered prior to flowing into Easttown's system.

The Penn's Preserve drainage area connects approximately 190 EDUs from the Willistown Chase and Penn's Preserve subdivisions to the Penn's Preserve WWTP. One Township owned pump station – Pump Station #5 – is located in this drainage area. All wastewater flows are conveyed through a gravity sewer to Pump Station #5, located on the eastbound side of West Chester Pike (Route 3), and directly pumped to the aeration lagoons across the street at Penn's Preserve WWTP for treatment.

APPRAISAL PROCEDURES AND RESULTS

The purpose of this appraisal of the Willistown Township's wastewater collection and treatment system is the determination of the fair market value of the wastewater's property plant and equipment as of January 20, 2021. The report was prepared based on the 2020-2021 Uniform Standards of Professional Practices (USPAP) and is intended to meet the criteria established with Title 66 (Public Utilities) of the Pennsylvania Consolidated Statues (PS CS) Section 1329: Valuation of acquired water and wastewater systems, collectively referred to as Act 12 of the Pennsylvania legislator's 2016 legislative session (Act 12). The intended users of this appraisal are Willistown Township, Pennsylvania, Aqua Pennsylvania Wastewater Inc., and the Pennsylvania Public Utility Commission (PA PUC).

The value established in this appraisal was based on the definition of Market Value as:

> *"The most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress." The Appraisal of Real Estate, 14th Edition, page 58.*

In conducting this appraisal, we utilized several sources of data:

- Annual (year-ending December 31) Willistown Township's wastewater system's operational financial statements cover the period 2016 through 2019, Willistown Budgets 2020 and 2021, and customers and rates at year end 2020.

- Pennoni Associates Inc.'s Engineer's Assessment and inventory of the Willistown Township's wastewater system's property dated July 6, 2021.

- The Handy-Whitman (water industry) Index of Public Utilities Construction Costs for northeastern United States, AUS Consultant General Plant Cost Indexes for the period 1912 through July 1, 2021, and various cost indexes published by the United States Bureau of Labor Statistics (US BLS).

In preparing this fair market value appraisal of the wastewater system's property, plant and equipment, and its operations; the cost, income, and market approaches to value were considered. Primary reliance was placed on the cost approach for the property, plant and equipment, with the income approach and market approaches being utilized to confirm the overall value of the sewer system's operation. Detailed explanation of each approach to value is included below.

Cost Approach (Cost Approach tab) - The philosophy in the cost approach to value is that the maximum value of a property's tangible assets is established by the cost to acquire or build a similar property. In this appraisal, the cost approach to value was analyzed using reproduction/replacement cost approach.

Reproduction cost and replacement cost are defined as:

> Reproduction cost – "The estimated cost to construct, at current prices as of the effective date of the appraisal, an exact duplicate or replica of the [property] being appraised, using the same materials, construction standards, design, layout, and quality of workmanship and embodying all the deficiencies, super-adequacies, and obsolescence of the subject [property]."[9]
>
> Replacement cost – "The estimated cost to construct, at current prices as of the effective appraisal date, a substitute for the [property] being appraised using modern materials and current standards, design and layout."[10]
>
> In the wastewater industry the property's reproduction costs and replacement costs are quite similar; therefore, the property's cost new was determined based on its replacement cost new.

The trended original cost method was utilized in preparing the replacement cost new. "Trending is a method of estimating a property's replacement cost new in which an *index* or *trend factor* is applied to the property's *historical cost* to convert the known cost into an indication of current cost. Simply put, trending reflects the movement of price over

[9] The Appraisal of Real Estate, 13th Edition. Page 385
[10] ibid

time."[11] In the trended original cost method, the System's investment in wastewater plant and equipment is restated to costs reflective of the appraisal date, by the application of cost trends to the property's original investment. AUS Consultants utilized the Engineer's Assessment performed by Pennoni Associates Inc. (Engineer's Assessment tab) as the starting point of the Cost Approach. Utilizing the Engineer's Assessment of the System's original cost in property, plant and equipment AUS Consultants developed the plant's depreciated original cost (OCLD) and depreciated replacement cost (RCNLD) As of January 20, 2021 (Cost Approach tab).

The cost trends are applied to each of the various investment categories (NARUC plant accounts) by original year of placement for that investment. The cost indexes used in these studies were the Handy-Whitman Index of Public Utility Construction Costs for the water industry of the northeastern region of the United States which includes the Commonwealth of Pennsylvania (HW), the AUS Consultants of General Plant Indexes AUS), and various United States Bureau of Labor Statistics (US BLS) indexes. The following table details the costing parameters using in the trending costing procedures:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(3)				
		(3a)	(3b)	(3c)	(3d)	(3e)
Account Number	Description	Costing Parameters				Reproduction to Replacement Cost Factor
		Index Series	Table	Line Reference	Lookup	AUS Input
353.20	Land & Land Rights - Collection System	USBLS	PPI	1.00	USBLS1	1.00
353.30	Land & Land Rights - Pumping	USBLS	PPI	1.00	USBLS1	1.00
353.40	Land & Land Rights - Treatment	USBLS	PPI	1.00	USBLS1	1.00
354.30	Stuctures & Improvements - Pumping	HW	W-1	8.00	HWW-18	1.00
354.40	Stuctures & Improvements - Treatment	HW	W-1	15.00	HWW-115	1.00
355.30	Generating Equipment - Pumping	USBLS	PPI	4.00	USBLS4	1.00
360.21	Collection Sewers - Force - Mains	HW	W-1	44.00	HWW-144	1.00
361.21	Collection Sewers - Gravity - Mains	HW	W-1	44.00	HWW-144	1.00
361.22	Collection Sewers - Gravity - Mains Relining	HW	W-1	38.00	HWW-138	1.00
361.23	Collection Sewers - Gravity - Manholes	HW	W-1	45.00	HWW-145	1.00
363.20	Service Laterals	HW	W-1	39.00	HWW-139	1.00
364.30	Flow Measuring Devices - Pumping	HW	W-1	40.00	HWW-140	1.00
390.70	Office Furniture and Equipment	AUS	T-1	15.00	AUST-115	1.00

[11] Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets, Second Edition. Page 59

The following table presents the development of the cost approach for the Collection Sewers – Gravity Mains (Account 361.21) portion of the Willistown Township wastewater service area; this example will be used to describe the entire cost approach process:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Account	Account	Asset Description	Average Year Installed	Average Year Installed	Units	Quantity	Replacement cost per unit	Original Cost	Costing Parameter	Placement Date Cost Index	Appraisal Date Cost Index	Cost Translator	Reproduction Cost New (RCN)	Reproduction Cost New (RCN) to Replacement Cost New (COR)	Replacement Cost New (COR)
								OC $s					RCN $s	COR $s / RCN $s	COR $s
Input	Input	Input	Input	Input	Input	Input	Input	Input	Input	Input	Input	Calculation	Calculation	Input	Calculation
Eng Assmnt	AUS Input	Willistown Township Wastewater Assets Detail by Pennoni Associates, Inc.	Eng Assmnt	AUS Input	Eng Assmnt	Eng Assmnt	AUS Input	Eng Assmnt	AUS Input	Cost Indices Lookup Cols(10) & (5)	Cost Indices Lookup Cols(10) & Study YR	Col (12) / (11)	Col (5) * (13)	AUS Input	Col (14) * (15)
NARUC Code	NARUC Code	Asset Description	Service Date	Year Installed	Units	Quantity	COR Cost	Original Cost	Cost Index Table	YearIndex	APPCostIndex	Translator	RCN	COR / RCN Factor	COR
361.21	361.21	COLLECTION SEWERS - GRAVITY MAINS													
361.21	361.21	VP - 8-inch	1977	1977	LF	59,472.00	22.83	1,357,563.07	HWW-144	137.1	674.5	4.920	6,679,210	1.000	6,679,210
361.21	361.21	CIP - 8-inch	1977	1977	LF	775.00	14.12	10,941.90	HWW-144	137.1	674.5	4.920	53,834	1.000	53,834
361.21	361.21	ACP - 8-inch	1977	1977	LF	26,773.00	23.38	625,962.82	HWW-144	137.1	674.5	4.920	3,079,737	1.000	3,079,737
361.21	361.21	VP - 10-inch	1977	1977	LF	1,453.00	27.26	39,603.80	HWW-144	137.1	674.5	4.920	194,851	1.000	194,851
361.21	361.21	ACP - 10-inch	1977	1977	LF	4,659.00	21.89	101,970.53	HWW-144	137.1	674.5	4.920	501,695	1.000	501,695
361.21	361.21	VP - 12-inch	1977	1977	LF	497.00	23.10	11,482.26	HWW-144	137.1	674.5	4.920	56,493	1.000	56,493
361.21	361.21	ACP - 12-inch	1977	1977	LF	2,062.00	29.38	60,577.87	HWW-144	137.1	674.5	4.920	298,043	1.000	298,043
361.21	361.21	VP - 15-inch	1977	1977	LF	360.00	24.13	8,686.78	HWW-144	137.1	674.5	4.920	42,739	1.000	42,739
361.21	361.21	RCP - 15-inch	1977	1977	LF	1,679.00	24.83	41,697.28	HWW-144	137.1	674.5	4.920	205,151	1.000	205,151
361.21	361.21	ACP - 15-inch	1977	1977	LF	1,498.00	43.92	65,786.92	HWW-144	137.1	674.5	4.920	323,672	1.000	323,672
361.21	361.21	DIP - 16-inch	1977	1977	LF	166.00	46.72	7,755.47	HWW-144	137.1	674.5	4.920	38,157	1.000	38,157
361.21	361.21	RCP - 18-inch	1977	1977	LF	3,933.00	29.26	115,095.22	HWW-144	137.1	674.5	4.920	566,268	1.000	566,268
361.21	361.21	DIP - 18-inch	1977	1977	LF	105.00	29.26	3,072.72	HWW-144	137.1	674.5	4.920	15,118	1.000	15,118
361.21	361.21	Unknown - 8-inch	1978	1978	LF	4,737.00	16.51	78,212.82	HWW-144	145.4	674.5	4.639	362,829	1.000	362,829
361.21	361.21	ACP - 8-inch	1980	1980	LF	3,047.00	18.18	55,387.89	HWW-144	173	674.5	3.899	215,957	1.000	215,957
361.21	361.21	PVC - 8-inch	1987	1987	LF	5,100.00	24.15	123,157.25	HWW-144	217.2	674.5	3.105	382,403	1.000	382,403
361.21	361.21	PVC - 8-inch	1989	1989	LF	3,464.00	39.23	135,906.68	HWW-144	270.8	674.5	2.491	338,544	1.000	338,544
361.21	361.21	PVC - 8-inch	1998	1998	LF	3,806.00	49.07	186,760.37	HWW-144	295	674.5	2.286	426,934	1.000	426,934
361.21	361.21	DIP - 8-inch	1998	1998	LF	7,803.00	45.54	355,322.31	HWW-144	295	674.5	2.286	812,267	1.000	812,267
361.21	361.21	PVC - 8-inch	2009	2009	LF	585.00	46.97	27,477.80	HWW-144	524.3	674.5	1.286	35,336	1.000	35,336
361.21	361.21	PVC - 8-inch	2013	2013	LF	3,667.00	95.23	349,216.32	HWW-144	551.7	674.5	1.223	427,092	1.000	427,092
361.21	361.21	PVC - 6-inch	2017	2017	LF	778.00	58.85	45,783.38	HWW-144	573.5	674.5	1.176	53,841	1.000	53,841
	361.21	**TOTAL COLLECTION SEWERS - GRAVITY MAINS**						**3,807,421.45**					**15,110,171**		**15,110,171**

Using the trended original cost method, Willistown Township's investment in this example of $3,807,421.45 was determined to have a replacement cost new of $15,110,171.

When the trended cost method is applied to each of Willistown Township's investment in plant, property and equipment of $19,641,519.75 was determined to have a replacement cost new of $49,898,907 detailed as follows:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Replacement Cost New (RCN)

(1)	(2)	(3)	(9)	(10)	(13)	(14)	(15)	(16)
Account	Account	Asset Description	Original Cost	Costing Parameter	Cost Translator	Reproduction Cost New (RCN)	Reproduction Cost New (RCN) to Replacement Cost New (COR)	Replacement Cost New (COR)
			OC $s			RCN $s	COR $s / RCN $s	COR $s
Input	Input	Input	Input	Input	Calculation	Calculation	Input	Calculation
Eng Assmnt NARUC Code	AUS Input NARUC Code	Willistown Township Wastewater Assets Detail by Pennoni Associates, Inc. Asset Description	Eng Assmnt Original Cost	AUS Input Cost Index Table	Translator	RCN	AUS Input COR / RCN Factor	Col (14) * (15) COR
353.20	353.20	Land & Land Rights - Collection System	216.00	USBLS1	1.61	347	644.89	223,776
353.30	353.30	Land & Land Rights - Pumping	21,606.00	USBLS1	4.85	104,817	1.05	109,988
353.40	353.40	Land & Land Rights - Treatment	1,500,007.00	USBLS1	1.30	1,945,510	1.00	1,945,510
354.30	354.30	Stuctures & Improvements - Pumping	2,146,252.31	HWW-18	2.36	5,065,392	1.00	5,065,392
354.40	354.40	Stuctures & Improvements - Treatment	1,448,500.00	HWW-115	2.26	3,275,059	1.00	3,275,059
355.30	355.30	Generating Equipment - Pumping	344,586.01	USBLS4	1.17	401,787	1.00	401,787
360.21	360.21	Collection Sewers - Force - Mains	6,823,585.73	HWW-144	2.18	14,857,717	1.00	14,857,717
361.21	361.21	Collection Sewers - Gravity - Mains	3,807,421.45	HWW-144	3.97	15,110,171	1.00	15,110,171
361.22	361.22	Collection Sewers - Gravity - Mains Relining	956,037.32	HWW-138	1.15	1,096,644	1.00	1,096,644
361.23	361.23	Collection Sewers - Gravity - Manholes	1,562,320.53	HWW-145	3.19	4,989,198	1.00	4,989,198
363.20	363.20	Service Laterals	698,453.71	HWW-139	3.43	2,394,359	1.00	2,394,359
		Grand Total	19,641,519.75		2.53	49,670,307	1.01	49,898,907

The replacement cost new of the Land and Land Rights easements were determined based on the following:

Current cost of Easements

Activity	Engineer	Legal	Fees	Total
Determine the facilities for which a Easment is need	1	0	0	
Locate the Land owner for the property needing a easement	1	1	0	
Develop a diagram o the Property, the facilities, and the easement	2	0	0	
Develop the easement document	1	1	0	
Visit the property owner to obtain permission for the easement and sign the easment documentation	4	0	0	
Register the easement with the Municipal Clerk	0	1	250	
Total	9	3	250	
Labor Costs per Hour	54	100		
Total Cost	486	300	250	1,036

Replacement Cost New Less Depreciation - The replacement cost described above reflects the cost of new property; however, the Willistown Township's wastewater system property is not new and has experienced normal depreciation and potentially functional and or economic obsolescence. These various forms of depreciation are defined as follows:

> Normal depreciation/deterioration, akin to physical deterioration, is "loss in value caused by wear, tear, age and use."[12]
>
> Functional obsolescence is "the loss in value or usefulness of a property caused by inefficiencies or inadequacies of the property itself, when compared to a more efficient of less costly replacement property that new technology has developed."[13]
>
> Economic, or external, obsolescence is defined as "A loss in value caused by factors outside a property"[14] and is most often indicated by insufficient earning.

Wastewater Depreciation Service Life Experience in Pennsylvania

The service lives used in the depreciation and functional obsolescence calculations were developed based on the property and its use, AUS Consultants' experience in developing depreciation studies for the water and wastewater industries and depreciation studies filed with PAWC and Aqua America rate cases. With each of their recent rate case filings PAWC and Aqua America have filed depreciation studies in support of their depreciation service lives and associated depreciation expenses contained within their revenue requirements. The depreciation studies were prepared by Gannett Fleming Rate Consultants a recognized firm in the depreciation consulting area. AUS Consultants has reviewed the PAWC and Aqua studies which are summarized in the following table:

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[12] The Dictionary of Real Estate Appraisal, 4th Edition
[13] Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets, Second Edition. Page 67.
[14] The Appraisal of Real Estate, 13th Edition, page 442.

Summary of PAWC & Aqua Depreciation Studies Prepared for Rate Case

Account	Account Description	Iowa Curves			Service Life			Remaining Life		
		PAWC 12/31/2016	PAWC 12/31/2019	Aqua 3/31/2018	PAWC 12/31/2016	PAWC 12/31/2019	Aqua 3/31/2018	PAWC 12/31/2016	PAWC 12/31/2019	Aqua 3/31/2018
					years	years		years	years	
354.20	STRUCTURES AND IMPROVEMENTS - COLLECTION	R3	R3	S0.5	45	45	55	39.1	33.3	35.3
354.30	STRUCTURES AND IMPROVEMENTS - SPP	R2.5	S0	S1.0	50	55	60	45.2	32.6	44.6
354.40	STRUCTURES AND IMPROVEMENTS - TDP	R2	S0	R2.0	65	55	50	56.6	31.7	28.9
354.70	STRUCTURES AND IMPROVEMENTS - GENERAL	S1	S1	R3.0	35	35	50	33.3	23.2	17.3
355.00	POWER GENERATION EQUIPMENT	R2.5	S0.5		35	35		29.7	19.3	
360.10	COLLECTION SEWERS - FORCE MAINS	S2	R3	R2.5	70	75	75	53.1	52.5	52.0
361.10	COLLECTION SEWERS - GRAVITY MAINS	R2.5	R2.5	R2.5	70	80	75	56.9	54.8	50.3
361.20	MANHOLES	S1.5	S2.5		50	50		41.3	32.2	
363.00	SERVICES	R3	R3	R4.0	38	47	70	22.9	30.2	54.3
364.00	FLOW MEASURING DEVICES	L3	L2.5		20	15		13.3	5.1	
365.00	FLOW MEASURING INSTALLATIONS	S1.5	S2		30	25		23.1	10.8	
370.00	RECEIVING WELLS	R3	R3		50	50		42.7	33.7	
371.00	PUMPING EQUIPMENT	SO	S0.5	L0.5	40	30	25	35.5	18.2	13.2
380.00	TREATMENT EQUIPMENT	5-R2	S1.5	S0.0	45	35	40	37.1	20.1	21.5
381.00	PLANT SEWERS	R3	R3	R1.5	50	50	40	43.1	32.7	9.9
382.00	OUTFALL SEWER LINES	R3	R3	R2.5	50	50	40	37.8	28.3	7.0
389.10	OTHER PLANT AND MISCELLANEOUS EQUIPMENT - INTANGIBLES	52.5	S2.5		20	20		13.6	11.3	
389.60	OTHER PLANT AND MISCELLANEOUS EQUIPMENT - CPS	SQ	SQ	L3.0	20	5	20	12.3	3.5	11.3
390.00	OFFICE FURNITURE AND EQUIPMENT	L4	SQ	SQ	15	20	20	9.5	10.1	
391.00	TRANSPORTATION EQUIPMENT	SQ	L4		25	14		19,9	9.8	
392.00	STORES EQUIPMENT	SQ	SQ		20	25		16.4	17.2	
393.00	TOOLS, SHOP AND GARAGE EQUIPMENT	SQ	SQ	SQ	15	20	20	11,3	15.4	
394.00	LABORATORY EQUIPMENT	L2.5	SQ	SQ	16	15	25	8.7	10.4	
395.00	POWER OPERATED EQUIPMENT	SQ	R2		15	22		10.3	13.2	
396.00	COMMUNICATION EQUIPMENT	SQ	SQ		15	15		9.6	6.9	
397.00	MISCELLANEOUS EQUIPMENT		SQ			15			12.8	
398.00	OTHER TANGIBLE PLANT		SQ			25			21.5	
	TOTAL DEPRECIABLE PLANT									
	NONDEPRECIABLE PLANT									

It is of particular importance in the above table the service life extension of the mains plant categories between the 2016 and the 2020 studies. The mains service lives increased as follows:

Account	Description	Service Life	
		2016	2020
360.10	COLLECTION SEWERS - FORCE MAINS	70	75
361.10	COLLECTION SEWERS - GRAVITY MAINS	70	80

AUS Consultants believe this increase in service lives is attributable to the widespread use of relining older mains instead of replacing mains which are in need of repair. The practice of relining mains with a “cured-in-place” plastic liner not only repairs specific main but has the effect of extending the life of the original mains by the length of time which the relining can be expected to last. Most relining vendors warranty their product and procedures for 50 years. Thus, in essence the original main’s service life will be extended by 50 plus years at the date the relining occurred. For those mains associated with relining their installation date was established at the date of their relining and their depreciation parameters were established the same as the depreciation parameters of the relining, i.e., R2.5 – 60 years.

The following table details the lives used in the depreciation portion of the replacement cost new less depreciation analysis:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(4)		(5)	(6)	
		(4a)	(4b)		(6a)	(6b)
Account Number	Description	Iowa Survivor / Retirement Curve	Normal Service Life	Economic Obsolescence	Tax Depreciation	
			years	% of CORLD	Table	Life
353.20	Land & Land Rights - Collection System	ZNonDep	0.00	38.57%	Non-Depr	0.00
353.30	Land & Land Rights - Pumping	ZNonDep	0.00	38.57%	Non-Depr	0.00
353.40	Land & Land Rights - Treatment	ZNonDep	0.00	38.57%	Non-Depr	0.00
354.30	Stuctures & Improvements - Pumping	R4.0	55.00	38.57%	MACRS	25.00
354.40	Stuctures & Improvements - Treatment	R4.0	55.00	38.57%	MACRS	25.00
355.30	Generating Equipment - Pumping	R3.0	35.00	38.57%	MACRS	25.00
360.21	Collection Sewers - Force - Mains	R3.0	75.00	38.57%	MACRS	25.00
361.21	Collection Sewers - Gravity - Mains	R2.5	80.00	38.57%	MACRS	25.00
361.22	Collection Sewers - Gravity - Mains Relining	R2.5	60.00	38.57%	MACRS	25.00
361.23	Collection Sewers - Gravity - Manholes	R2.5	80.00	38.57%	MACRS	25.00
363.20	Service Laterals	R3.0	70.00	38.57%	MACRS	25.00
364.30	Flow Measuring Devices - Pumping	S2.0	25.00	38.57%	MACRS	25.00
390.70	Office Furniture and Equipment	R3.0	15.00	38.57%	MACRS	15.00

As the above table demonstrates, the depreciation lives selected for the AUS Consultants appraisal are consistent with the depreciation studies' finding for wastewater plant.

Normal Depreciation – The extent of the depreciation in the property was evaluated using age-life depreciation techniques. In age-life depreciation, the property's depreciation or condition is estimated using the following formulas:

$$\text{Depreciation (\%)} = \frac{\text{Age (years) x100\%}}{\text{Service Life (years)}}$$

$$\text{Condition (\%)} = \frac{\text{Remaining Life (years) x (100\%)}}{\text{Service Life (years)}}$$

where: the property's Service Life = Age + Remaining Life
and Remaining Life = f(Survival Characteristic, Service Life, Age)

However due to the age of some of the property the extent of the depreciation was limited to 85% of the assets original cost and its replacement cost new.

When the above depreciation lives are used to quantify the property's depreciation is applied to the replacement cost new of the example Gravity Collection Mains portion of the Willistown Township wastewater service area of $15,110,171 the replacement cost new less depreciation was determined to be $8,050,179 detailed as follows:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)
Account	Description	Placement Year	Age at January 20, 2021 Appraisal Date	Replacement Cost New (COR)	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Age as % of NSL	Iowa Lookup	Iowa Condition Percent of Percent New	Normal Remaining Life	Total Life Expectancy	Condition	Preliminary Cost Approach (COR less Normal Depreciation)
			years	COR $s		years	% of NSL	Lookup	%	years	years	% of COR	CORLD $s
Input	Input	Input	Calculation	Calculation	Input	Input	Calculation	Calculation	Lookup	Calculation	Calculation	Calculation	Calculation
AUS Input	Eng Assmnt	Eng Assmnt	2021-[(20)+0.5]	Col (16)	AUS Input	AUS Input	Col (21) / (24)	Col (23) & (25)	Lookup Iowa Curves Life Tables @ col (26)	Col (24) * (27)	Col (21) + (28)	Col (28) / (29)	Col (22) * (30)
Account	Description	Year1	Age	RCN	Iowa	NLife	AgeP	IowaLookup	IowaCondition	Rem Life	Total Life	Condition	CORLD
361.21	COLLECTION SEWERS - GRAVITY MAINS												
361.21	VP - 8-inch	1977	43.50	6,679,210	R2.5	80	54	R2.5054	0.52940	42.35	85.85	49.330227%	3,294,869
361.21	CIP - 8-inch	1977	43.50	53,834	R2.5	80	54	R2.5054	0.52940	42.35	85.85	49.330227%	26,556
361.21	ACP - 8-inch	1977	43.50	3,079,737	R2.5	80	54	R2.5054	0.52940	42.35	85.85	49.330227%	1,519,241
361.21	VP - 10-inch	1977	43.50	194,851	R2.5	80	54	R2.5054	0.52940	42.35	85.85	49.330227%	96,120
361.21	ACP - 10-inch	1977	43.50	501,695	R2.5	80	54	R2.5054	0.52940	42.35	85.85	49.330227%	247,487
361.21	VP - 12-inch	1977	43.50	56,493	R2.5	80	54	R2.5054	0.52940	42.35	85.85	49.330227%	27,868
361.21	ACP - 12-inch	1977	43.50	298,043	R2.5	80	54	R2.5054	0.52940	42.35	85.85	49.330227%	147,025
361.21	VP - 15-inch	1977	43.50	42,739	R2.5	80	54	R2.5054	0.52940	42.35	85.85	49.330227%	21,083
361.21	RCP - 15-inch	1977	43.50	205,151	R2.5	80	54	R2.5054	0.52940	42.35	85.85	49.330227%	101,201
361.21	ACP - 15-inch	1977	43.50	323,672	R2.5	80	54	R2.5054	0.52940	42.35	85.85	49.330227%	159,668
361.21	DIP - 16-inch	1977	43.50	38,157	R2.5	80	54	R2.5054	0.52940	42.35	85.85	49.330227%	18,823
361.21	RCP - 18-inch	1977	43.50	566,268	R2.5	80	54	R2.5054	0.52940	42.35	85.85	49.330227%	279,341
361.21	DIP - 18-inch	1977	43.50	15,118	R2.5	80	54	R2.5054	0.52940	42.35	85.85	49.330227%	7,458
361.21	Unknown - 8-inch	1978	42.50	362,829	R2.5	80	53	R2.5053	0.53711	42.97	85.47	50.274950%	182,412
361.21	ACP - 8-inch	1980	40.50	215,957	R2.5	80	51	R2.5051	0.55269	44.22	84.72	52.195467%	112,720
361.21	PVC - 8-inch	1987	33.50	382,403	R2.5	80	42	R2.5042	0.62498	50.00	83.50	59.880240%	228,984
361.21	PVC - 8-inch	1989	31.50	338,544	R2.5	80	39	R2.5039	0.64984	51.99	83.49	62.270931%	210,815
361.21	PVC - 8-inch	1998	22.50	426,934	R2.5	80	28	R2.5028	0.74396	59.52	82.02	72.567666%	309,816
361.21	DIP - 8-inch	1998	22.50	812,267	R2.5	80	28	R2.5028	0.74396	59.52	82.02	72.567666%	589,443
361.21	PVC - 8-inch	2009	11.50	35,336	R2.5	80	14	R2.5014	0.86951	69.56	81.06	85.812978%	30,323
361.21	PVC - 8-inch	2013	7.50	427,092	R2.5	80	9	R2.5009	0.91563	73.25	80.75	90.712074%	387,424
361.21	PVC - 6-inch	2017	3.50	53,841	R2.5	80	4	R2.5004	0.96231	76.98	80.48	95.651093%	51,500
361.21	**TOTAL COLLECTION SEWERS - GRAVITY MAINS**			**15,110,171**									**8,050,179**

When the above depreciation lives are used to quantify the property's depreciation is applied to each of the Willistown Township's investment in plant, property and equipment the replacement cost new (RCN) of $49,898,907 the resultant RCN less depreciation (RCNLD) was found to be $30,113,231 detailed as follows:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Replacement Cost New less Depreciation (RCNLD)

(18)	(19)	(21)	(22)	(23)	(24)	(28)	(29)	(30)	(31)
Account	Description	Age at January 20, 2021 Appraisal Date	Replacement Cost New (COR)	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Normal Remaining Life	Total Life Expectancy	Condition	Preliminary Cost Approach (COR less Normal Depreciation)
		years	COR $s		years	years	years	% of COR	CORLD $s
Input	Input	Calculation	Calculation	Input	Input	Calculation	Calculation	Calculation	Calculation
Eng Assmnt	Willistown Township Wastewater Assets Detail by Pennoni Associates, Inc.		Col (16)	AUS Input	AUS Input		Col (21) + (28)	Col (28) / (29)	Col (22) * (30)
Account	Description	Age	RCN	Iowa	NL	Rem Life	Total Life	Condition	CORLD
353.20	Land & Land Rights - Collection System	22.85	223,776	ZNonDep	-	-	-	-	223,776
353.30	Land & Land Rights - Pumping	44.30	109,988	ZNonDep	-	-	-	-	109,988
353.40	Land & Land Rights - Treatment	14.50	1,945,510	ZNonDep	-	-	-	-	1,945,510
354.30	Stuctures & Improvements - Pumping	27.73	5,065,392	R4.0	45.00	20.06	47.78	45.00	2,218,402
354.40	Stuctures & Improvements - Treatment	22.50	3,275,059	R4.0	55.00	32.77	55.27	55.00	1,941,807
355.30	Generating Equipment - Pumping	10.50	401,787	R3.0	35.00	24.95	35.45	35.00	282,781
360.21	Collection Sewers - Force - Mains	24.37	14,857,717	R3.0	75.00	52.04	76.41	75.00	10,144,396
361.21	Collection Sewers - Gravity - Mains	39.95	15,110,171	R2.5	80.00	45.27	85.22	80.00	8,050,177
361.22	Collection Sewers - Gravity - Mains Relining	2.03	1,096,644	R2.5	60.00	57.89	59.92	60.00	1,059,746
361.23	Collection Sewers - Gravity - Manholes	38.82	4,989,198	R2.5	80.00	46.21	85.03	80.00	2,721,303
363.20	Service Laterals	36.39	2,394,359	R3.0	70.00	36.94	73.33	70.00	1,213,391
Grand Total		30.28	49,898,907		67.83	41.31	70.83	0.60	30,113,231

The preliminary cost approach to value of the Willistown Township's wastewater utility property was found to be $30,113,231.

Income Approach (Income Approach tabs)

The income approach to value establishes the value of the property based on its economic returns. There are two generally accepted procedures in performing an income analysis: the direct capitalization of anticipated income, and the discounted cash flow procedures.

In the direct capitalization approach, anticipated earnings are capitalized directly into value using a market-required capitalization rate. The Willistown Township's wastewater operation will be moving from a municipal operation, wherein economic returns are not the primary objective of the operation to a private (investor owned) rate regulated sewer utility operation in which economic returns are one of the objectives of the operation; therefore, the direct capitalization of earnings approach was not utilized in this appraisal.

In the discounted cash flow (DCF) approach, the property's economic returns are forecast for future periods. The cash flows (debt-free after-tax net cash flows) from operations are discounted to the appraisal date using a market derived discount rate resulting in the DCF approach's income indicator of value. Use of the DCF approach allows the appraiser to address the property's historical operating experience and its migration, in future periods, to an operation as a rate regulated income taxed (local, state and federal) operation; thus, making the DCF approach preferable in this case.

In preparing this appraisal's DCF analysis first the results from the Willistown Township's wastewater utility's operations were evaluated based on an analysis of historical operating performances over the period 2016 through 2019 (Financials tab). In this analysis operating statistics such as revenues and their growth, various operating expenses were stated as function of their typical drivers (revenues, plant investment, income from operations, etc.) were analyzed. Details are provided in Income Approach tab. Using the above-described analyses, the results of future periods operations were forecast based on the migration of the Willistown Townships of historical operations type experience over time to operations of the wastewater operation similar to a public investor-owned water/wastewater utilities. These forecasts are detailed in the Income Approach tab.

In this appraisal, future operating results were forecasted as follows:

Revenues
Operating Expenses
    Operating and Maintenance Expense
    Depreciation & Amortization
Total Operating Expenses
Operating Income (Revenues less Operating Expenses)
Taxes
    Property
    Income (state & federal)
Total Taxes
After Tax Income (Operating Income less Total Taxes)
Net Cash Flows
    Plus: After Tax Income
    Plus: Depreciation
    Less: Capital Expenditures
    Plus/less: Change in Working Capital
Equals: Debt-free after-tax net cash flows

In the above-described table, the depreciation expense (both book and tax) and the capital expenditures were forecast based on the investment in property plant and equipment at the appraisal date and in subsequent periods. The initial investment in the plant and depreciation forecast were based on the criteria established in Section 1329 for the acquisition and subsequent regulation (rate base) of the acquired property by the acquiring investor-owned utility company. The following table details the forecasts of plant investment, book depreciation, tax depreciation forecast, and the resultant net plant investment and rate base as follows:

Plant Investment
    Initial Investment/ Beginning Plant Balance
    Additions (Capital Expenditures)
    Retirements
    Ending Plant Balance

Depreciation (book)

- Initial Book Depreciation Reserve / Beginning Book Reserve Balance
- Book Depreciation & Amortization
- Retirements
- Ending Book Reserve Balance

Depreciation (tax)

- Initial Tax Reserve / Beginning Tax Reserve
- Tax Depreciation
- Retirement
- Ending Tax Reserve Balance

In these forecasts, the initial plant investment was based on the allocated purchase price of $17,500,000. Initially, the Cost Approach results are utilized to allocate the purchase price by category of plant (NARUC account). The Cost Approach results also define the property's ages and remaining lives of the various plant investment categories. Using these inputs, the future periods book and tax depreciation can be forecast, as well as the accumulated deferred taxes and resulting rate base.

With a forecast of the future rate base and an estimate of the Pennsylvania Commission's authorized return on rate base, the future return on rate base can be estimated which along with the forecast operating expenses (operating expenses, depreciation, and taxes) the future period revenue requirement forecasts can be made. An estimate of the PA Commission return on rate base is detailed as follows:

Water and Wastewater Cost of Capital
First Quarter 2021 (0-01-2021)

As an Investor-Owned Utility

Weighted Cost of Capital (Rate of Return on Rate Base)

(1)	(2)	(2a)	(3)	(3a)	(4)	(4a)	(5)
	Portion of Capital AUS Input	Type of Data	Capital Cost AUS Input	Type of Data	Tax Rate	Tax affect on cost of capital	Required Return on Rate Base (2)*(3)
Debt	44%	Embedded	3.84%	Embedded	Not Applicable	Not Applicable	1.69%
Equity	56%	Embedded	9.85%	Market	Not Applicable	Not Applicable	5.52%
Total Capital r	**100.0%**						**7.21%**
Growth (g)						Not Applicable	**0.00%**
Rate without Growth: [(1+r)/(1+g)]-1							**7.21%**

Based on a comparison of the forecast revenues and the forecast of the estimated revenue requirement, future period rate increases were forecast. The criteria in making future period rate adjustments were to bring the forecast achieved return in line with the required return. Based on this process the results of future operations were forecast for the next 19-year period. Period 20 of the forecast was treated in the discounted cash flow as the forecast for period 20 through perpetuity.

Finally, the resultant cash flows from future period operations of the System were discounted to the appraisal date using a market derived discount rate for a public investor-owned water/wastewater utility (Cost of Capital / Required Return tab). The following table details the market discount rate developed using the weighted average cost of capital (WACC) of the market debt and equity:

Water and Wastewater Cost of Capital
First Quarter 2021 (0-01-2021)

As an Investor-Owned Utility

Weighted Cost of Capital (Discount Rate)

(1)	(2)	(2a)	(3)	(3a)	(4)	(4a)	(5)
	Portion of Capital AUS Input	Type of Data	Capital Cost AUS Input	Type of Data	Tax Rate	Tax affect on cost of capital	After-tax Market Capital Cost (2)*(3)*(4a)
Debt	29%	Market	2.79%	Market	28.89%	71.11%	0.58%
Equity	71%	Market	9.85%	Market	0.0%	100.0%	6.99%
Total Capital r	**100.0%**						**7.57%**
Growth (g)							**1.82%**
Rate without Growth: [(1+r)/(1+g)]-1							**5.65%**

The market cost of debt was developed based on market returns for utilities debt as reported in the Value Line Investment Survey. The market cost of equity was developed

using the capital asset pricing model (CAPM) and the dividend-growth model (DGM). Input to these equity costing models were developed based on Value Line Investment Surveys for the water industry published for January 8, 2021, consisting of the following nine companies:

Company	
American States Water (NYSE-AWR)	Consolidated Water Company (NDQ-CWCO)
American Water ((NYSE-AWK)	Middlesex Water (NDQ-MSEX)
Essential Utilities, Inc. (NYSE-WTRG)	SJW Corporation (NYSE-SJW)
California Water (NYSE-CWT)	York Water (NDQ-YORW)
In the January 2020 Issue Value Line dropped Connecticut Water (NDQ-CTWS) out of its list of Water Utility Industry companies	

The Value Line data was also used to develop the market capital structure used in the WACC determination. The market required return analysis can be found in the Cost of Capital / Required Return tab.

The following table presents the results of the discounted cash flow analysis:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021
Discounted Cash Flow Analysis

Discount Rate: 7.57%
Capitalization Rate: 5.65%

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Period	Age	Revenues	O&M Expenses	Tax Depreciation	Cash Flow from Operations	Taxable Income before State & Federal Taxes	State and Federal Taxes @ 28.89%	Capital Expenditures	Change in Working Capital	Net Cash Flows	Period Present Worth Factor (PW)	PW of Cashflow	Accumulated PW of Cashflows
					(3)-(4)	(6)-(5)	(7) *28.89%			(3)-(4)-(8)-(9)-(10)		(11)*(12)	Sum (13)
1	0.5	2,659,679	1,833,318	773,554	826,361	52,807	15,256	417,347	-	393,758	0.964	379,583	379,583
2	1.5	2,659,679	1,869,985	782,619	789,694	7,075	2,044	420,814	-	366,836	0.896	328,685	708,268
3	2.5	3,457,583	1,907,385	791,937	1,550,198	758,261	219,062	424,334	43,086	863,716	0.833	719,475	1,427,743
4	3.5	3,457,583	1,945,533	801,513	1,512,050	710,537	205,274	427,902	-	878,874	0.775	681,127	2,108,870
5	4.5	3,457,583	1,984,444	811,355	1,473,139	661,784	191,190	431,525	-	850,424	0.720	612,305	2,721,175
6	5.5	4,149,100	2,024,133	821,467	2,124,967	1,303,500	376,581	435,202	37,342	1,275,842	0.669	853,538	3,574,713
7	6.5	4,149,100	2,064,616	800,818	2,084,484	1,283,666	370,851	319,482	-	1,394,151	0.622	867,162	4,441,875
8	7.5	4,149,100	2,105,908	808,887	2,043,192	1,234,305	356,591	322,486	-	1,364,115	0.579	789,823	5,231,698
9	8.5	4,564,010	2,148,026	817,198	2,415,984	1,598,786	461,889	325,541	22,406	1,606,148	0.538	864,108	6,095,806
10	9.5	4,564,010	2,190,987	825,760	2,373,023	1,547,263	447,004	328,654	-	1,597,365	0.500	798,683	6,894,489
11	10.5	4,564,010	2,234,806	834,578	2,329,204	1,494,626	431,797	331,824	-	1,565,583	0.465	727,996	7,622,485
12	11.5	4,837,851	2,279,503	843,663	2,558,348	1,714,685	495,373	335,055	14,787	1,713,133	0.432	740,073	8,362,558
13	12.5	4,837,851	2,325,093	853,018	2,512,758	1,659,740	479,499	338,345	-	1,694,914	0.402	681,355	9,043,913
14	13.5	4,837,851	2,371,595	862,653	2,466,256	1,603,603	463,281	341,698	-	1,661,277	0.373	619,656	9,663,569
15	14.5	5,128,122	2,419,027	872,580	2,709,095	1,836,515	530,569	345,119	15,674	1,817,733	0.347	630,753	10,294,322
16	15.5	5,128,122	2,467,408	771,844	2,660,714	1,888,870	545,694	348,603	-	1,766,417	0.323	570,553	10,864,875
17	16.5	5,128,122	2,516,756	778,275	2,611,366	1,833,091	529,580	352,158	-	1,729,628	0.300	518,888	11,383,763
18	17.5	5,435,809	2,567,092	784,893	2,868,717	2,083,824	602,017	355,784	16,616	1,894,300	0.279	528,510	11,912,273
19	18.5	5,435,809	2,618,434	791,709	2,817,375	2,025,666	585,215	359,487	-	1,872,673	0.259	485,022	12,397,295
20 and beyond	19.5	5,435,809	2,670,802	798,726	2,765,007	1,966,281	568,058	363,263	-	1,833,686	3.184	5,838,456	18,235,751
								7,324,623					
Age				19.5									
PW(Age) = 1/(1+Discount Rate)$^{(Age)}$				0.241				Net Plant		15,660,079			
PW to Perpetuity = 1/Capitalization Rate				13.210				ADIT		(2,040,733)			
$PW_{(20and\ Beyond)}$ = PW to Perpetuity * PW $Factor_{(19.5)}$				3.184				Rate Base		13,619,346	0.241	3,282,262	15,679,557
								Annual Plant Construction Inflation Rate		0.0422 Input			
								Plant Inflation over 19.5 years		31,129,893	0.241	7,502,304	19,899,599
								PP	17,500,000				
								OCLD	13,524,101				
								PP/OCLD	1.294				
								RCNLD	30,113,231				
								RCNLD/PP		1.720756057			
										23,435,572.16	0.241	5,647,973	18,045,268
								Average					17,965,044

Based on the above-described discounted cash flow analysis, the Income Approach to value of the System's wastewater property and its operations was determined to be $18,235,751. To ensure that the above-described forecast captured the entire economic returns of the property an additional 40-year period beyond the original 20-year forecast was made. This additional forecast indicated the reasonableness of the initial forecast results.

Market Approach (Market Approach tab)

The market or comparable sales approach to value looks to market sales of comparable properties in order to arrive at value. In this appraisal, the market approach was addressed from a comparable sales approach using Pennsylvania water and wastewater

systems and market value to book value ratios based on investor-owned water utilities reported in Value Line Investment Survey.

Market Sales – In the comparable sales market approach the sales of Pennsylvania municipal water and wastewater systems to investor-owned water/wastewater utilities following the passage of Section 1329 were used to insure comparability. The following sales were considered:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Data

RowID	Approximate Date	Buyer	Seller	County	Type of Facility	Initial Purchase Price	Final Purchase Price[1]	Number of Total Customers	Relationship to the passage of Section 1329
1	9/1/2016	PA American Water	City of McKeesport	Allegheny	Wastewater Collection and Treatment	156,000,000	159,000,000	21,953	Post
2	8/1/2016	Aqua PA	New Garden Twp. SA	Chester	Wastewater Collection and Paid for and Owned Treatment	29,500,000	29,500,000	2,106	Post
3	11/16/2016	Aqua PA	Limerick Township	Montgomery	Wastewater Collection and Treatment System	75,100,000	64,373,378	5,434	Post
4	12/10/2017	Aqua PA	East Bradford Township	Chester	Wastewater Collection and paid for treatment Capacity	5,000,000	5,000,000	1,248	Post
5	4/20/2018	SUEZ	Mahoning	Carbon	Water Distribution System	4,734,800	4,734,800	1,186	Post
6	4/20/2018	SUEZ	Mahoning	Carbon	Wastewater Collection	4,765,200	4,765,200	1,451	Post
7	6/1/2018	Aqua PA	Cheltenham	Montgomery	Wastewater Collection	50,250,000	50,250,000	10,500	Post
8	11/14/2018	PA American Water	Steelton	Dauphin	Water Distribution and Treatment	22,500,000	21,750,000	2,325	Post
9	1/1/2017	PA American Water	Sadsbury	Chester	Wastewater Collection	9,250,000	8,600,000	998	Post
10	5/28/2018	PA American Water	Exeter	Berks	Wastewater Collection and Treatment	96,000,000	93,500,000	9,000	Post
11	10/29/2018	Aqua PA	East Norriton	Montgomery	Wastewater Collection	21,000,000	21,000,000	4,950	Post
12	9/30/2018	PA American	Kane	McKean	Wastewater Collection and Treatment	17,560,000	17,560,000	2,006	Post
13	12/10/2019	PA American	Royersford	Montgomery	Wastewater Collection and Treatment	13,000,000	13,000,000	1,596	Post
14	12/17/2019	PA American	Valley	Chester	Water Treatment and Distribution System	7,325,000	7,325,000	1,459	Post
15	12/17/2019	PA American	Valley	Chester	Wastewater Collection System	13,950,000	13,950,000	1,644	Post
16	12/31/2019	Aqua PA	Delaware County Regional Wa	Delaware	Wastewater Collection and Treatment	276,500,000	276,500,000	16,473	Post
17	4/28/2020	PA American Water	Upper Pottsgrove	Montgomery	Wastewater Collection	13,750,000	13,750,000	1,428	Post
18	9/17/2020	Aqua PA	Lower Makefield	Bucks	Wastewater Collection and Purchased Treatment Capacity	53,000,000	53,000,000	11,151	Post

In order to arrive at a measure of comparability these system sales were analyzed in relationship of the purchase price to the properties' depreciated original cost (OCLD) and depreciated replacement cost (RCNLD) (Market Approach tab).

The following tables details the market sales analyses:

Purchase Price to Original Cost less Depreciation (OCLD)

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Analysis - PP/OCLD

Property Acquired	Type of System and Attributes	Purchase Price (PP)	Proportion of Purchase Price to Total	Depreciated Original Cost (OCLD) (AUS Consultants Determination	Purchase Price to (PP/OCLD)	Variance to Simple Mean	Variance to Wtd Mean	(Variance to Wtd Mean)^2
City of McKeesport	Wastewater Collection and Treatment	159,000,000	19%	80,085,602	1.9854	0.226	0.136	0.0185
New Garden Twp. SA	Wastewater Collection and Paid for and Owned Treatment	29,500,000	3%	18,567,728	1.5888	-0.1706	-0.2606	0.0679
Limerick Township	Wastewater Collection and Treatment System	64,373,378	8%	46,153,867	1.3948	-0.3646	-0.4546	0.2067
East Bradford Township	Wastewater Collection and paid for treatment Capacity	5,000,000	1%	5,383,591	0.9287	-0.8307	-0.9207	0.8477
Mahoning	Water Distribution System	4,734,800	1%	3,507,138	1.3500	-0.4094	-0.4994	0.2494
Mahoning	Wastewater Collection	4,765,200	1%	3,234,859	1.4731	-0.2863	-0.3763	0.1416
Cheltenham	Wastewater Collection	50,250,000	6%	15,784,463	3.1835	1.4241	1.3341	1.7798
Steelton	Water Distribution and Treatment	21,750,000	3%	14,433,435	1.5069	-0.2525	-0.3425	0.1173
Sadsbury	Wastewater Collection	8,600,000	1%	6,128,876	1.4032	-0.3562	-0.4462	0.1991
Exeter	Wastewater Collection and Treatment	93,500,000	11%	40,057,634	2.3341	0.5747	0.4847	0.2349
East Norriton	Wastewater Collection	21,000,000	2%	8,407,007	2.4979	0.7385	0.6485	0.4206
Kane	Wastewater Collection and Treatment	17,560,000	2%	12,070,455	1.4548	-0.3046	-0.3946	0.1557
Royersford	Wastewater Collection and Treatment	13,000,000	2%	5,173,559	2.5128	0.7534	0.6634	0.4401
Valley	Water Treatment and Distribution System	7,325,000	1%	5,370,438	1.3639	-0.3955	-0.4855	0.2357
Valley	Wastewater Collection System	13,950,000	2%	9,214,738	1.5139	-0.2455	-0.3355	0.1126
Delaware County Regional Water Quality Au	Wastewater Collection and Treatment	276,500,000	32%	191,774,486	1.4418	-0.3176	-0.4076	0.1661
Upper Pottsgrove	Wastewater Collection	13,750,000	2%	11,769,925	1.1682	-0.5912	-0.6812	0.464
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	53,000,000	6%	20,644,920	2.5672	0.8078	0.7178	0.5152
		857,558,378	100%	497,762,721	1.7228			6.3729

Simple Mean		1.7594	Square Root[(Variance to Wtd Mean)^2]/Count
Standard Deviation		0.5882	2.52446
SimpleMedian		1.4900	18
Simple Mode	DELCOR	1.4418	0.140248

Weighted Mean		1.849
Standard Deviation		0.5292
Wtd Median		1.4375
Wtd Mode	DELCOR	1.4418

Purchase Price to Replacement Cost New less Depreciation (CORLD)

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Analysis - PP/CORLD

Property Acquired	Type of System and Attributes	Purchase Price (PP)	Proportion of Purchase Price to Total	Replacement Cost New less Depreciation (CORLD)	Purchase Price to CORLD	Variance to Simple Mean	Variance to Wtd Mean	(Variance to Wtd Mean)^2
City of McKeesport	Wastewater Collection and Treatment	159,000,000	19%	156,524,909	1.0158	0.2071	0.1625	0.0264
New Garden Twp. SA	Wastewater Collection and Paid for and Owned Treatment	29,500,000	3%	30,615,410	0.9636	0.1549	0.1103	0.0122
Limerick Township	Wastewater Collection and Treatment System	64,373,378	8%	73,068,377	0.881	0.0723	0.0277	0.0008
East Bradford Township	Wastewater Collection and paid for treatment Capacity	5,000,000	1%	9,236,581	0.5413	-0.2674	-0.312	0.0973
Mahoning	Water Distribution System	4,734,800	1%	8,899,336	0.532	-0.2767	-0.3213	0.1032
Mahoning	Wastewater Collection	4,765,200	1%	7,991,234	0.5963	-0.2124	-0.257	0.066
Cheltenham	Wastewater Collection	50,250,000	6%	49,940,486	1.0062	0.1975	0.1529	0.0234
Steelton	Water Distribution and Treatment	21,750,000	3%	23,921,473	0.9092	0.1005	0.0559	0.0031
Sadsbury	Wastewater Collection	8,600,000	1%	8,517,587	1.0097	0.2010	0.1564	0.0245
Exeter	Wastewater Collection and Treatment	93,500,000	11%	99,589,819	0.9389	0.1302	0.0856	0.0073
East Norriton	Wastewater Collection	21,000,000	2%	27,461,356	0.7647	-0.0440	-0.0886	0.0078
Kane	Wastewater Collection and Treatment	17,560,000	2%	29,015,055	0.6052	-0.2035	-0.2481	0.0616
Royersford	Wastewater Collection and Treatment	13,000,000	2%	13,376,109	0.9719	0.1632	0.1186	0.0141
Valley	Water Treatment and Distribution System	7,325,000	1%	11,664,026	0.628	-0.1807	-0.2253	0.0508
Valley	Wastewater Collection System	13,950,000	2%	19,252,333	0.7246	-0.0841	-0.1287	0.0166
Delaware County Regional Water Quality Authority	Wastewater Collection and Treatment	276,500,000	32%	399,664,111	0.6918	-0.1169	-0.1615	0.0261
Upper Pottsgrove	Wastewater Collection	13,750,000	2%	18,460,028	0.7449	-0.0638	-0.1084	0.0118
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	53,000,000	6%	51,414,555	1.0308	0.2221	0.1775	0.0315
		857,558,378	100%	1,038,612,785	0.8257			

Simple Mean	0.8087
Standard Deviation	0.1746
SimpleMedian	0.8229
Simple Mode	0.6918
Weighted Mean	0.8533
Standard Deviation	0.1493
Wtd Median	0.7558
Wtd Mode	0.6918

Purchase Price to Customers

Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Analysis - PP/Customer

Property Acquired	Type of System and Attributes		Asset Purchase Agreement (APA) Date	Purchase Price (PP)	Proportion of Purchase Price to Total	Customers	Purchase Price to Customers	Variance to Simple Mean	Variance to Wtd Mean	(Variance to Wtd Mean)^2
City of McKeesport	Wastewater Collection and Treatment	2	2016.67	159,000,000	19%	21,953	7,243	(720)	(3,719)	13,830,961
New Garden Twp. SA	Wastewater Collection and Paid for and Owned Treatment	2	2016.59	29,500,000	3%	2,106	14,008	6,045	3,046	9,278,116
Limerick Township	Wastewater Collection and Treatment System	2	2016.88	64,373,378	8%	5,434	11,846	3,883	884	781,456
East Bradford Township	Wastewater Collection and paid for treatment Capacity	2	2017.94	5,000,000	1%	1,248	4,006	(3,957)	(6,956)	48,385,936
Mahoning	Water Distribution System	1	2018.30	4,734,800	1%	1,186	3,992	(3,971)	(6,970)	48,580,900
Mahoning	Wastewater Collection	3	2018.30	4,765,200	1%	1,451	3,284	(4,679)	(7,678)	58,951,684
Cheltenham	Wastewater Collection	3	2018.42	50,250,000	6%	10,500	4,786	(3,177)	(6,176)	38,142,976
Steelton	Water Distribution and Treatment	1	2018.87	21,750,000	3%	2,325	9,355	1,392	(1,607)	2,582,449
Sadsbury	Wastewater Collection	3	2017.00	8,600,000	1%	998	8,617	654	(2,345)	5,499,025
Exeter	Wastewater Collection and Treatment	2	2018.41	93,500,000	11%	9,000	10,389	2,426	(573)	328,329
East Norriton	Wastewater Collection	3	2018.83	21,000,000	2%	4,950	4,242	(3,721)	(6,720)	45,158,400
Kane	Wastewater Collection and Treatment	2	2018.75	17,560,000	2%	2,006	8,754	791	(2,208)	4,875,264
Royersford	Wastewater Collection and Treatment	2	2019.94	13,000,000	2%	1,596	8,145	182	(2,817)	7,935,489
Valley	Water Treatment and Distribution System	1	2019.96	7,325,000	1%	1,459	5,021	(2,942)	(5,941)	35,295,481
Valley	Wastewater Collection System	3	2019.96	13,950,000	2%	1,644	8,485	522	(2,477)	6,135,529
Delaware County Regional Water Quality Au	Wastewater Collection and Treatment	2	2020.00	276,500,000	32%	16,473	16,785	8,822	5,823	33,907,329
Upper Pottsgrove	Wastewater Collection	3	2020.33	13,750,000	2%	1,428	9,629	1,666	(1,333)	1,776,889
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	2	2020.71	53,000,000	6%	11,151	4,753	(3,210)	(6,209)	38,551,681
				857,558,378	100%	96,908	8,849			
Simple Mean							7963			
Standard Deviation							3637			
SimpleMedian							8,315			
Simple Mode							7,243			
Weighted Mean							10962			
Standard Deviation							4613			
Wtd Median							4,963			
Wtd Mode							7,243			
Forecast			2019.944064				7,600			
			2021				7,301			

Purchase Price to Cash Flows (EBITDA)

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Analysis - PP/Cash Flow (EBITDA Periods 1-5)

Property Acquired	Type of System and Attributes	Asset Purchase Agreement (APA) Date	Purchase Price (PP)	Proportion of Purchase Price to Total	Cash Flows (EBITDA Periods 1-5)	Purchase Price to Cash Flow	Variance to Simple Mean	Variance to Wtd Mean	Variance Squared	Wtd Mean Cash Flow
City of McKeesport	Wastewater Collection and Treatment	2016.67	159,000,000	19%	7,409,096	21.46	3.98	6.14	37.70	3.98
New Garden Twp. SA	Wastewater Collection and Paid for and Owned Treatment	2016.59	29,500,000	3%	1,717,347	17.18	(0.30)	1.86	3.46	0.59
Limerick Township	Wastewater Collection and Treatment System	2016.88	64,373,378	8%	3,542,124	18.17	0.69	2.85	8.12	1.36
East Bradford Township	Wastewater Collection and paid for treatment Capacity	2017.94	5,000,000	1%	283,367	17.64	0.16	2.32	5.38	0.10
Mahoning	Water Distribution System	2018.30	4,734,800	1%	233,922	20.24	2.76	4.92	24.21	0.11
Mahoning	Wastewater Collection	2018.30	4,765,200	1%	233,922	20.37	2.89	5.05	25.50	0.11
Cheltenham	Wastewater Collection	2018.42	50,250,000	6%	4,754,020	10.57	(6.91)	(4.75)	22.56	0.62
Steelton	Water Distribution and Treatment	2018.87	21,750,000	3%	2,278,514	9.55	(7.93)	(5.77)	33.29	0.24
Sadsbury	Wastewater Collection	2017.00	8,600,000	1%	714,645	12.03	(5.45)	(3.29)	10.82	0.12
Exeter	Wastewater Collection and Treatment	2018.41	93,500,000	11%	7,279,978	12.84	(4.64)	(2.48)	6.15	1.40
East Norriton	Wastewater Collection	2018.83	21,000,000	2%	1,265,269	16.60	(0.88)	1.28	1.64	0.41
Kane	Wastewater Collection and Treatment	2018.75	17,560,000	2%	1,039,593	16.89	(0.59)	1.57	2.46	0.35
Royersford	Wastewater Collection and Treatment	2019.94	13,000,000	2%	600,765	21.64	4.16	6.32	39.94	0.33
Valley	Water Treatment and Distribution System	2019.96	7,325,000	1%	398,458	18.38	0.90	3.06	9.36	0.16
Valley	Wastewater Collection System	2019.96	13,950,000	2%	392,972	35.50	18.02	20.18	407.23	0.58
Delaware County Regional Wa	Wastewater Collection and Treatment	2020.00	276,500,000	32%	25,883,282	10.68	(6.80)	(4.64)	21.53	3.44
Upper Pottsgrove	Wastewater Collection	2020.33	13,750,000	2%	845,182	16.27	(1.21)	0.95	0.90	0.26
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	2020.71	53,000,000	6%	2,839,988	18.66	1.18	3.34	11.16	1.15
			857,558,378	100%	61,712,444					
Simple Mean						17.48				
Standard Deviation						5.71				
SimpleMedian						17.41				
Simple Mode						10.68				
Weighted Mean						15.32				
Standard Deviation						5.10				
Wtd Median						18.13				
Wtd Mode						10.68				

Purchase Price to Cash Flows (EBITDA)

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Analysis - PP/Cash Flow (EBITDA Periods 1-13)

Property Acquired	Type of System and Attributes	Asset Purchase Agreement (APA) Date	Purchase Price (PP)	Proportion of Purchase Price to Total	Cash Flows (EBITDA Periods 1-13)	Purchase Price to Cash Flow	Variance to Simple Mean	Variance to Wtd Mean	Variance Squared	Wtd Mean Cash Flow
City of McKeesport	Wastewater Collection and Treatment	2016.67	159,000,000	19%	11,958,224	13.30	1.68	1.85	3.42	2.47
New Garden Twp. SA	Wastewater Collection and Paid for and Owned Treatment	2016.59	29,500,000	3%	2,625,115	11.24	(0.38)	(0.21)	0.04	0.39
Limerick Township	Wastewater Collection and Treatment System	2016.88	64,373,378	8%	5,212,045	12.35	0.73	0.90	0.81	0.93
East Bradford Township	Wastewater Collection and paid for treatment Capacity	2017.94	5,000,000	1%	632,892	7.90	(3.72)	(3.55)	12.60	0.05
Mahoning	Water Distribution System	2018.30	4,734,800	1%	348,409	13.59	1.97	2.14	4.58	0.08
Mahoning	Wastewater Collection	2018.30	4,765,200	1%	348,409	13.68	2.06	2.23	4.97	0.08
Cheltenham	Wastewater Collection	2018.42	50,250,000	6%	4,326,210	11.62	-	0.17	0.03	0.68
Steelton	Water Distribution and Treatment	2018.87	21,750,000	3%	3,893,757	5.59	(6.03)	(5.86)	34.34	0.14
Sadsbury	Wastewater Collection	2017.00	8,600,000	1%	895,128	9.61	(2.01)	(1.84)	3.39	0.10
Exeter	Wastewater Collection and Treatment	2018.41	93,500,000	11%	8,011,315	11.67	0.05	0.22	0.05	1.27
East Norriton	Wastewater Collection	2018.83	21,000,000	2%	2,011,465	10.44	(1.18)	(1.01)	1.02	0.26
Kane	Wastewater Collection and Treatment	2018.75	17,560,000	2%	1,446,948	12.14	0.52	0.69	0.48	0.25
Royersford	Wastewater Collection and Treatment	2019.94	13,000,000	2%	1,209,765	10.75	(0.87)	(0.70)	0.49	0.16
Valley	Water Treatment and Distribution System	2019.96	7,325,000	1%	817,993	8.95	(2.67)	(2.50)	6.25	0.08
Valley	Wastewater Collection System	2019.96	13,950,000	2%	844,046	16.53	4.91	5.08	25.81	0.27
Delaware County Regional Water Q	Wastewater Collection and Treatment	2020.00	276,500,000	32%	28,960,162	9.55	(2.07)	(1.90)	3.61	3.08
Upper Pottsgrove	Wastewater Collection	2020.33	13,750,000	2%	932,042	14.75	3.13	3.30	10.89	0.24
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	2020.71	53,000,000	6%	3,432,340	15.44	3.82	3.99	15.92	0.95
			857,558,378	100%	77,906,265					

Simple Mean	11.62
Standard Deviation	2.67
SimpleMedian	11.65
Simple Mode	9.55
Weighted Mean	11.45
Standard Deviation	2.14
Wtd Median	12.07
Wtd Mode	9.55

Financial Market Ratios – In the market approach based on market financial ratios the market data of companies (nine) in the water industry as reported in Value Line Investment Surveys (January 2021) were analyzed. In the analysis the companies' stock (market) and debt (book) per share are compared as a ratio to the book value per share which is detailed in the following table:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Comparable Sales Approach

Financial Basis[1]

	Industry Averages	American & Aqua Averages	American States Water	American Water	Aqua America	California Water	Consol. Water Co.	Middlesex Water	SJW Corp	York	Totals
Price per Share			87.33	123.05	47.08	51.52	16.46	63.56	71.79	46.38	
Book value per share			16.1	34.4	18	15.85	10.95	15.7	31.2	10.4	
Market to Book Equity Ratio			5.42	3.58	2.62	3.25	1.5	4.05	2.3	4.46	
Minimum	1.5	2.62									
Mean	3.40	3.1		3.58	2.62						
Standard Deviation	1.18	0.480									
Weighted Market to Debt Ratio	3.41		20,013.22	112,367.28	34,710.24	11,207.07	371.03	5,481.74	5,874.18	3,135.10	193,159.86
Median	3.415	3.1									
Maximum	5.42	3.58									
Debt (Total) $s millions			475.3	9,143.0	3,086.4	967.9	-	294.0	511.1	100.7	
Outstanding Shares (millions)			36.84	180.78	215.84	48.15	15.03	16.67	28.46	12.98	
Debt per share			12.9	50.58	14.3	20.1	0	17.64	17.96	7.76	
Equity (Total) $s millions			3,217.18	22,244.51	10,161.78	2,480.43	247.35	1,059.52	2,042.89	602.24	
Total Capital (Debt + Equity)			3,692.48	31,387.51	13,248.18	3,448.33	247.35	1,353.52	2,553.99	702.94	56,634.30
			0.07	0.55	0.23	0.06	-	0.02	0.05	0.01	0.99
Market Value per Share (Equity+Debt)			100.23	173.63	61.38	71.62	16.46	81.2	89.75	54.14	
Book Value per Share (Equity+Debt)			29	84.98	32.3	35.95	10.95	33.34	49.16	18.16	
Market to Book (Total Capital) Ratio			3.46	2.04	1.9	1.99	1.5	2.44	1.83	2.98	
Minimum	1.5	1.9									
Mean	2.27	1.97		2.04	1.9						
Standard Deviation	0.61	0.070									
Weighted Market to Book (Debt&Equity) Ratio	2.11		12,775.97	64,030.52	25,171.55	6,862.18	371.03	3,302.58	4,673.80	2,094.75	119,282.38
Variance to Wtd Mean	0.1392		1.35	(0.07)	(0.21)	(0.12)	(0.61)	0.33	(0.28)	0.87	
Median	2.015	1.97									
Maximum	3.46	2.04									

1. Value Line Investment Survey January 10, 2020
2. Value Line dropped Connecticut Water in its January 10, 2020 publication

The following table summarizes both the comparable sales and financial market ratio analysis and the Market Approach conclusion of this appraisal:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Data

Central Tendancy and Reliability Analysis

Market Sales Analysis - PP/OCLD	Simple	Weighted	
Mean	1.7594	1.8494	
Standard Deviation	0.5882	0.5292	
Median	1.49	1.4375	
Mode	1.4418	1.4418	
Conclusion		1.8494	AUS Input
Willistown Wastewater Collection System OCLD		13,524,101	Cost Approach - OCLD
Market Value Indication		**25,011,472**	

Market Sales Analysis - PP/CORLD	Simple	Weighted	
Mean	0.8087	0.8533	
Standard Deviation	0.1746	0.1493	
Median	0.8229	0.7558	
Mode	0.6918	0.6918	
Conclusion		0.8533	AUS Input
Willistown Wastewater Collection System CORLD		30,113,231	Cost Approach - CORLD
Market Value Indication		**25,695,620**	

Market Sales Analysis - PP/Customer

	Simple	Weighted	
Water & Wastewater Industryn			
Mean	7,963	10,962	
Standard Deviation	3,637	4,613	
Median	8,315	4,963	
Mode	7,243	7,243	
Water Tretment & Distribution			
Mean	6,123		
Standard Deviation			
Median	5,021		
Wastewater Collection & Treatment			
Mean	9,579		
Standard Deviation		-	AUS Input
Median	8,754		
Wastewater Collection			
Mean	6,507		
Standard Deviation			
Median	6,636		
Watewater Treatment Only			
Mean	3,072		
Standard Deviation			
Median	2,118		
Willistown Wastewater Collection System Customers		2,294	AUS Input
Wastewater Collection & Treatment PP/Customer		9,579	AUS Input
Collection and Treatement Customers Market Value Indica		**21,974,226**	
Treatement Only Market Value Indication			
Treatment Only PP/customer		2,118	AUS Input
Treatment Only Customers		-	AUS Input
Market Value Indication Treatment Only		**-**	
Total Market Value Indication		**21,974,226**	

Financial Basis[1]

Financial Markets	Market Value per Share to Book Value per Share	
Market to Book (equity)	3.40	
Market to Book (equity and debt)	2.11	
Use (equity and debt)	2.11	AUS Input
Willistown Wastewater Collection System OCLD	13,524,101	Cost Approach - OCLD
Market Value Indication	**28,535,853**	

Market Sales Analysis - PP/Cash Flows (EBITDA Period 1-5)	Simple	Weighted	
Mean	17.48	15.32	
Standard Deviation	5.71	5.10	
Median	17.41	18.13	
Mode	10.68	10.68	
Forecast			
Conclusion		18.00	AUS Input
Willistown Wastewater Collection System Cash Flows		892,978	Income Approach
Market Value Indication		**16,073,611**	

Market Sales Analysis - PP/Cash Flows (EBITDA Period 1-13)	Simple	Weighted	
Mean	11.62	11.45	
Standard Deviation	2.67	2.14	
Median	11.65	12.07	
Mode	9.55	9.55	
Forecast			
Conclusion		12.00	AUS Input
Willistown Wastewater Collection System Cash Flows		1,168,600	Income Approach
Market Value Indication		**14,023,202**	

Summary of Market Analyses

Indicators	
OCLD	25,011,472
CORLD	25,695,620
Customers	21,974,226
Cash Flows	
EBITDA Periods 1-5	16,073,611
EBITDA Periods 1-13	14,023,202
Value Line	28,535,853
Mean	21,885,664
Median	23,492,849
Conclusion	**25,695,620**

The market approach conclusion of this appraisal was determined to be $25,695,620.

Cost Approach Revisited – Before concluding this appraisal's fair market value, the preliminary cost approach conclusion of $30,113,231 needs to be evaluated to determine if external obsolescence exists in the preliminary replacement cost new less depreciation conclusion of $30,113,231. The appraisal literature regarding developing a cost approach state:

> "The last step in the implementation of the cost approach is to estimate *economic obsolescence*. Economic obsolescence (sometimes called "external obsolescence") has been previously defined as the loss in value or usefulness of a property caused by factors external to the asset. These factors include increased cost of raw materials, labor, utilities (without an offsetting increase in product price); reduced demand for the product; increased competition; environmental or other regulations; or similar factors.
>
> The difficulty in measuring the full effect of economic obsolescence is one of the weaknesses of the cost approach. Because economic obsolescence is usually a function of outside influences that affect an entire business (i.e., all tangible and intangible assets) rather than individual assets or isolated groups of assets, it is sometimes measured using the income approach or by using the income approach to help identify the existence of economic influences on value. However, the cost approach can be used to measure some forms of economic obsolescence."[15]

The above-described income approach value conclusion of $18,235,751 and the market approach conclusion of $25,695,620 for the Willistown Township's future wastewater system compared to the preliminary cost approach conclusion of $30,113,231 indicates external obsolescence of 38.57% exists detailed as follows:

[15] Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets, Second Edition, pp. 96-97.

Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

	Column Reference in OCLD & RCNLD	Amount in $s		
Depreciated Replacement Cost (RCNLD)			18,235,751	Income
Original Cost (OC)	(9)	19,641,520	25,695,620	Market
Replacement Cost New (RCN)	(16)	49,898,907	18,500,000	Conclusion
Replacement Cost New less Depreciation (RCNLD)	(31)	30,113,231	17,500,000	Purchase Price
Intangible Assets - Treatment Contracts				
				Economic
Fair Market Vaue (FMV)	(41)	18,498,555	(11,613,231)	Obsolescence
			38.57%	EO %

When this economic obsolescence of 38.57% is applied to the Collection Sewers – Gravity Mains example the final cost approach for Gravity Mains the Preliminary Cost Approach of $8,050,179 the final cost approach of the Gravity Mains was determined to be $4,925,225 detailed as follows:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

(36)	(37)	(38)	(39)	(40)	(41)
Account	Description	Placement Year	Preliminary Cost Approach	Economic Obsolescence	Fair Market Value
			CORLD $s	% of Preliminary Cost Approach	Appraisal Date Value $s
Input	Input	Input	Calculation	Input	Calculation
AUS Input	Eng Assmnt	Eng Assmnt	CORLD	AUS Economic Obsolescence Analysis	(39) * [1.00-Col (40)]
Account	Description	Year	Prelim CORLD	EO%	FMV
361.21	COLLECTION SEWERS - GRAVITY MAINS				
361.21	VP - 8-inch	1977	3,294,869	38.57%	2,024,038
361.21	CIP - 8-inch	1977	26,556	38.57%	16,314
361.21	ACP - 8-inch	1977	1,519,241	38.57%	933,270
361.21	VP - 10-inch	1977	96,120	38.57%	59,047
361.21	ACP - 10-inch	1977	247,487	38.57%	152,031
361.21	VP - 12-inch	1977	27,868	38.57%	17,119
361.21	ACP - 12-inch	1977	147,025	38.57%	90,318
361.21	VP - 15-inch	1977	21,083	38.57%	12,951
361.21	RCP - 15-inch	1977	101,201	38.57%	62,168
361.21	ACP - 15-inch	1977	159,668	38.57%	98,084
361.21	DIP - 16-inch	1977	18,823	38.57%	11,563
361.21	RCP - 18-inch	1977	279,341	38.57%	171,599
361.21	DIP - 18-inch	1977	7,458	38.57%	4,581
361.21	Unknown - 8-inch	1978	182,412	38.57%	112,056
361.21	ACP - 8-inch	1980	112,720	38.57%	69,244
361.21	PVC - 8-inch	1987	228,984	38.57%	140,665
361.21	PVC - 8-inch	1989	210,815	38.57%	129,503
361.21	PVC - 8-inch	1998	309,816	38.57%	190,320
361.21	DIP - 8-inch	1998	589,443	38.57%	362,095
361.21	PVC - 8-inch	2009	30,323	38.57%	18,627
361.21	PVC - 8-inch	2013	387,424	38.57%	237,995
361.21	PVC - 6-inch	2017	51,500	38.57%	31,636
361.21	**TOTAL COLLECTION SEWERS - GRAVITY MAINS**		**8,050,179**		**4,945,225**

When the economic obsolescence of 38.57% is applied to the Preliminary Cost Approach Conclusion of $30,113,231 the final Cost Approach Conclusion was determined to be $18,498,555 detailed as follows:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Fair Market Value

(36)	(37)	(39)	(40)	(41)
Account	Description	Preliminary Cost Approach	Economic Obsolescence	Fair Market Value
		CORLD $s	% of Preliminary Cost Approach	Appraisal Date Value $s
Input	Input	Calculation	Input	Calculation
Eng Assmnt	Eng Assmnt	Col (31)	AUS Economic Obsolescence Analysis	(39) * [1.00-Col (40)]
Account	Description	Prelim CORLD	EO%	FMV
353.20	Land & Land Rights - Collection System	223,776	38.57%	137,463
353.30	Land & Land Rights - Pumping	109,988	38.57%	67,563
353.40	Land & Land Rights - Treatment	1,945,510	38.57%	1,195,128
354.30	Stuctures & Improvements - Pumping	2,218,402	38.57%	1,362,766
354.40	Stuctures & Improvements - Treatment	1,941,807	38.57%	1,192,852
355.30	Generating Equipment - Pumping	282,781	38.57%	173,712
360.21	Collection Sewers - Force - Mains	10,144,396	38.57%	6,231,703
361.21	Collection Sewers - Gravity - Mains	8,050,177	38.57%	4,945,223
361.22	Collection Sewers - Gravity - Mains Relining	1,059,746	38.57%	651,002
361.23	Collection Sewers - Gravity - Manholes	2,721,303	38.57%	1,671,697
363.20	Service Laterals	1,213,391	38.57%	745,386
	Grand Total	30,113,231	38.57%	18,498,555

Value Conclusion

The Fair Market Value of the Willistown Township's, Pennsylvania's wastewater property, plant and equipment and its operation were determined to be $19,113,140 as follows:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Fair Market Value Appraisal

Appraisal Approach		Investor-owned Utility	Weight	Wtd Valuation Indications
Cost Approach				
Inventory of Assets				
Original Cost ($OC)		19,641,520		
Depreciated Original Cost ($OCLD)		13,524,101		
Intangible Assets (Treatment contracts)				
Cost Approach of all assets Conclusion		13,524,101		
Replacement Cost				
Replacement Cost New (COR)		49,898,907		
Depreciated Replacement Cost New (CORLD)	**$**	**30,113,231**		
External or Economic Obsolescence		**38.57%**	AUS Input	
Market Value of Tangible Assets	**$**	**18,498,555**		
Intangible Assets (Treatement contracts)				
Cost Approach of all assets Conclusion		**18,498,555**		
Cost Approach Conclusion		**18,498,555**	**50%**	**9,249,278**
Income Approach				
Required Rate Increases: 30% period 3, 20% period 6, 10% period 9, 6% period 12, 6% period 15, and 6% every 3rd year beginning in period 18 (Input 6)		18,235,751		
Income Approach Conclusion		**18,235,751**	**40%**	**7,294,300**
Market Approach				
Market Comparables (to)				
OCLD		25,011,472		
CORLD		25,695,620		
Customers		21,974,226		
Cash Flows (EBITDA)		16,073,611		
Market Financials (to)				
OCLD		28,535,853		
Market Approach Conclusion		**25,695,620**	**10%**	**2,569,562**
Appraisal Conclusion	**$**	**19,113,140**	**100%**	**19,113,140**
Conclusion (cost approach)	**$**	**18,498,555**		

As the purpose of this appraisal was to fulfill the requirements of Section 1329 of the PA CS in the establishment of value for rate making of the Willistown Township's wastewater collection system's property, plant and equipment this appraisal's conclusion of $19,113,140 is consistent with the purpose of the appraisal. As the cost approach work papers detail our value conclusion by National Association of Regulatory Utility Commissioners' (NARUC) Uniform System of Accounts (USOA) for the water industry account classifications and the installation year of the property, this detail can be used to allocate the appraisal conclusion to establish the booked value for future accounting and rate making.

Compliance with Uniform Standards of Professional Appraisal Practice (USPAP) 2020-2021

Fulfillment of Requirements for a Personal Property Appraisal and Report

- State the identity of the client and any intended users, by name or type:
  Willistown Township, PA, Aqua Pennsylvania Wastewater, Inc., and the Pennsylvania Public Utility Commission

- State the intended use of the appraisal
  To establish the Fair Market Value of Willistown Township's (PA) Wastewater Collection System and Treatment System.

- Describe information sufficient to identify the property, real, personal, and intangible, involved in the appraisal, including the physical and economic property characteristics relevant to the assignment.

  The system consists of collection mains and laterals of various sizes and types, pumping structures, improvements and equipment, and purchased treatment capacity. The property is in good condition based on physical inspections and reviews or operating statements. The property is an operating wastewater system the economics of which were analyzed based on seven years of operating financials which were incorporated into the income approach to value analysis in this appraisal.

- State the real property interests appraised
  The system's land and land rights agreements necessary to access its property.

- State the type and definition of value and city the source of the definition, including whether the opinion of value is in terms of cash or of financing terms equivalent to cash, or based on non-market financing or financing with unusual conditions or incentives
  - *Market Value definition:*
    "The most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress." The Appraisal of Real Estate, 12th Edition, page 22.

- State the effective date of the appraisal and the date of the report
  The effective date of the appraisal is January 20, 2021 and the appraisal report date is July 24, 2021.

- Describe sufficient information to disclose to the client and any other intended users of the appraisal the scope of work used to develop the appraisal

Compliance with Uniform Standards of Professional Appraisal Practice (USPAP) 2020-2021
Fulfillment of Requirements for a Personal Property Appraisal and Report

The appraisal considered all three approaches to value: the cost, income and market.[1] Briefly the scopes of work for each are as follows:

Cost Approach – The cost approach utilized the trended cost method utilizing the investment inventory developed by Pennoni Associates, Inc. Engineers Assessment. The Handy Whitman Index of Public Utility Construction Costs for the water industry were used in the trending. Depreciation was assessed based on straight line age-life depreciation method based on service life expectation for each of the various account categories.

Income Approach – The income approach utilized the discounted cash flow (DCF) method that facilitates the development of cash flows from operations as the property migrates from municipal operation to a regulated investor-owned operation. The Township's operating experience was analyzed (2016-2019) in order to estimate the initial cash flows. Future customer tariff rates address the rates agreed to by the parties in the Asset Purchase Agreement between the parties. The operations were forecast for 19 periods in the future and a 20th period which is intended to reflect operation beyond that time. The discount rate was developed based on market debt and equity rates at the appraisal date.

Market Approach – The market approach was developed based on market comparable sales of Pennsylvania wastewater properties and market to book ratios developed for the water industry based on information published by Value Line Investment Surveys at the appraisal date.

Valuation Approaches Reconciliation - The appraisal conclusion was based on reconciliation of each of the approaches and the intended purpose of the appraisal.

- Clearly and conspicuously:
  - State all extraordinary assumptions and hypothetical conditions.

    There were no extraordinary assumptions or hypothetical conditions in this appraisal.

  - State that their use might have affected the assignment results

    Not applicable.

- Clearly and accurately disclose all assumptions, extraordinary assumptions, hypothetical conditions, and limiting conditions used in the assignment

[1] The Appraisal Institute has extended the 2020-2021Edition of USPAP until year-end 2022.

Compliance with Uniform Standards of Professional Appraisal Practice (USPAP) 2020-2021
Fulfillment of Requirements for a Personal Property Appraisal and Report

Not applicable.

- Describe the information analyzed, the appraisal procedures followed, and the reasoning that supports the analyses, opinions, and conclusions

  See scope of work above.

- State the use of the real estate existing as of the date of value and the use of the real estate reflected in the appraisal – when reporting an opinion of market value, describe the support and rationale for the appraiser's opinion of the highest and best use of the real estate

- State and explain any permitted departures from specific requirements of STANDARD 1 and the reason for excluding any of the usual valuation approaches. The appraisal then becomes a limited appraisal – a limited appraisal report must contain a prominent section that clearly identifies the extent of the appraisal process performed and the departures taken

  No departures for Standard 1 were made.

- Include a signed certification in accordance with Standards Rule 2-3

  Contained in Narrative Report.

Compliance with Uniform Standards of Professional Appraisal Practice (USPAP) 2020-2021

Fulfillment of Requirements for a Personal Property Appraisal and Report

AUS Consultants, Valuation and Depreciation Services Group certify that, to the best of its knowledge and belief:

- The statements of fact contained in this report are true and correct.

- The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are our personal, impartial, and unbiased professional analyses, opinions, and conclusions.

- AUS Consultants, Valuation and Depreciation Services Group has not performed an appraisal of the Willistown Township's sanitary wastewater collection and treatment system previously in the last three year.

- AUS Consultants, Valuation and Depreciation Services Group, nor its professional staff has any present or prospective interest in the property that is the subject of this report and has no interest or bias with respect to the parties involved.

- We have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.

- Our engagement in this assignment is not contingent upon developing or reporting predetermined results.

- Our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.

- Our analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice 2020-2021.

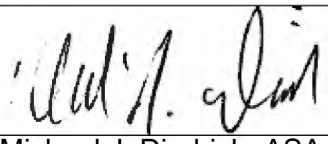
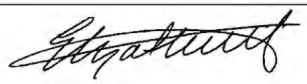
- The signers of this report have not made a personal inspection of the property that is the subject of this report.

- Individuals providing significant appraisal assistance to the person signing this certification include Scott Shearer of PFM Financial Advisors, LLC who provided access to the information from the Willistown Township's data room and the Engineer's Assessment report prepared by Pennoni Associates Inc. which was the inventory starting point of the Cost Approach.

Compliance with Uniform Standards of Professional Appraisal Practice (USPAP) 2020-2021

Fulfillment of Requirements for a Personal Property Appraisal and Report

AUS Consultants, Depreciation & Valuation
By:

Jerome C. Weinert, AM, P.E., CDP Principal and Director	David A. Sheffer Principal
	
Michael J. Diedrich, ASA, P.E., CDP Certified General Appraiser Principal	Elizabeth A. Weinert Associate

ASA: Accredited Senior Appraiser in the Machinery and Equipment (Public Utilities) discipline of the American Society of Appraisers
AMA: Accredited Member Appraiser in the Machinery and Equipment (Public Utilities) discipline of the American Society of Appraisers
P.E.: Registered Professional Engineer State of Wisconsin
CDP: Certified Depreciation Professions in the Society of Depreciation Professionals

Curriculum Vitae (CV) of Jerome C. Weinert, P.E., CDP, ASA

Mr. Weinert is currently Principal and Director of AUS Consultants, Depreciation and Valuation. He has forty-nine (2021-1972) years' experience in valuation and depreciation consulting and management. AUS, with offices across the country, has provided consulting services to the regulated utility industry nationally for over thirty-nine years. A partial list of services provided includes valuations depreciation studies, rate of return studies, cost of service studies, and rate design.

Prior to joining AUS in 1987, Mr. Weinert was employed by American Appraisal Associates, Inc. (American) for sixteen years in their Regulated Industries Group. He held various positions at American, the last being supervising appraiser. Among his other valuation responsibilities, he directed the firm's utility industry capital recovery studies and AUS Consultant's valuation of communication company assets and businesses.

Mr. Weinert graduated from the Milwaukee School of Engineering with a Bachelor of Science degree in Mechanical Engineering and received a master's in business administration from Marquette University. He is a registered professional engineer (1976) (by examination) in the state of Wisconsin as well as a senior member (1982) of the American Society of Appraisers in the public utility valuation field. This latter designation is obtained by written examination primarily in the areas of utility valuation, depreciation, and the economics of regulated firms. He is also a Certified Depreciation Professional (1997) (CDP) and founding member of the Society of Depreciation Professionals and the Society's 1995 President and sponsor of the Society's Certification and re-certification program as such Mr. Weinert developed these programs and oversaw their initial introduction into the Society. He also worked in conjunction with Society members in the development of the Society's training programs which as of 2003 has become the only such formalized depreciation training program in the North America and is an instructor in several of its courses.

During his professional career related to valuations and depreciation matters Mr. Weinert has testified before various courts and public service commissions on these subjects. He has also assisted numerous utilities in preparing capital recovery plans which specifically address the issues of plant replacement. Mr. Weinert has also presented expert testimony on valuation matters. Mr. Weinert has testified before the Pennsylvania Public Utility Commission on regulatory matters associated with Pennsylvania Section 1329 matters. On matters related to eminent domain issues, Mr. Weinert has presented expert testimony in the Massachusetts Superior Court, the Court of Common Pleas, Fayette County, Ohio, the New Hampshire Public Utilities Commission, the Twentieth Judicial Court (deposition only) in Charlotte County, Florida, the Nineteenth Judicial Circuit Court in St. Lucie County, Florida (deposition only). In regard to ad valorem taxation, Mr. Weinert has presented study results to the New York State Board of Equalization and Assessment (now the New York Office of Real Property Services (NY ORPS)), pertaining to useful life and net salvage values for all types of utility property subject to the Board's mass appraisal model. Mr. Weinert has appeared before the Valuation Adjustment Board in Florida for Duval, Hillsborough, Okeechobee, and Palm Beach counties, the Twelfth Judicial Circuit Sarasota County, Florida, the California Board of Equalization and Assessment, the Arizona Board of Assessment, the Missouri Board of Taxation, the Colorado and Texas Departments of Review, the Massachusetts Tax Appeal Court, the Superior Court of the State of Arizona in the County of Maricopa, the State Tax Appeal Board of the State of Montana, the New York City Tax Commission and the Public Utility Commission of Pennsylvania Section 1329 hearings (8).

Mr. Weinert has appeared before regulatory bodies in Alaska, Arkansas, Illinois, Indiana, Iowa, Missouri, Nevada, Nebraska, North Carolina, Ohio, Oregon, Pennsylvania, and South Carolina in support of rate-base valuation determination and capital recovery. He has presented testimony on depreciation matters before the Canadian Radio-Television and Telecommunications Commission (CRTC) and the United

States Federal Energy Regulatory Commission (FERC). In terms of water and wastewater acquisitions and applications for regulatory approval of rate base Mr. Weinert has testified for two investor-owned acquisitions of municipal wastewater authorities one representing the municipality and secondly for the acquiring investor-owned utility. He has submitted study results to the State Commissions of Alabama, Alaska, Arkansas, Idaho, Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, North Carolina, Oregon, Pennsylvania, South Carolina, Washington, and Wisconsin, and the Federal Communications Commission.

Mr. Weinert has presented papers on valuation and depreciation topics to professional and utility industry trade organizations. He also directed AUS Consultants' semi-annual week-long depreciation training programs (1988-1997). These specialized training courses, offered at basic and advanced levels, teach depreciation study techniques to public utility and public service commission staff specialists. The training includes depreciation theory and concepts and hands-on experience with personal computer-based analytical depreciation programs.

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
2021				
AT&T Communications	North America	2020	2021	Ad Valorem Tax Appraisal
AT&T Communications	California	2020	2021	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2020	2021	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2020	2021	Ad Valorem Tax Appraisal
Lower Makefield, PA	Lower Makefield Wastewater	2021	2021	Fair Market Value 1329
Cozen O'Connor	Egg Harbor, NJ Water & Wastewater	2021	2021	Fair Market Value
2020				
AT&T Communications	North America	2019	2020	Ad Valorem Tax Appraisal
AT&T Communications	California	2019	2020	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2019	2020	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2019	2020	Ad Valorem Tax Appraisal
Verizon New York, Inc.	New York	2019	2020	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2019	2020	Ad Valorem Tax Appraisal
East Norriton Township, PA	East Norriton Wastewater	2019	2020	Fair Market Value 1329
Pennsylvania American Water Company	Kane Wastewater	2019	2020	Fair Market Value 1329
Pennsylvania American Water Company	Royersford Wastewater	2019	2020	Fair Market Value 1329
Pennsylvania American Water Company	Valley Wastewater	2019	2020	Fair Market Value 1329
Pennsylvania American Water Company	Valley Water	2019	2020	Fair Market Value 1329
Lehigh County Authority	Allentown Water & Sewer	2020	2020	Financing
Pennsylvania American Water Company	Upper Pottsgrove wastewater	2020	2020	Fair Market Value 1329
2019				
AT&T Communications	North America	2018	2019	Ad Valorem Tax Appraisal
AT&T Communications	California	2018	2019	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2018	2019	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2018	2019	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2018	2019	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2018	2019	Ad Valorem Tax Appraisal
Cheltenham Township, PA	Cheltenham Wastewater	2018	2019	Fair Market Value 1329
Pennsylvania American Water Company	Steelton Water	2018	2019	Fair Market Value 1329
Pennsylvania American Water Company	Exeter Wastewater	2018	2019	Fair Market Value 1329
2018				
AT&T Communications	North America	2017	2018	Ad Valorem Tax Appraisal
AT&T Communications	California	2017	2018	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2017	2018	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2017	2018	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2017	2018	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2017	2018	Ad Valorem Tax Appraisal
Level 3 Communications, LLC	North America	2017	2018	Ad Valorem Tax Appraisal
Level 3 Communications, LLC	California	2017	2018	Ad Valorem Tax Appraisal
CenturyLink Communications, LLC	North America	2017	2018	Ad Valorem Tax Appraisal
CenturyLink Communications, LLC	California	2017	2018	Ad Valorem Tax Appraisal
East Bradford Township, PA	East Bradford Wastewater	2018	2018	Fair Market Value 1329
Pennsylvania American Water Company	Sadsbury Wastewater	2017	2018	Fair Market Value Appraisal

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Pennsylvania American Water Company Appraisal	Kane Wastewater	2017	2018	Fair Market Value
2017				
AT&T Communications	North America	2016	2017	Ad Valorem Tax Appraisal
AT&T Communications	California	2016	2017	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2016	2017	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2016	2017	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2016	2017	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2016	2017	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2016	2017	Ad Valorem Tax Appraisal
Level 3 Communications	North America	2016	2017	Ad Valorem Tax Appraisal
Level 3 Communications	California	2016	2017	Ad Valorem Tax Appraisal
Whitpain Township, PA	Whitpain Wastewater	2016	2017	Appraisal for Planning
Plymouth Township, PA	Plymouth Wastewater	2016	2017	Appraisal for Planning
East Norriton Township, PA	East Norriton Wastewater	2016	2017	Appraisal for Planning
Pennsylvania American Water Company	Sadsbury Wastewater	2016	2017	Fair Market Value Appraisal
Pennsylvania American Water Company	McKeesport Wastewater	2016	2017	Fair Market Value Appraisal
Intermountain Gas Company	Idaho	2016	2017	Depreciation Study
2016				
AT&T Communications	North America	2015	2016	Ad Valorem Tax Appraisal
AT&T Communications	California	2015	2016	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2015	2016	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2015	2016	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2015	2016	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2015	2016	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2015	2016	Ad Valorem Tax Appraisal
Level 3 Communications	North America,	2015	2016	Ad Valorem Tax Appraisal
Level 3 Communications	California	2015	2016	Ad Valorem Tax Appraisal
New Garden Township, PA	New Garden Wastewater	2016	2016	Fair Market Value Appraisal
2015				
AT&T Communications	North America	2014	2015	Ad Valorem Tax Appraisal
AT&T Communications	California	2014	2015	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2014	2015	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2014	2015	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2014	2015	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2014	2015	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2014	2015	Ad Valorem Tax Appraisal
Level 3 Communications	North America,	2014	2015	Ad Valorem Tax Appraisal
Level 3 Communications	California	2014	2015	Ad Valorem Tax Appraisal
Verizon Wireless	Nationwide	2014	2015	Ad Valorem Tax Appraisal
2014				
AT&T Communications	North America	2013	2014	Ad Valorem Tax Appraisal
AT&T Communications	California	2013	2014	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2013	2014	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2013	2014	Ad Valorem Tax Appraisal

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Embarq Florida, Inc.	Florida	2013	2014	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2013	2014	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2013	2014	Ad Valorem Tax Appraisal
Level 3 Communications	North America,	2013	2014	Ad Valorem Tax Appraisal
Level 3 Communications	California	2013	2014	Ad Valorem Tax Appraisal
Cascade Natural Gas Corporation	Oregon & Washington	2013	2014	Depreciation Study
Intermountain Gas Company	Idaho	2013	2014	Depreciation Study
Virgin Islands Telephone Corporation	US Virgin Islands	2013	2014	Depreciation Study
Verizon Wireless	Nationwide	2013	2014	Ad Valorem Tax Appraisal
2013				
AT&T Communications	North America	2012	2013	Ad Valorem Tax Appraisal
AT&T Communications	California	2012	2013	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2012	2013	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2012	2013	Ad Valorem Tax Appraisal
AT&T - Michigan Bell Telephone Company	Michigan	2012	2013	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2012	2013	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2012	2013	Ad Valorem Tax Appraisal
Verizon Communications	New England - Mass	2012	2013	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2012	2013	Ad Valorem Tax Appraisal
Level 3 Communications	North America, California	2012	2013	Ad Valorem Tax Appraisal
Sprint Nextel Corporation	North America	2012	2013	Ad Valorem Tax Appraisal
Verizon Wireless	Palm Beach, Florida	2012	2013	Ad Valorem Tax Appraisal
Verizon Communications	New England Mass	2002-2007	2013	Ad Valorem Tax Appraisal
2012				
AT&T Communications	North America	2011	2012	Ad Valorem Tax Appraisal
AT&T Communications	California	2011	2012	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2011	2012	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2011	2012	Ad Valorem Tax Appraisal
AT&T - Michigan Bell Telephone Company	Michigan	2011	2012	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2011	2012	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2011	2012	Ad Valorem Tax Appraisal
Verizon Communications	New England - Mass	2011	2012	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2011	2012	Ad Valorem Tax Appraisal
Level 3 Communications	North America, California	2011	2012	Ad Valorem Tax Appraisal
Sprint Nextel Corporation	North America	2011	2012	Ad Valorem Tax Appraisal
Verizon Wireless	Palm Beach, Florida	2011	2012	Ad Valorem Tax Appraisal
MetroPCS	Palm Beach, Florida	2011	2012	Ad Valorem Tax Appraisal
Verizon Communications	Florida - revised	2008	2012	Ad Valorem Tax Appraisal
Verizon Wireless	Palm Beach, Florida	2012	2012	Ad Valorem Tax Appraisal
2011				
AT&T Communications	North America	2010	2011	Ad Valorem Tax Appraisal
AT&T Communications	California	2010	2011	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2010	2011	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2010	2011	Ad Valorem Tax Appraisal
AT&T - Michigan Bell Telephone Company	Michigan	2010	2011	Ad Valorem Tax Appraisal

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Embarq Florida, Inc.	Florida	2010	2011	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2010	2011	Ad Valorem Tax Appraisal
Verizon Communications	New England - Mass	2010	2011	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2010	2011	Ad Valorem Tax Appraisal
Level 3 Communications	North America, California	2010	2011	Ad Valorem Tax Appraisal
Global Crossing	North America	2010	2011	Ad Valorem Tax Appraisal
Intermountain Gas Company	Idaho	2010	2011	Depreciation Study
Sprint Nextel Corporation	North America	2010	2011	Ad Valorem Tax Appraisal
Verizon Wireless	Palm Beach, Florida	2010	2011	Ad Valorem Tax Appraisal
MetroPCS	Palm Beach, Florida	2010	2011	Ad Valorem Tax Appraisal
Verizon Communications	Florida - revised	2008	2011	Ad Valorem Tax Appraisal
Intermountain Gas Company	Idaho	2010	2011	Depreciation Study
Virgin Islands Telephone Corporation	US Virgin Islands	2010	2011	Technical Update of Depreciation Study
2010				
AT&T Communications	North America	2009	2010	Ad Valorem Tax Appraisal
AT&T Communications	California	2009	2010	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2009	2010	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2009	2010	Ad Valorem Tax Appraisal
AT&T - Michigan Bell Telephone Company	Michigan	2009	2010	Ad Valorem Tax Appraisal
AT&T - Southwestern Bell Telephone Company	Arkansas, Kansas, Missouri, Oklahoma, Texas	2009	2010	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2009	2010	Ad Valorem Tax Appraisal
Embarq Missouri, Inc.	Missouri	2009	2010	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2009	2010	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2009	2010	Ad Valorem Tax Appraisal
Verizon Communications	New England - Mass	2009	2010	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2009	2010	Ad Valorem Tax Appraisal
Level 3 Communications	North America, California	2009	2010	Ad Valorem Tax Appraisal
Global Crossing	North America	2009	2010	Ad Valorem Tax Appraisal
MetroPCS	Palm Beach, Florida	2009	2010	Ad Valorem Tax Appraisal
2009				
AT&T Communications	North America	2008	2009	Ad Valorem Tax Appraisal
AT&T Communications	California	2008	2009	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2008	2009	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2008	2009	Ad Valorem Tax Appraisal
AT&T - Michigan Bell Telephone Company	Michigan	2008	2009	Ad Valorem Tax Appraisal
AT&T - Wisconsin Bell Telephone Company	Wisconsin	2008	2009	Ad Valorem Tax Appraisal
AT&T - Southwestern Bell Telephone Company	Arkansas, Kansas, Missouri, Oklahoma, Texas	2008	2009	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2008	2009	Ad Valorem Tax Appraisal
Embarq Texas, Inc.	Texas	2008	2009	Ad Valorem Tax Appraisal
Embarq Missouri, Inc.	Missouri	2008	2009	Ad Valorem Tax Appraisal
Embarq Northwest	Washington	2008	2009	Ad Valorem Tax Appraisal
Embarq Virginia	Virginia	2008	2009	Ad Valorem Tax Appraisal

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Verizon Communications	Florida	2008	2009	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2008	2009	Ad Valorem Tax Appraisal
Verizon Communications	New England - Mass	2008	2009	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2008	2009	Ad Valorem Tax Appraisal
Level 3 Communications	North America, California, Michigan & Arizona	2008	2009	Ad Valorem Tax Appraisal
Global Crossing	North America	2008	2009	Ad Valorem Tax Appraisal
AboveNet, Inc	North America/California	2003	2009	Ad Valorem Tax Appraisal
Verizon Wireless	Ohio Properties	2004-2005	2009	Ad Valorem Tax Appraisal
Virgin Islands Telephone Corporation	US Virgin Islands	2008	2009	Depreciation Study
Sprint Nextel Corporation	North America	2008	2009	Ad Valorem Tax Appraisal
2008				
AT&T Communications	North America	2007	2008	Ad Valorem Tax Appraisal
AT&T Communications	California	2007	2008	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2007	2008	Ad Valorem Tax Appraisal
AT&T - Michigan Bell Telephone Company	Michigan	2007	2008	Ad Valorem Tax Appraisal
AT&T - Wisconsin Bell Telephone Company	Wisconsin	2007	2008	Ad Valorem Tax Appraisal
AT&T - Southwestern Bell Telephone Company	Arkansas, Kansas, Missouri, Oklahoma, Texas	2007	2008	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2007	2008	Ad Valorem Tax Appraisal
Embarq Texas, Inc.	Texas	2007	2008	Ad Valorem Tax Appraisal
Embarq Missouri, Inc.	Missouri	2007	2008	Ad Valorem Tax Appraisal
Embarq Northwest	Washington	2007	2008	Ad Valorem Tax Appraisal
Embarq Virginia	Virginia	2007	2008	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2007	2008	Ad Valorem Tax Appraisal
Verizon Communications	California	2007	2008	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2007	2008	Ad Valorem Tax Appraisal
Verizon Communications	New England Mass	2002-2007	2008	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2007	2008	Ad Valorem Tax Appraisal
Level 3 Communications	North America, California, Michigan & Arizona	2007	2008	Ad Valorem Tax Appraisal
Global Crossing	North America	2007	2007	Ad Valorem Tax Appraisal
Intermountain Gas Company	Idaho	2007	2008	Depreciation Study
2007				
AT&T Communications	North America	2006	2007	Ad Valorem Tax Appraisal
AT&T Communications	California	2006	2007	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2006	2007	Ad Valorem Tax Appraisal
AT&T - Michigan Bell Telephone Company	Michigan	2006	2007	Ad Valorem Tax Appraisal
AT&T - Wisconsin Bell Telephone Company	Wisconsin	2006	2007	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2006	2007	Ad Valorem Tax Appraisal
Embarq Texas, Inc.	Texas,	2006	2007	Ad Valorem Tax Appraisal
Embarq Missouri, Inc.	Missouri	2006	2007	Ad Valorem Tax Appraisal
Embarq North Carolina	North Carolina	2006	2007	Ad Valorem Tax Appraisal
Embarq Virginia	Virginia	2006	2007	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2006	2007	Ad Valorem Tax Appraisal
Verizon Communications	California	2006	2007	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2006	2007	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2006	2007	Ad Valorem Tax Appraisal
Qwest Communications Corporation	North America	2006	2007	Ad Valorem Tax Appraisal

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Level 3 Communications	California North America, California, Michigan, & Arizona	2006	2007	Ad Valorem Tax Appraisal
Level 3 Communications	Arizona	2002 - 2006	2007	Ad Valorem Tax Appraisal
Global Crossing	North America	2006	2007	Ad Valorem Tax Appraisal
Alaska Communications System, Inc. (ACS)	ACS of Alaska ACS of Anchorage ACS of Fairbanks ACS of the Northland ACS Holdings	2006	2007	Depreciation Studies
Intermountain Gas Company	Idaho	2006	2007	Depreciation Study
2006				
AT&T Communications	Palm Beach Florida	2000 - 2003	2006	Ad Valorem Tax Appraisal
AT&T Communications	North America	2005	2006	Ad Valorem Tax Appraisal
AT&T Communications	California	2005	2006	Ad Valorem Tax Appraisal
Sprint Florida, Inc.	Florida	2005	2006	Ad Valorem Tax Appraisal
Sprint Texas, Inc.	Texas,	2005	2006	Ad Valorem Tax Appraisal
Sprint Missouri, Inc.	Missouri	2005	2006	Ad Valorem Tax Appraisal
Sprint North Carolina	North Carolina	2005	2006	Ad Valorem Tax Appraisal
Sprint Virginia	Virginia	2005	2006	Ad Valorem Tax Appraisal
Embarq Nevada	Nevada	2005	2006	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2005	2006	Ad Valorem Tax Appraisal
Verizon Communications	California	2005	2006	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2005	2006	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	Massachusetts	2002-2--5	2006	Ad Valorem Tax Appraisal
Level 3 Communications	North America	2005	2006	Ad Valorem Tax Appraisal
Level 3 Communications	Arizona	2002-2006	2006	Ad Valorem Tax Appraisal
Global Crossing	North America	2005	2006	Ad Valorem Tax Appraisal
Indianapolis Power & Light	IPL	2005	2006	Depreciation Study
2005				
AT&T Communications	North America	2004	2005	Ad Valorem Tax Appraisal
AT&T Communications	California	2004	2005	Ad Valorem Tax Appraisal
Sprint Florida, Inc.	Florida	2004	2005	Ad Valorem Tax Appraisal
Sprint PCS	North America	2004	2005	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2004	2005	Ad Valorem Tax Appraisal
Verizon Communications	California	2004	2005	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2004	2005	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	2004	2005	Ad Valorem Tax Appraisal
Level 3 Communications	North America	2004	2005	Ad Valorem Tax Appraisal
Global Crossing	North America	2004	2005	Ad Valorem Tax Appraisal
Global Crossing	New York Special Franchise Property	2003 & 2004	2005	Ad Valorem Tax Appraisal
Indianapolis Power & Light	IPL	2004	2005	Depreciation Study
2004				
Sprint Florida, Inc.	Florida	2003	2004	Ad Valorem Tax Appraisal
Verizon Communications	California	2003	2004	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2003	2004	Ad Valorem Tax Appraisal

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Verizon Communications	New England	2003	2004	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	2003	2004	Ad Valorem Tax Appraisal
Level 3 Communications	North America	2003	2004	Ad Valorem Tax Appraisal
Global Crossing	North America	2003	2004	Ad Valorem Tax Appraisal
Sprint PCS	Cost Indexes	2003	2004	Ad Valorem Tax Appraisal
AT&T Communications	North America	2003	2004	Ad Valorem Tax Appraisal
AT&T Communications	California	2003	2004	Ad Valorem Tax Appraisal
Intermountain Gas Company	Idaho	2003	2004	Depreciation Study
2003				
Sprint Florida, Inc.	Florida	2002	2003	Ad Valorem Tax Appraisal
Verizon Communications	California	2002	2003	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2002	2003	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	2002	2003	Ad Valorem Tax Appraisal
Level 3 Communications	North America	2002	2003	Ad Valorem Tax Appraisal
Sprint PCS	Cost Indexes	2002	2003	Ad Valorem Tax Appraisal
AT&T Communications	North America	2002	2003	Ad Valorem Tax Appraisal
AT&T Communications	California	2002	2003	Ad Valorem Tax Appraisal
Global Crossing	North America	2002	2003	Ad Valorem Tax Appraisal
Verizon Wireless	Broward County, FL	1998 through 2002	2003	Ad Valorem Tax Appraisal
2002				
Sprint Florida, Inc.	Florida	2001	2002	Ad Valorem Tax Appraisal
Verizon Communications	California	2001	2002	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2001	2002	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	2001	2002	Ad Valorem Tax Appraisal
Level 3 Communications	North America	2001	2002	Ad Valorem Tax Appraisal
Global Crossing	North America	2001	2002	Ad Valorem Tax Appraisal
AT&T Wireless	Plymouth, MI	2001	2002	Ad Valorem Tax Appraisal
Sprint PCS	Cost Indexes	2001	2002	Ad Valorem Tax Appraisal
AT&T Communications	North America	2001	2002	Ad Valorem Tax Appraisal
Intermountain Gas Company	Idaho	2001	2002	Depreciation Study
AT&T Communications	California	2001	2002	Ad Valorem Tax Appraisal
2001				
Verizon	Verizon - New York	2001	2001-2	Functional Obsolescence & Useful Life studies for valuation
Sprint Florida, Inc.	Sprint Florida, Inc.	2000	2001	Ad Valorem Tax Appraisal
Verizon Communications	California	2000	2001	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	2000	2001	Ad Valorem Tax Appraisal
Global Crossing	North America	2000	2001	Ad Valorem Tax Appraisal
Sprint PCS	Cost Indexes	2000	2001	Ad Valorem Tax Appraisal
Sprint Corporation	Centel - Nevada	2000	2001-2	Depreciation Study
Alaska Communications System, Inc. (ACS)	ACS of Alaska ACS of Anchorage ACS of Fairbanks ACS of the Northland ACS Holdings	2000	2001	Depreciation Study
2000				

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Sprint PCS	BTS Equipment	2000	2000	Economic Life Study
Telus Communications	Telus - Alberta & British Columbia	2000	2000	Depreciation study Phase III Price Caps
Sprint Florida, Inc.	Florida	1999	2000	Ad Valorem Tax Appraisal
Verizon Communications	California	1999	2000	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	1999	2000	Ad Valorem Tax Appraisal
1999				
Sprint Corporation	Centel - Nevada	1998	1999	Depreciation Study
Intermountain Gas Company	Intermountain Gas Company	1998	1999	Depreciation Study
Sprint Florida, Inc.	Florida	1998	1999	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	1998	1999	Ad Valorem Tax Appraisal
1998				
Frontier Corporation	Frontier Telephone of Rochester	1998	1997	Valuation depreciation Lives and Net Salvage Parameters
Pacific Telecom, Inc.	Telephone Utilities of Washington	1997	1998	Depreciation Study
Sprint Florida, Inc.	Florida	1997	1998	Ad Valorem Tax Appraisal
Verizon Communications	Florida	1997	1998	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	1997	1998	Ad Valorem Tax Appraisal
Sprint Corporation	United Telephone Company of South Carolina	1998	1998	Depreciation Expense Universal Service Fund
Sprint Corporation	Carolina Telephone and Telegraph and Central Telephone of North Carolina	1998	1998	Depreciation Expense Universal Service Fund
Telus Communications	Telus - Edmonton (TCE)	1997	1998	Depreciation Study Phase II Price Caps
1997				
Sprint Corporation	Centel - Nevada	1997	1997	Unbundling/ Inter-connection Depreciation Study
Pacific Telecom, Inc.	Telephone Utilities of Oregon	1996	1997	Depreciation Study
Pacific Telecom, Inc.	Telephone Utilities of Alaska And the Northland	1996	1997	Depreciation Study
Telus Communications	Telus - TCI formerly AGT	1996	1997	Depreciation Study Phase II Price Caps
Indianapolis Power & Light	IPL	1996	1997	Depreciation Study
Sprint Florida, Inc.	Florida	1996	1997	Ad Valorem Tax Appraisal
Verizon Communications	Florida	1996	1997	Ad Valorem Tax Appraisal

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Pacific Telecom, Inc.	Eagle Telephone (Colorado)	1996	1997	Depreciation Study
1996				
Intermountain Gas Company	Intermountain Gas Company	1995	1996	Depreciation Study
Sprint Florida, Inc.	Florida	1995	1996	Ad Valorem Tax Appraisal
Century Telephone	Century Telephone of Ohio, Inc.	1995	1996	Depreciation Study
Telus Communications	AGT Limited (Alberta Government Telephones)	1995	1996	Depreciation Study
Johnson County Kansas Office of the Assessor	Useful Life of Computer Equipment	1995	1995	Useful/Market Life Analysis
Milwaukee Metropolitan Sewerage District	Milwaukee Metropolitan Sewerage District	1995	1996	Depreciation Study
Sprint Corporation	Long Distance Division	1995	1995	Depreciation/Recovery Status Study
Sprint Corporation	Cellular Division	1995	1995	Depreciation/Recovery Status Study
Pacific Telecom, Inc.	Alascom, Inc.	1994	1995	Depreciation Study
Pacific Telecom, Inc.	Telephone Utilities of the Northland	1993	1994	Depreciation Study
	Telephone Utilities of Alaska	1993	1994	Depreciation Study
Indiana Energy	Indiana Gas Company	1993	1994	Depreciation Study
Columbia Gas Transmission	Gas Pipeline Property in Sullivan County, NY	1993	1993	Useful Life Study
United Telephone - Midwest Group	United Telephone Company of Missouri	1993	1993	Modernization/ Depreciation Study
Intermountain Gas Co.	Intermountain Gas Co.	1992	1993	Depreciation Study
Pacific Telecom, Inc.	Alascom, Inc.	1992	1993	Depreciation Study
	Telephone Utilities of Oregon, Inc.	1991	1992	Depreciation Study
	Telephone Utilities of Washington, Inc.	1991	1992	Depreciation Study
Small Telephone Company Coalition	Oregon Small Telephone Companies	1991	1992	Depreciation Support
United Telephone Systems	United Telephone Co. of Pennsylvania	1991	1992	Instructional Depreciation Study

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
New York State Division of Equalization and Assessment	Electric, Gas, Water, Telephone, Pipeline, Steam, CATV	1991	1992	Useful Lives and Net Salvage Values
Rochester Telephone Company	Enterprise Telephone	1991	1992	Study Review
Indiana Energy	Indiana Gas/Richmond Gas/ Terre Haute Gas	1990	1991	Depreciation Study
American Electric Power	Indiana/Michigan Power Co.	1990	1991	Depreciation Study
Rochester Telephone Company	Rochester Telephone Co.	1990	1991	Study Review
United Telephone Systems	United Telephone Co. of Florida	1990	1991	Instructional Depreciation Study
United Telephone Systems	United Telephone Co. of Oregon	1989	1990	Study Review
Telephone and Data Systems, Inc.	Quincy Telephone Company	1990	1991	Depreciation Study
Telephone and Data Systems, Inc.	Wolverine Telephone Company	1989	1990	Depreciation Study
Indiana Energy	Indiana Gas Company, Inc.	1989	1990	Depreciation Study
Intermountain Gas Co.	Intermountain Gas Co.	1989	1990	Remaining Life/Net Salvage Support
North-West Telephone Company	North-West Telephone Company	1989	1990	Study Review
United Telephone System	United of Texas	1989	1990	Instructional Depreciation Study
	United of Missouri	1989	1990	Instructional Depreciation Study
Milwaukee Water	Milwaukee Water	1989	1990	Depreciation Study
Indiana Natural Gas Corp.	Indiana Natural Gas Corp.	1989	1990	Depreciation Study
Pacific Telecom	Telephone Utilities of the Northland	1989	1990	Depreciation Study
	Telephone Utilities of Alaska	1989	1990	Depreciation Study

Appraisal & Capital Recovery Activities Client List

Company	Property	Year	Study Year Performed	Activity
	Alascom	1989	1990	Depreciation Study
	Telephone Utilities of Washington, Inc.	1988	1989	Depreciation Study
WICOR	Wisconsin Gas Company	1988	1989	Depreciation Study
ALLTEL	ALLTEL - Kentucky, Inc.	1987	1989	Depreciation Study
	ALLTEL - Ohio, Inc.	1988	1989	Depreciation Study
	Western Reserve Telephone Company	1988	1989	Depreciation Study
Milwaukee Metropolitan Sewer District	Milwaukee Metropolitan Sewer District	1988	1989	Depreciation Study
United Telephone	United of Ohio	1988	1989	ELG Support
Telephone Company	Telephone Company	1988	1989	ELG Support
United Telecom	U.S. Sprint	1988	1988	Useful Life Study
Pacific Telecom	Telephone Utilities of Oregon	1987	1988	Depreciation Study
	Telephone Utilities of Eastern Oregon	1987	1988	Depreciation Study
	Rose Valley Telephone Company	1987	1988	Depreciation Study
United Telephone	United of Minnesota	1987	1988	Capital Planning Support
Wisconsin Southern Gas	Wisconsin Southern Gas	1987	1988	Depreciation Study
Pacific Telecom	Glacier State Telephone Company	1986	1987	Depreciation Study
	Sitka Telephone Co.	1986	1987	Depreciation Study
	Juneau-Douglas Tel Company	1986	1987	Depreciation Study
Pacific Telecom	Telephone Utilities of Alaska	1986	1987	Depreciation Study
	Alascom	1986	1987	Depreciation Study
Lincoln	Lincoln Telephone and	1986	1987	Digital Switching

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Telecommunications	Telegraph Company			Service Life
Northwest Natural Gas Corporation	Northwest Natural Gas Corporation	1985	1986	Depreciation Study
ALLTEL	Western Reserve Telephone Company	1984	1985	Depreciation Study
	ALLTEL - Ohio	1984	1985	Depreciation Study
	ALLTEL - Alabama	1984	1985	Depreciation Study
Gulf Telephone Co.	Gulf Telephone Company	1984	1985	Depreciation Study
United Telephone Systems, Inc.	United of Iowa	1984	1985	Depreciation Study
	United of Arkansas	1984	1985	Depreciation Study
Pacific Telecom	Telephone Utilities of Washington	1983	1984	Depreciation Study
	Telephone Utilities of Eastern Oregon	1983	1984	Depreciation Study
Pacific Telecom	Telephone Utilities of Oregon	1983	1984	Depreciation Study
	Northwestern Telephone Systems, Inc., Oregon	1983	1984	Depreciation Study
	Rose Valley Telephone Company	1983	1984	Depreciation Study
United Telecommunications	All United Telephone Companies	1983	1984	Capital Recovery Strategy
Lincoln Telecommunications	Lincoln Telephone & Telegraph Company	1983	1984	Depreciation Study
ALLTEL	ALLTEL - Mississippi	1982	1983	Depreciation Study
	ALLTEL - Michigan	1982	1983	Depreciation Study
North Carolina Natural Gas Corp.	North Carolina Natural Gas Corporation	1982	1983	Depreciation Study
Mid Continent Telephone (Currently ALLTEL)	Western Reserve Telephone	1982	1983	Depreciation Study
	Mid Ohio Telephone	1982	1982	Depreciation Study
	Florence Telephone Company	1980	1981	Depreciation Study

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
	Leeds Telephone Co.	1980	1981	Depreciation Study
	Elmore Coosa Tel Company	1980	1981	Depreciation Study
	Brookville Telephone Company	1980	1981	Depreciation Study
	Mid-Pennsylvania Telegraph	1980	1981	Depreciation Study
Telephone Utilities (Currently Pacific Telecom)	Telephone Utilities of Oregon	1979	1980	Depreciation Study
	Telephone Utilities of Eastern Oregon	1979	1980	Depreciation Study
	Northwestern Telephone Systems, Inc.-Oregon	1979	1980	Depreciation Study
	Rose Valley Telephone Company	1979	1980	Depreciation Study
United Telephone Systems, Inc.	United of Ohio	1979	1980	Depreciation Study
Telephone Utilities	Telephone Utilities of Washington	1978	1979	Depreciation Study
United Telephone Systems, Inc.	United of Ohio	1978	1979	Depreciation Study
Rochester Telephone	Rochester Telephone (Indiana)	1977	1978	Depreciation Study
United Telephone Systems, Inc.	United of Ohio	1977	1978	Depreciation Study
Princeton Telephone	Princeton Telephone (Indiana)	1976	1977	Depreciation Study
Northwestern Telephone	Northwestern Telephone (Illinois)	1975	1976	Depreciation Study

Papers and Seminars

2011 Training Instructor Depreciation Basics Sessions A & B and Life and Salvage Analysis
Society of Depreciation Professionals 25th Annual Meeting
Atlanta, GA September 20-22, 2011

2010 Will the Real Cost Approach Please Stand Up?
National Association of Property Tax Representatives Transportation, Energy, & Communications (NAPTR·TEC)
Scottsdale, Arizona October 25-27, 2010

Issues Affecting Assessment of Regulated Industries
Institute for Professionals in Taxation (IPT) Property Tax Symposium
Austin, Texas October 31 – November 3, 2010

2009 (Valuing) Intangibles
Appraisal for Ad Valorem Taxation, Wichita State University
Wichita, Kansas July 28, 2009

Fair Value Accounting (Appraisal Panelist)
Appraisal for Ad Valorem Taxation, Wichita State University
Wichita, Kansas July 29, 2009

2008 Valuation Issues Valuation of Assets and the Impact of Depreciation
Society of Depreciation Professionals Annual Meeting
Greenville, SC September 21-26, 2008

Obsolescence in the Long-Distance and Local Transport Networks
Technology Futures Inc. Asset Valuation Conference
Austin Texas February 8, 2008

2007 Communications Industry Issues
National Association of Property Tax Representative – Transportation, Energy, & Communications
New Orleans, LA October 30, 2007

2006 Appraisal Procedures & Issues in a Changing communications Industry
Florida Chapter International Association of Assessing Officers' Tangible Personal Property Conference
Ocala, Florida January 12, 2006

Valuation of Intangibles
Appraisal for Ad Valorem Taxation, Wichita State University
Wichita, Kansas July 25, 2006

SDP 20 years of History and Beyond
Society of Depreciation Professionals 20th Annual Meeting
Long Beach, CA September 18, 2006

2005 Valuation in a World with Asset Impairments
Appraisal for Ad Valorem Taxation, Wichita State University
Wichita, Kansas August 1, 2005

Papers and Seminars

2004 Depreciation in the Valuation of Assets
Society of Depreciation Professionals' Eighteenth Annual Meeting
Washington, D.C., September 13, 2004

2003 Cost Approach and the Use of Appraisal Guidelines
Institute for Professionals in Taxation – Property Tax Symposium
Fort Lauderdale, FL, September 17, 2003

Cost Approach – Obsolescence and Depreciation
Appraisal for Ad Valorem Taxation, Wichita State University
Wichita, Kansas, July 28, 2003

2000 Appraisal Issues Associated with Technological Change in the Wireline Telecommunications Industry
Appraisal for Ad Valorem Taxation, Wichita State University
Wichita, Kansas, July 31, 2000

The Impact of Advancing Technology and the Changing Regulatory Environment on Obsolescence Calculations for Ad Valorem Valuation Purposes
Journal of Property Tax Management, Spring 2000

1996 How to Develop a Reproduction/Replacement Cost New Less Depreciation Approach to Value
Appraisal for Ad Valorem Taxation, Wichita State University
Wichita, Kansas, August 4, 1996

1995 Valuation Method, Techniques and Strategies (How to Quantify Stranded Investment) (Market, Income, & Cost Approach
AGA Depreciation Committee Meeting
Denver, Colorado, August 6-9, 1995, jointly presented with Earl Robinson of AUS Consultants

1994 Integrating Future Expectations for the Telephone Industry into Historical Depreciation Analysis
United States Telephone Association (USTA's 1994 Capital Recovery Seminar)
Scottsdale, Arizona, September 12-13, 1994

1994 Capital Recovery: United States versus Canada
Canadian Telephone Industry's Annual Capital Recovery Seminar
Edmonton, Alberta, Canada June 14-15, 1994

1990 Capital Recovery: Methods, Terminology, Procedures, and Record Keeping
United States Telephone Association (USTA)'s
1990 Non-FCC Subject and Small Company Capital Recovery Seminar
Minneapolis, Minnesota April 10_11, 1990

Integration of Technology Forecasting Into Historical Life Studies
29th Iowa State Regulatory Conference
Ames, Iowa May 15-17, 1990

The 1990's and the Second Wave of Major Plant Retirements in the Communications Industry
NARUC's Seventh Biennial Information Conference
Columbus, Ohio September 12-14, 1990

Papers and Seminars

How Do We Incorporate Change into the Study Filing Procedures?
USTA's 1990 Capital Recovery Seminar
Chicago, Illinois October 16_17, 1990

1989 Plant Modernization: Capital Planning and Capital Recovery
Midwest Utilities Conference
Chicago, Illinois September 11_14, 1989

Price Indexes Today: Procedures, Uses, and Misuses
Society of Depreciation Professionals' Third Annual Meeting
New Orleans, Louisiana December 6_7, 1989

1988 Plant Modernization: Capital Planning and Capital Recovery
National Association of Regulatory Utility Commissioners (NARUC)'s
Sixth Biennial Regulatory Information Conference
Columbus, Ohio September 14_16, 1988

Papers and Seminars

1997	Sprint Corporation - West Finance Center Overland Park, Kansas, August 1997
1997	Rochester Telephone Corporation Rochester, New York, April 1997
1996	Sprint-Florida-Vista United Telecommunications Altamonte Springs, Florida August 27-29, 1996
1994	Saskatchewan Telecommunications Regina, Saskatchewan, Canada, June 1994
1994	AUS Consultants/Leroy J. Murphy and Associates 1994 Capital Recovery Seminar May 1994
1993	Manitoba Telephone System, Winnipeg, Manitoba, December 1993
1993	Society of Depreciation Professionals Annual Meeting Charleston, South Carolina September 30, 1993
1993	SPRINT - Local Telephone Division Atlanta, Georgia August 11-12, 1993
1993	AUS Consultants/Leroy J. Murphy and Associates 1993 Capital Recovery Seminar Chicago, Illinois May 11 - 13, 1993
1993	Canadian Telephone Capital Recovery Seminar Halifax, Nova Scotia April 20 - 22, 1993
1993	United Telephone, Midwest Group Overland Park, Kansas January 20, 1993
1992	BellSouth Corporation Birmingham, Alabama November 23, 1992
1992	Sprint - Local Telephone Division Kansas City, Kansas November 18 - 20, 1992
1992	Society of Depreciation Professionals Annual Meeting San Antonio, Texas September 9 - 10, 1992
1992	AUS Consultants/Leroy J. Murphy and Associates 1992 Capital Recovery Seminar Chicago, Illinois October 6 - 8, 1992
1991	Society of Depreciation Professionals Annual Meeting Nashville, Tennessee November 20-22, 1991
1991	ALLTEL Corporation Microcomputer Depreciation Studies System Training Hudson, Ohio October 14-16, 1991

Capital Recovery Training

2016 Society of Depreciation Professionals
Annual Training
Charleston, South Carolina, September 18-23, 2016

2015 Society of Depreciation Professionals
Annual Training
Austin Texas September 2015

2014 Society of Depreciation Professionals
Annual Training
New Orleans, Louisiana September 2014

2013 Society of Depreciation Professionals
Annual Training
Salt Lake City, Utah September 2013

2012 Society of Depreciation Professionals
Annual Training
Minneapolis, Minnesota, September 16-18, 2012

1991 United Telecommunications, Inc., Capital Recovery/Microcomputer Depreciation Studies System Training
Kansas City, Kansas September 23-25, 1991

1991 AUS Consultants/Leroy J. Murphy and Associates 1991 Capital Recovery Seminar
Lake Geneva, Wisconsin September 17-19, 1991

1991 Rochester Telephone Corporation, Capital Recovery/Microcomputer Depreciation Studies System Training, Rochester, New York September 3-7, 1991

1991 Ameritech Services, Microcomputer Depreciation Studies System Training
Chicago, Illinois May 16-17, 1991

1991 AUS Consultants/Leroy J. Murphy and Associates 1991 Capital Recovery Seminar
Washington, D.C. April 9_11, 1991

1990 United Telecommunications, Inc., Capital Recovery Seminar
Overland Park, Kansas December 1990

1990 AUS Consultants/Leroy J. Murphy and Associates 1990 Capital Recovery Seminar
Chicago, Illinois September 24_27, 1990

1990 AUS Consultants/Leroy J. Murphy and Associates 1990 Capital Recovery Seminar
Chicago, Illinois January 29-February 1, 1990

1990 United Telecommunications, Inc., Capital Recovery/Microcomputer Depreciation Studies System Training, Chicago, Illinois July 1990

1989 United Telecommunications, Inc., Capital Recovery/Microcomputer Depreciation Studies System Training, Chicago, Illinois July 1989

Capital Recovery Training

1989	AUS Consultants/Leroy J. Murphy and Associates 1989 Capital Recovery Seminar Chicago, Illinois March 6_9, 1989
1988	AUS Consultants/Leroy J. Murphy and Associates 1988 Capital Recovery Seminar Chicago, Illinois July 25_28, 1988
1988	United Telecommunications, Inc., Microcomputer Depreciation Studies System Training Kansas City, Kansas January 1988

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Valuation Summary

AUS Consultants
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Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Fair Market Value Appraisal

Appraisal Approach		Investor-owned Utility	Weight	Wtd Valuation Indications
Cost Approach				
Inventory of Assets				
Original Cost ($OC)		19,641,520		
Depreciated Original Cost ($OCLD)		13,524,101		
Intangible Assets (Treatment contracts)				
Cost Approach of all assets Conclusion		13,524,101		
Replacement Cost				
Replacement Cost New (COR)		49,898,907		
Depreciated Replacement Cost New (CORLD)	$	30,113,231		
External or Economic Obsolescence		38.57%	AUS Input	
Market Value of Tangible Assets	$	18,498,555		
Intangible Assets (Treatement contracts)				
Cost Approach of all assets Conclusion		18,498,555		
Cost Approach Conclusion		18,498,555	50%	9,249,278
Income Approach				
Required Rate Increases: 30% period 3, 20% period 6, 10% period 9, 6% period 12, 6% period 15, and 6% every 3rd year beginning in period 18 (Input 6)		18,235,751		
Income Approach Conclusion		18,235,751	40%	7,294,300
Market Approach				
Market Comparables (to)				
OCLD		25,011,472		
CORLD		25,695,620		
Customers		21,974,226		
Cash Flows (EBITDA)		16,073,611		
Market Financials (to)				
OCLD		28,535,853		
Market Approach Conclusion		25,695,620	10%	2,569,562
Appraisal Conclusion	$	19,113,140	100%	19,113,140
Conclusion (cost approach)	$	18,498,555		

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Cost Approach

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Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

	Column Reference in OCLD & RCNLD	Amount in $s		
Depreciated Replacement Cost (RCNLD)			18,235,751	Income
Original Cost (OC)	(9)	19,641,520	25,695,620	Market
Replacement Cost New (RCN)	(16)	49,898,907	18,500,000	Conclusion
Replacement Cost New less Depreciation (RCNLD)	(31)	30,113,231	17,500,000	Purchase Price
Intangible Assets - Treatment Contracts				
				Economic
Fair Market Vaue (FMV)	(41)	18,498,555	(11,613,231)	Obsolescence
			38.57%	EO %
Depreciated Original Cost (OCLD)				
Original Cost (OC)	(46)	19,641,520		
Original Cost less Depreciation (OCLD)	(57)	13,524,101		
Intangible Assets - Treatment Contracts		-		
Depreciated Original Cost (OCLD)		13,524,101		
Cost Approach Conclusion		18,498,555		

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Cost Approach
Replacement Cost New

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Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Replacement Cost New (RCN)

(1)	(2)	(3)	(9)	(10)	(13)	(14)	(15)	(16)
Account	Account	Asset Description	Original Cost	Costing Parameter	Cost Translator	Reproduction Cost New (RCN)	Reproduction Cost New (RCN) to Replacement Cost New (COR)	Replacement Cost New (COR)
			OC $s			RCN $s	COR $s / RCN $s	COR $s
Input	Input	Input	Input	Input	Calculation	Calculation	Input	Calculation
Eng Assmnt	AUS Input	Willistown Township Wastewater Assets Detail by Pennoni Associates, Inc.	Eng Assmnt	AUS Input			AUS Input	Col (14) * (15)
NARUC Code	NARUC Code	Asset Description	Original Cost	Cost Index Table	Translator	RCN	COR / RCN Factor	COR
353.20	353.20	Land & Land Rights - Collection System	216.00	USBLS1	1.61	347	644.89	223,776
353.30	353.30	Land & Land Rights - Pumping	21,606.00	USBLS1	4.85	104,817	1.05	109,988
353.40	353.40	Land & Land Rights - Treatment	1,500,007.00	USBLS1	1.30	1,945,510	1.00	1,945,510
354.30	354.30	Stuctures & Improvements - Pumping	2,146,252.31	HWW-18	2.36	5,065,392	1.00	5,065,392
354.40	354.40	Stuctures & Improvements - Treatment	1,448,500.00	HWW-115	2.26	3,275,059	1.00	3,275,059
355.30	355.30	Generating Equipment - Pumping	344,586.01	USBLS4	1.17	401,787	1.00	401,787
360.21	360.21	Collection Sewers - Force - Mains	6,823,585.73	HWW-144	2.18	14,857,717	1.00	14,857,717
361.21	361.21	Collection Sewers - Gravity - Mains	3,807,421.45	HWW-144	3.97	15,110,171	1.00	15,110,171
361.22	361.22	Collection Sewers - Gravity - Mains Relining	956,037.32	HWW-138	1.15	1,096,644	1.00	1,096,644
361.23	361.23	Collection Sewers - Gravity - Manholes	1,562,320.53	HWW-145	3.19	4,989,198	1.00	4,989,198
363.20	363.20	Service Laterals	698,453.71	HWW-139	3.43	2,394,359	1.00	2,394,359
		Grand Total	19,641,519.75		2.53	49,670,307	1.01	49,898,907

Wilistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(3a)	(3b)	(3c)	(3d)	(3e)
Account Number	Description	Costing Parameters				Reproduction to Replacement Cost Factor
		Index Series	Table	Line Reference	Lookup	AUS Input
353.20	Land & Land Rights - Collection System	USBLS	PPI	1.00	USBLS1	1.00
353.30	Land & Land Rights - Pumping	USBLS	PPI	1.00	USBLS1	1.00
353.40	Land & Land Rights - Treatment	USBLS	PPI	1.00	USBLS1	1.00
354.30	Stuctures & Improvements - Pumping	HW	W-1	8.00	HWW-18	1.00
354.40	Stuctures & Improvements - Treatment	HW	W-1	15.00	HWW-115	1.00
355.30	Generating Equipment - Pumping	USBLS	PPI	4.00	USBLS4	1.00
360.21	Collection Sewers - Force - Mains	HW	W-1	44.00	HWW-144	1.00
361.21	Collection Sewers - Gravity - Mains	HW	W-1	44.00	HWW-144	1.00
361.22	Collection Sewers - Gravity - Mains Relining	HW	W-1	38.00	HWW-138	1.00
361.23	Collection Sewers - Gravity - Manholes	HW	W-1	45.00	HWW-145	1.00
363.20	Service Laterals	HW	W-1	39.00	HWW-139	1.00
364.30	Flow Measuring Devices - Pumping	HW	W-1	40.00	HWW-140	1.00
390.70	Office Furniture and Equipment	AUS	T-1	15.00	AUST-115	1.00

Current cost of Easements

Activity	Engineer	Legal	Fees	Total
Determine the facilities for which a Easment is need	1	0	0	
Locate the Land owner for the property needing a easement	1	1	0	
Develop a diagram o the Property, the facilities, and the easement	2	0	0	
Develop the easement document	1	1	0	
Visit the property owner to obtain permission for the easement and sign the easment documentation	4	0	0	
Register the easement with the Municipal Clerk	0	1	250	
Total	9	3	250	
Labor Costs per Hour	54	100		
Total Cost	486	300	250	1,036

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Cost Approach
Replacement Cost New less Depreciation

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Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Replacement Cost New less Depreciation (RCNLD)

(18)	(19)	(21)	(22)	(23)	(24)	(28)	(29)	(30)	(31)
Account	Description	Age at January 20, 2021 Appraisal Date	Replacement Cost New (COR)	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Normal Remaining Life	Total Life Expectancy	Condition	Preliminary Cost Approach (COR less Normal Depreciation)
		years	COR $s		years	years	years	% of COR	CORLD $s
Input	Input	Calculation	Calculation	Input	Input	Calculation	Calculation	Calculation	Calculation
Eng Assmnt	Willistown Township Wastewater Assets Detail by Pennoni Associates, Inc.		Col (16)	AUS Input	AUS Input		Col (21) + (28)	Col (28) / (29)	Col (22) * (30)
Account	Description	Age	RCN	Iowa	NL	Rem Life	Total Life	Condition	CORLD
353.20	Land & Land Rights - Collection System	22.85	223,776	ZNonDep	-	-	-	-	223,776
353.30	Land & Land Rights - Pumping	44.30	109,988	ZNonDep	-	-	-	-	109,988
353.40	Land & Land Rights - Treatment	14.50	1,945,510	ZNonDep	-	-	-	-	1,945,510
354.30	Stuctures & Improvements - Pumping	27.73	5,065,392	R4.0	45.00	20.06	47.78	45.00	2,218,402
354.40	Stuctures & Improvements - Treatment	22.50	3,275,059	R4.0	55.00	32.77	55.27	55.00	1,941,807
355.30	Generating Equipment - Pumping	10.50	401,787	R3.0	35.00	24.95	35.45	35.00	282,781
360.21	Collection Sewers - Force - Mains	24.37	14,857,717	R3.0	75.00	52.04	76.41	75.00	10,144,396
361.21	Collection Sewers - Gravity - Mains	39.95	15,110,171	R2.5	80.00	45.27	85.22	80.00	8,050,177
361.22	Collection Sewers - Gravity - Mains Relining	2.03	1,096,644	R2.5	60.00	57.89	59.92	60.00	1,059,746
361.23	Collection Sewers - Gravity - Manholes	38.82	4,989,198	R2.5	80.00	46.21	85.03	80.00	2,721,303
363.20	Service Laterals	36.39	2,394,359	R3.0	70.00	36.94	73.33	70.00	1,213,391
Grand Total		30.28	49,898,907		67.83	41.31	70.83	0.60	30,113,231

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(4)		(5)	(6)	
		(4a)	(4b)		(6a)	(6b)
Account Number	Description	Iowa Survivor / Retirement Curve	Normal Service Life	Economic Obsolescence	Tax Depreciation	
			years	% of CORLD	Table	Life
353.20	Land & Land Rights - Collection System	ZNonDep	0.00	0.00%	Non-Depr	0.00
353.30	Land & Land Rights - Pumping	ZNonDep	0.00	0.00%	Non-Depr	0.00
353.40	Land & Land Rights - Treatment	ZNonDep	0.00	0.00%	Non-Depr	0.00
354.30	Stuctures & Improvements - Pumping	R4.0	55.00	0.00%	MACRS	25.00
354.40	Stuctures & Improvements - Treatment	R4.0	55.00	0.00%	MACRS	25.00
355.30	Generating Equipment - Pumping	R3.0	35.00	0.00%	MACRS	25.00
360.21	Collection Sewers - Force - Mains	R3.0	75.00	0.00%	MACRS	25.00
361.21	Collection Sewers - Gravity - Mains	R2.5	80.00	0.00%	MACRS	25.00
361.22	Collection Sewers - Gravity - Mains Relining	R2.5	60.00	0.00%	MACRS	25.00
361.23	Collection Sewers - Gravity - Manholes	R2.5	80.00	0.00%	MACRS	25.00
363.20	Service Laterals	R3.0	70.00	0.00%	MACRS	25.00
364.30	Flow Measuring Devices - Pumping	S2.0	25.00	0.00%	MACRS	25.00
390.70	Office Furniture and Equipment	R3.0	15.00	0.00%	MACRS	15.00

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Cost Approach

Replacement Cost New less Depreciation to Fair Market Value

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Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Fair Market Value

(36)	(37)	(39)	(40)	(41)
Account	Description	Preliminary Cost Approach	Economic Obsolescence	Fair Market Value
		CORLD $s	% of Preliminary Cost Approach	Appraisal Date Value $s
Input	Input	Calculation	Input	Calculation
Eng Assmnt	Eng Assmnt	Col (31)	AUS Economic Obsolescence Analysis	(39) * [1.00-Col (40)]
Account	Description	Prelim CORLD	EO%	FMV
353.20	Land & Land Rights - Collection System	223,776	38.57%	137,463
353.30	Land & Land Rights - Pumping	109,988	38.57%	67,563
353.40	Land & Land Rights - Treatment	1,945,510	38.57%	1,195,128
354.30	Stuctures & Improvements - Pumping	2,218,402	38.57%	1,362,766
354.40	Stuctures & Improvements - Treatment	1,941,807	38.57%	1,192,852
355.30	Generating Equipment - Pumping	282,781	38.57%	173,712
360.21	Collection Sewers - Force - Mains	10,144,396	38.57%	6,231,703
361.21	Collection Sewers - Gravity - Mains	8,050,177	38.57%	4,945,223
361.22	Collection Sewers - Gravity - Mains Relining	1,059,746	38.57%	651,002
361.23	Collection Sewers - Gravity - Manholes	2,721,303	38.57%	1,671,697
363.20	Service Laterals	1,213,391	38.57%	745,386
	Grand Total	30,113,231	38.57%	18,498,555

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(4)		(5)	(6)	
		(4a)	(4b)		(6a)	(6b)
Account Number	Description	Iowa Survivor / Retirement Curve	Normal Service Life	Economic Obsolescence	Tax Depreciation	
			years	% of CORLD	Table	Life
353.20	Land & Land Rights - Collection System	ZNonDep	0.00	38.57%	Non-Depr	0.00
353.30	Land & Land Rights - Pumping	ZNonDep	0.00	38.57%	Non-Depr	0.00
353.40	Land & Land Rights - Treatment	ZNonDep	0.00	38.57%	Non-Depr	0.00
354.30	Stuctures & Improvements - Pumping	R4.0	55.00	38.57%	MACRS	25.00
354.40	Stuctures & Improvements - Treatment	R4.0	55.00	38.57%	MACRS	25.00
355.30	Generating Equipment - Pumping	R3.0	35.00	38.57%	MACRS	25.00
360.21	Collection Sewers - Force - Mains	R3.0	75.00	38.57%	MACRS	25.00
361.21	Collection Sewers - Gravity - Mains	R2.5	80.00	38.57%	MACRS	25.00
361.22	Collection Sewers - Gravity - Mains Relining	R2.5	60.00	38.57%	MACRS	25.00
361.23	Collection Sewers - Gravity - Manholes	R2.5	80.00	38.57%	MACRS	25.00
363.20	Service Laterals	R3.0	70.00	38.57%	MACRS	25.00
364.30	Flow Measuring Devices - Pumping	S2.0	25.00	38.57%	MACRS	25.00
390.70	Office Furniture and Equipment	R3.0	15.00	38.57%	MACRS	15.00

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Original Cost less Depreciation

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Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Determination of the Depreciated Original Cost

(43)	(44)	(46)	(47)	(48)	(49)	(53)	(54)	(55)	(56)	(57)
Account	Description	Original Costs	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Age at January 20, 2021 Appraisal Date	Normal Remaining Life	Total Life Expectancy	Theoretical Reserve Percent	Theoretical Reserve	Depreciated Original Cost
Input	Input	Input	Input	Input	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation
AUS Input	Eng Assmnt	Eng Assmnt	AUS Input	AUS Input			Col (46) + (53)	Col (53) / (54)	Col (46) * (55)	Col (46) - (56)
Acct	Descrip	Original Cost	Iowa	Normal Life	age	Rem Life	Total Life	Theo%	Theo Reserve	Net Book
353.20	Land & Land Rights - Collection System	216	ZNonDep	-	-	-	-	0.00%	-	216
353.30	Land & Land Rights - Pumping	21,606	ZNonDep	-	-	-	-	0.00%	-	21,606
353.40	Land & Land Rights - Treatment	1,500,007	ZNonDep	-	-	-	-	0.00%	-	1,500,007
354.30	Stuctures & Improvements - Pumping	2,146,252	R4.0	45.00	18.73	27.63	46.36	39.00%	840,900	1,305,352
354.40	Stuctures & Improvements - Treatment	1,448,500	R4.0	55.00	22.50	32.77	55.27	41.00%	589,670	858,830
355.30	Generating Equipment - Pumping	344,586	R3.0	35.00	10.50	24.95	35.45	30.00%	102,063	242,523
360.21	Collection Sewers - Force - Mains	6,823,586	R3.0	75.00	21.16	54.93	76.09	28.00%	1,890,569	4,933,017
361.21	Collection Sewers - Gravity - Mains	3,807,421	R2.5	80.00	35.68	48.87	84.55	42.00%	1,594,598	2,212,823
361.22	Collection Sewers - Gravity - Mains Relining	956,037	R2.5	60.00	1.99	57.93	59.92	3.00%	31,579	924,458
361.23	Collection Sewers - Gravity - Manholes	1,562,321	R2.5	80.00	33.89	50.36	84.24	40.00%	622,990	939,331
363.20	Service Laterals	698,454	R3.0	70.00	30.36	42.15	72.50	41.00%	289,416	409,038
Grand Total		19,641,520		63.15	22.16	42.87	65.03	31.15%	6,117,419	13,524,101

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(4)		(5)	(6)	
		(4a)	(4b)		(6a)	(6b)
Account Number	Description	Iowa Survivor / Retirement Curve	Normal Service Life	Economic Obsolescence	Tax Depreciation	
			years	% of CORLD	Table	Life
353.20	Land & Land Rights - Collection System	ZNonDep	0.00	0.00%	Non-Depr	0.00
353.30	Land & Land Rights - Pumping	ZNonDep	0.00	0.00%	Non-Depr	0.00
353.40	Land & Land Rights - Treatment	ZNonDep	0.00	0.00%	Non-Depr	0.00
354.30	Stuctures & Improvements - Pumping	R4.0	55.00	0.00%	MACRS	25.00
354.40	Stuctures & Improvements - Treatment	R4.0	55.00	0.00%	MACRS	25.00
355.30	Generating Equipment - Pumping	R3.0	35.00	0.00%	MACRS	25.00
360.21	Collection Sewers - Force - Mains	R3.0	75.00	0.00%	MACRS	25.00
361.21	Collection Sewers - Gravity - Mains	R2.5	80.00	0.00%	MACRS	25.00
361.22	Collection Sewers - Gravity - Mains Relining	R2.5	60.00	0.00%	MACRS	25.00
361.23	Collection Sewers - Gravity - Manholes	R2.5	80.00	0.00%	MACRS	25.00
363.20	Service Laterals	R3.0	70.00	0.00%	MACRS	25.00
364.30	Flow Measuring Devices - Pumping	S2.0	25.00	0.00%	MACRS	25.00
390.70	Office Furniture and Equipment	R3.0	15.00	0.00%	MACRS	15.00

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Asset Inventory
Pennoni Associates, Inc.
Engineers Assessment

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ACCOUNT	DESCRIPTION	YEAR	QUANTITY	UNIT COST	ORIGINAL COST	
353.2	LAND AND LAND RIGHTS - COLLECTION					
353.2	Fox Ridge Gravity Sewer Easements (UPI: 54-2-62.30, 54-2-62.29, 54-2-62.28, 54-2-62.27)	2012			$1.00	
353.2	Fox Ridge Gravity Sewer Easements (UPI: 54-2-62, 54-2-62.18, 54-2-62.19)	2015			$1.00	
353.2	2291 South Valley Rd (UPI: 54-4-8) Easement	2018			$1.00	
353.2	Applebrook Meadows Gravity Sewer (UPI: 54-2-95.5) Easement	2018			$1.00	
353.2	15 Long Ln (UPI: 54-3-33) Easement	2018			$1.00	
353.2	2 McKinley Ave (UPI: 54-3-50) Easement	2018			$1.00	
353.2	285 W Central Ave (UPI: 54-1K-1.7) Easement	2020			$1.00	
353.2	209 Sewer Easements	Varies			$209.00	
	TOTAL LAND AND LAND RIGHTS - COLLECTION				$216.00	
353.3	LAND AND LAND RIGHTS - PUMPING					
353.3	Pump Station #1 Property (UPI: 54-1-33.3A)	1975			$8,601.00	
353.3	Pump Station #2 Property (UPI: 54-3-343.1)	1975			$5,500.00	
353.3	Pump Station #3 Property (UPI: 54-3-212.1)	1975			$7,500.00	
353.3	Booster Pump Station #1 Property (UPI: 54-3-315)	1978			$1.00	
353.3	Penn's Preserve/PS #5 Easements (UPI: 54-8-14, 54-8-14.2, 54-8-14.2A, 54-8-14.2B)	1999			$1.00	
353.3	Booster Pump Station #2 Easement (UPI: 54-3-300.17)	2001			$1.00	
353.3	Pump Station #4 Force Main Easements (UPI: 54-2-95, 54-2-95.1, 54-2-95.2, 54-2-95.5, 54-2-115)	2006			$1.00	
353.3	Dovecote Pump Station Easements (UPI: 54-3-449, 54-3-450, 54-3-451, 54-3-452, 54-3-460, 54-3-461)	2018			$1.00	
	TOTAL LAND AND LAND RIGHTS - PUMPING				$21,606.00	
353.4	LAND AND LAND RIGHTS - TREATMENT					
353.4	Penn's Preserve (UPIs: 54-8-14.1, 54-8-14.3, 54-8-14.4, 54-8-14.5)	2001			$4.00	
353.4	Penn's Preserve (UPI: 54-8-14.2)	2002			$1.00	
353.4	Penn's Preserve (UPIs: 54-8-14.2B, 54-8-2679)	2003			$2.00	
353.4	Penn's Preserve (UPI: 54-8-14.2A)	2006			$1,500,000.00	
	TOTAL LAND AND LAND RIGHTS - TREATMENT				$1,500,007.00	
354.3	STRUCTURES AND IMPROVEMENTS - PUMPING					
354.3	Pump Station #1 - Initial Facility	1977			$135,577.68	
354.3	Pump Station #2 - Initial Facility	1977			$135,577.68	
354.3	Pump Station #3 - Initial Facility	1977			$135,577.68	
354.3	Pump Station #5 - Initial Facility	1997			$306,628.72	
354.3	Dovecote Pump Station - Initial Facility	1998			$148,622.00	
354.3	Booster Pump Station #1 - Initial Facility	2001			$30,426.04	
354.3	Booster Pump Station #2 - Initial Facility	2001			$30,426.04	
354.3	Pump Station #4 - Initial Facility	2006			$407,943.57	
354.3	Pump Station #5 - Building Improvements	2011			$1,650.00	
354.3	Pump Station #3 - Pump Upgrades and Station Improvements	2014			$659,984.76	
354.3	Pump Station #1 - Pump Upgrades	2015			$34,406.50	
354.3	Pump Station #2 - Pump Upgrades	2015			$43,611.62	
354.3	Pump Station #5 - Pump Upgrades	2019			$75,820.00	
	TOTAL STRUCTURES AND IMPROVEMENTS - PUMPING				$2,146,252.31	
354.4	STRUCTURES AND IMPROVEMENTS - TREATMENT PLANT					
354.4	Initial facility cost including pumps, building, treatment structures, fencing, property, etc.	1998			$1,448,500.00	
	TOTAL STRUCTURES AND IMPROVEMENTS - TREATMENT PLANT				$1,448,500.00	
355.3	POWER GENERATION - PUMPING					
355.3	Pump Station #3 Generator	2010			$344,586.01	
	TOTAL POWER GENERATION - PUMPING				$344,586.01	
360.21	COLLECTION SEWERS - FORCE/PRESSURE MAINS					
360.21	DIP - 4-inch	1977	820	$25.12	$20,601.17	
360.21	DIP - 8-inch	1977	1,555	$48.77	$75,837.35	
360.21	DIP - 14-inch	1977	6,264	$61.00	$382,124.04	
360.21	PVC - 1.5-inch	1993	921	$54.00	$49,729.40	
360.21	PVC - 2-inch	1993	20,614	$54.51	$1,123,751.60	
360.21	PVC - 2.5-inch	1993	1,832	$55.03	$100,821.01	
360.21	PVC - 2-inch	1996	1,874	$58.81	$110,204.32	
360.21	PVC - 2-inch	1997	892	$60.96	$54,375.96	
360.21	PVC - 1.5-inch	1998	3,400	$54.20	$184,292.58	
360.21	PVC - 2-inch	1998	11,595	$61.94	$718,231.40	
360.21	PVC - 2.5-inch	1998	1,281	$62.53	$80,104.90	
360.21	PVC - 3-inch	1998	3,743	$63.12	$236,269.76	
360.21	PVC - 4-inch	1998	5,406	$61.07	$330,119.01	
360.21	PVC - 6-inch	1998	3,169	$65.34	$207,068.80	
360.21	PVC - 4-inch	1999	1,839	$69.02	$126,935.14	
360.21	PVC - 2-inch	2001	755	$66.37	$50,108.75	
360.21	HDPE - 6-inch	2006	9,702	$244.38	$2,370,976.70	
360.21	HDPE - 4-inch	2009	2,475	$243.25	$602,033.85	
	TOTAL COLLECTION SEWERS - FORCE/PRESSURE MAINS				$6,823,585.73	
361.21	COLLECTION SEWERS - GRAVITY MAINS					
361.21	VP - 8-inch	1977	59,472	$22.83	$1,357,563.07	75% in roadway
361.21	CIP - 8-inch	1977	775	$14.12	$10,941.90	0% in roadway
361.21	ACP - 8-inch	1977	26,773	$23.38	$625,962.82	80% in roadway
361.21	VP - 10-inch	1977	1,453	$27.26	$39,603.80	98% in roadway
361.21	ACP - 10-inch	1977	4,659	$21.89	$101,970.53	54% in roadway
361.21	VP - 12-inch	1977	497	$23.10	$11,482.26	0% in roadway
361.21	ACP - 12-inch	1977	2,062	$29.38	$60,577.87	33% in roadway
361.21	VP - 15-inch	1977	360	$24.13	$8,686.78	0% in roadway
361.21	RCP - 15-inch	1977	1,679	$24.83	$41,697.28	4% in roadway
361.21	ACP - 15-inch	1977	1,498	$43.92	$65,786.92	100% in roadway
361.21	DIP - 16-inch	1977	166	$46.72	$7,755.47	100% in roadway
361.21	RCP - 18-inch	1977	3,933	$29.26	$115,095.22	0% in roadway
361.21	DIP - 18-inch	1977	105	$29.26	$3,072.72	0% in roadway
361.21	Unknown - 8-inch	1978	4,737	$16.51	$78,212.82	10% in roadway
361.21	ACP - 8-inch	1980	3,047	$18.18	$55,387.89	3% in roadway
361.21	PVC - 8-inch	1987	5,100	$24.15	$123,157.25	0% in roadway
361.21	PVC - 8-inch	1989	3,464	$39.23	$135,906.68	67% in roadway
361.21	PVC - 8-inch	1998	3,806	$49.07	$186,760.37	12% in roadway
361.21	DIP - 8-inch	1998	7,803	$45.54	$355,322.31	49% in roadway
361.21	PVC - 8-inch	2009	585	$46.97	$27,477.80	0% in roadway
361.21	PVC - 8-inch	2013	3,667	$95.23	$349,216.32	100% in roadway
361.21	PVC - 6-inch	2017	778	$58.85	$45,783.38	0% in roadway

ACCOUNT	DESCRIPTION	YEAR	QUANTITY	UNIT COST	ORIGINAL COST
	TOTAL COLLECTION SEWERS - GRAVITY MAINS				$3,807,421.45
361.22	COLLECTION SEWERS - GRAVITY MAINS - REPAIRS/UPGRADES				
361.22	Fox Ridge Sewer Upgrades	2009			$71,101.25
361.22	Long Lane Emergency Sewer Repair	2019			$336,363.30
361.22	McKinley Avenue Emergency Sewer Repair	2019			$307,674.90
361.22	Jacqueline Drive Emergency Sewer Repair	2020			$39,259.87
361.22	Marlin Drive & Eisenhower Drive Sewer Replacement	2020			$201,638.00
	TOTAL COLLECTION SEWERS - GRAVITY MAINS - REPAIRS/UPGRADES				$956,037.32
361.23	COLLECTION SEWERS - GRAVITY - MANHOLES				
361.23	Initial Installation - Original System	1977	519	$1,642.78	$852,602.51
361.23	Initial Installation - Weatherstone	1978	34	$1,770.32	$60,191.03
361.23	Initial Installation - Rustmont	1980	14	$2,064.32	$28,900.41
361.23	Initial Installation - Brampton Chase	1987	28	$2,809.82	$78,674.85
361.23	Initial Installation - Fox Ridge	1989	15	$2,949.80	$44,246.95
361.23	Initial Installation - Pump Station 5	1998	6	$3,775.33	$22,651.99
361.23	Initial Installation - Quaker Farms	1998	50	$3,775.33	$188,766.58
361.23	Initial Installation - Dovecote	1998	21	$3,775.33	$79,281.97
361.23	Initial Installation - Applebrook Meadows	2013	34	$6,088.36	$207,004.24
	TOTAL COLLECTION SEWERS - GRAVITY - MANHOLES				$1,562,320.53
363.20	SERVICE TO CUSTOMERS				
363.2	PVC - 4-inch	1977	19,860	$14.12	$280,395.10
363.2	PVC - 4-inch	1978	1,755	$15.21	$26,701.88
363.2	PVC - 4-inch	1980	1,215	$17.74	$21,555.81
363.2	PVC - 4-inch	1987	420	$24.15	$10,142.36
363.2	PVC - 4-inch	1989	390	$25.29	$9,864.65
363.2	PVC - 4-inch	1993	1,995	$28.56	$56,967.34
363.2	PVC - 4-inch	1996	225	$30.80	$6,930.49
363.2	PVC - 4-inch	1997	45	$31.93	$1,436.91
363.2	PVC - 4-inch	1998	3,195	$32.45	$103,666.37
363.2	PVC - 4-inch	2001	2,130	$34.76	$74,049.07
363.2	PVC - 4-inch	2013	2,040	$52.33	$106,743.74
	TOTAL SERVICE TO CUSTOMERS				$698,453.71
364.3	FLOW MEASURING DEVICES				
364.3	Cedar Hollow Flow Meter	1977			$9,195.07
364.3	Pheasant Run Flow Meter	1978			$9,908.97
364.3	Flow Meter	2007			$2,380.00
364.3	Counter	2008			$1,756.17
	TOTAL FLOW MEASURING DEVICES				$23,240.21
390.7	EQUIPMENT - GENERAL				
390.7	ICOM3 Software	2015			$36,843.75
390.7	Video Pipe Inspection Trailer	2015			$71,730.00
390.7	Jet Truck	2015			$200,719.71
	TOTAL EQUIPMENT - GENERAL				$309,293.46
					19,641,519.75
					19,641,519.75

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Income Approach

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Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021
Discounted Cash Flow Analysis

Discount Rate: 7.57%
Capitalization Rate: 5.65%

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Period	Age	Revenues	O&M Expenses	Tax Depreciation	Cash Flow from Operations	Taxable Income before State & Federal Taxes	State and Federal Taxes @ 28.89%	Capital Expenditures	Change in Working Capital	Net Cash Flows	Period Present Worth Factor (PW)	PW of Cashflow	Accumulated PW of Cashflows
					(3)-(4)	(6)-(5)	(7) *28.89%			(3)-(4)-(8)-(9)-(10)		(11)*(12)	Sum (13)
1	0.5	2,659,679	1,833,318	773,554	826,361	52,807	15,256	417,347	-	393,758	0.964	379,583	379,583
2	1.5	2,659,679	1,869,985	782,619	789,694	7,075	2,044	420,814	-	366,836	0.896	328,685	708,268
3	2.5	3,457,583	1,907,385	791,937	1,550,198	758,261	219,062	424,334	43,086	863,716	0.833	719,475	1,427,743
4	3.5	3,457,583	1,945,533	801,513	1,512,050	710,537	205,274	427,902	-	878,874	0.775	681,127	2,108,870
5	4.5	3,457,583	1,984,444	811,355	1,473,139	661,784	191,190	431,525	-	850,424	0.720	612,305	2,721,175
6	5.5	4,149,100	2,024,133	821,467	2,124,967	1,303,500	376,581	435,202	37,342	1,275,842	0.669	853,538	3,574,713
7	6.5	4,149,100	2,064,616	800,818	2,084,484	1,283,666	370,851	319,482	-	1,394,151	0.622	867,162	4,441,875
8	7.5	4,149,100	2,105,908	808,887	2,043,192	1,234,305	356,591	322,486	-	1,364,115	0.579	789,823	5,231,698
9	8.5	4,564,010	2,148,026	817,198	2,415,984	1,598,786	461,889	325,541	22,406	1,606,148	0.538	864,108	6,095,806
10	9.5	4,564,010	2,190,987	825,760	2,373,023	1,547,263	447,004	328,654	-	1,597,365	0.500	798,683	6,894,489
11	10.5	4,564,010	2,234,806	834,578	2,329,204	1,494,626	431,797	331,824	-	1,565,583	0.465	727,996	7,622,485
12	11.5	4,837,851	2,279,503	843,663	2,558,348	1,714,685	495,373	335,055	14,787	1,713,133	0.432	740,073	8,362,558
13	12.5	4,837,851	2,325,093	853,018	2,512,758	1,659,740	479,499	338,345	-	1,694,914	0.402	681,355	9,043,913
14	13.5	4,837,851	2,371,595	862,653	2,466,256	1,603,603	463,281	341,698	-	1,661,277	0.373	619,656	9,663,569
15	14.5	5,128,122	2,419,027	872,580	2,709,095	1,836,515	530,569	345,119	15,674	1,817,733	0.347	630,753	10,294,322
16	15.5	5,128,122	2,467,408	771,844	2,660,714	1,888,870	545,694	348,603	-	1,766,417	0.323	570,553	10,864,875
17	16.5	5,128,122	2,516,756	778,275	2,611,366	1,833,091	529,580	352,158	-	1,729,628	0.300	518,888	11,383,763
18	17.5	5,435,809	2,567,092	784,893	2,868,717	2,083,824	602,017	355,784	16,616	1,894,300	0.279	528,510	11,912,273
19	18.5	5,435,809	2,618,434	791,709	2,817,375	2,025,666	585,215	359,487	-	1,872,673	0.259	485,022	12,397,295
20 and beyond	19.5	5,435,809	2,670,802	798,726	2,765,007	1,966,281	568,058	363,263	-	1,833,686	3.184	5,838,456	18,235,751
								7,324,623					

Age	19.5
PW(Age) = 1/(1+Discount Rate)$^{(Age)}$	0.241
PW to Perpetuity = 1/Capitalization Rate	13.210
$PW_{(20and\ Beyond)}$ = PW to Perpetuity * PW Factor$_{(19.5)}$	3.184

Net Plant		15,660,079		
ADIT		(2,040,733)		
Rate Base		13,619,346	0.241	3,282,262	15,679,557
Annual Plant Construction Inflation Rate		0.0422 Input			
Plant Inflation over 19.5 years		31,129,893	0.241	7,502,304	19,899,599
PP	17,500,000				
OCLD	13,524,101				
PP/OCLD	1.294				
RCNLD	30,113,231				
RCNLD/PP		1.720756057			
		23,435,572.16	0.241	5,647,973	18,045,268
Average					17,965,044

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021
Calculated Rates of Return on Rate Base and Equity
(Years 1 through 20)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Period	Age	Revenues	O&M Expenses	Book Depreciation	Ratemaking Interest Expense	Book Taxable Income (Current – Deferred)	State and Federal Taxes @ 28.89%	Net Operating Income	Net (Equity) Income	Net Plant	Working Capital	Accumulated Deferred Income Taxes (ADIT)	Rate Base	Return on Rate Base	Net Equity	Return on Equity
						(3)-(4)-(5)-(6)	(7) *28.89%	(7)-(8)=(6)	(9) - (6)				(11)+(12)+(13)	(9)/(14)		(10)/(16)
1	0.5	2,659,679	1,833,318	413,185	234,615	178,561	51,586	361,590	126,975	17,504,096	143,623	(104,110)	17,543,609	2.06%	20,714,910	0.61%
2	1.5	2,659,679	1,869,985	418,046	228,430	143,218	41,376	330,272	101,842	17,506,799	143,623	(209,435)	17,440,987	1.89%	20,816,752	0.49%
3	2.5	3,457,583	1,907,385	424,644	222,850	902,704	260,791	864,763	641,913	17,506,424	186,709	(315,546)	17,377,587	4.98%	21,458,665	2.99%
4	3.5	3,457,583	1,945,533	430,223	215,421	866,406	250,305	831,522	616,101	17,504,038	186,709	(422,812)	17,267,935	4.82%	22,074,766	2.79%
5	4.5	3,457,583	1,984,444	436,872	208,241	828,026	239,217	797,050	588,809	17,498,626	186,709	(531,000)	17,154,335	4.65%	22,663,575	2.60%
6	5.5	4,149,100	2,024,133	443,511	201,299	1,480,157	427,617	1,253,839	1,052,540	17,490,252	224,051	(640,191)	17,074,112	7.34%	23,716,115	4.44%
7	6.5	4,149,100	2,064,616	448,060	194,589	1,441,835	416,546	1,219,878	1,025,289	17,361,609	224,051	(742,103)	16,843,557	7.24%	24,741,404	4.14%
8	7.5	4,149,100	2,105,908	450,303	188,103	1,404,786	405,843	1,187,046	998,943	17,233,727	224,051	(845,698)	16,612,080	7.15%	25,740,347	3.88%
9	8.5	4,564,010	2,148,026	454,491	181,833	1,779,660	514,144	1,447,349	1,265,516	17,104,712	246,457	(950,484)	16,400,685	8.82%	27,005,863	4.69%
10	9.5	4,564,010	2,190,987	460,424	175,772	1,736,827	501,769	1,410,830	1,235,058	16,972,877	246,457	(1,056,029)	16,163,305	8.73%	28,240,921	4.37%
11	10.5	4,564,010	2,234,806	462,084	169,913	1,697,207	490,323	1,376,797	1,206,884	16,842,552	246,457	(1,163,642)	15,925,367	8.65%	29,447,805	4.10%
12	11.5	4,837,851	2,279,503	464,340	164,249	1,929,759	557,507	1,536,501	1,372,252	16,713,202	261,244	(1,273,228)	15,701,218	9.79%	30,820,057	4.45%
13	12.5	4,837,851	2,325,093	471,756	158,774	1,882,228	543,776	1,497,226	1,338,452	16,579,726	261,244	(1,383,375)	15,457,595	9.69%	32,158,509	4.16%
14	13.5	4,837,851	2,371,595	470,917	153,482	1,841,857	532,113	1,463,226	1,309,744	16,450,442	261,244	(1,496,548)	15,215,138	9.62%	33,468,253	3.91%
15	14.5	5,128,122	2,419,027	476,066	148,366	2,084,663	602,259	1,630,770	1,482,404	16,319,430	276,918	(1,611,101)	14,985,247	10.88%	34,950,657	4.24%
16	15.5	5,128,122	2,467,408	481,741	143,420	2,035,553	588,071	1,590,902	1,447,482	16,186,227	276,918	(1,694,912)	14,768,233	10.77%	36,398,140	3.98%
17	16.5	5,128,122	2,516,756	482,698	138,639	1,990,029	574,919	1,553,749	1,415,110	16,055,621	276,918	(1,780,304)	14,552,235	10.68%	37,813,250	3.74%
18	17.5	5,435,809	2,567,092	487,805	134,018	2,246,894	649,128	1,731,784	1,597,766	15,923,534	293,534	(1,866,133)	14,350,935	12.07%	39,411,016	4.05%
19	18.5	5,435,809	2,618,434	492,686	129,551	2,195,138	634,175	1,690,514	1,560,963	15,790,268	293,534	(1,952,520)	14,131,282	11.96%	40,971,978	3.81%
20	19.5	5,435,809	2,670,802	493,386	125,232	2,146,389	620,092	1,651,529	1,526,297	15,660,079	293,534	(2,040,733)	13,912,880	11.87%	42,498,275	3.59%
										3,774,079.04						

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021
Discounted Cash Flow Analysis

Discount Rate: 7.57%
Capitalization Rate: 5.65%

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Period	Age	Revenues	O&M Expenses	Tax Depreciation	Cash Flow from Operations	Taxable Income before State & Federal Taxes	State and Federal Taxes @ 28.89%	Capital Expenditures	Change in Working Capital	Net Cash Flows	Period Present Worth Factor (PW)	PW of Cashflow	Accumulated PW of Cashflows
					(3)-(4)	(6)-(5)	(7) *28.89%			(3)-(4)-(8)-(9)-(10)		(11)*(12)	Sum (13)
20	19.5	5,435,809	2,670,802	798,726	2,765,007	1,966,281	568,058	363,263	-	1,833,686	0.241	441,918	12,839,213
21	20.5	5,761,958	2,724,218	805,956	3,037,740	2,231,784	644,762	367,119	17,611	2,008,248	0.224	449,848	13,289,061
22	21.5	5,761,958	2,778,702	813,408	2,983,256	2,169,848	626,869	371,058	-	1,985,329	0.208	412,948	13,702,009
23	22.5	5,761,958	2,834,276	821,088	2,927,682	2,106,594	608,595	375,079	-	1,944,008	0.194	377,138	14,079,147
24	23.5	6,107,675	2,890,961	829,008	3,216,714	2,387,706	689,808	379,188	18,669	2,129,049	0.180	383,229	14,462,376
25	24.5	6,107,675	2,948,781	837,177	3,158,894	2,321,717	670,744	383,386	-	2,104,764	0.167	351,496	14,813,872
26	25.5	6,107,675	3,007,757	387,678	3,099,918	2,712,240	783,566	387,678	-	1,928,674	0.156	300,873	15,114,745
27	26.5	6,474,136	3,067,912	392,067	3,406,224	3,014,157	870,790	392,067	19,789	2,123,578	0.145	307,919	15,422,664
28	27.5	6,474,136	3,129,270	396,554	3,344,866	2,948,312	851,767	396,554	-	2,096,545	0.134	280,937	15,703,601
29	28.5	6,474,136	3,191,856	401,144	3,282,280	2,881,136	832,360	401,144	-	2,048,776	0.125	256,097	15,959,698
30	29.5	6,474,136	3,255,693	405,839	3,218,443	2,812,604	812,561	405,839	-	2,000,043	0.116	232,005	16,191,703
31	30.5	6,474,136	3,320,808	410,648	3,153,328	2,742,680	792,360	410,648	-	1,950,320	0.108	210,635	16,402,338
32	31.5	6,474,136	3,387,224	415,570	3,086,912	2,671,342	771,751	415,570	-	1,899,591	0.100	189,959	16,592,297
33	32.5	6,474,136	3,454,969	430,107	3,019,167	2,589,060	747,979	420,609	-	1,850,579	0.093	172,104	16,764,401
34	33.5	6,474,136	3,524,068	444,966	2,950,068	2,505,102	723,724	425,770	-	1,800,574	0.087	156,650	16,921,051
35	34.5	6,474,136	3,594,549	450,461	2,879,587	2,429,126	701,775	431,061	-	1,746,751	0.081	141,487	17,062,538
36	35.5	6,474,136	3,666,440	456,086	2,807,696	2,351,610	679,380	436,481	-	1,691,835	0.075	126,888	17,189,426
37	36.5	6,474,136	3,739,769	461,847	2,734,367	2,272,520	656,531	442,035	-	1,635,801	0.070	114,506	17,303,932
38	37.5	6,474,136	3,814,564	467,754	2,659,572	2,191,818	633,216	447,732	-	1,578,624	0.065	102,611	17,406,543
39	38.5	6,474,136	3,890,856	473,807	2,583,280	2,109,473	609,427	453,574	-	1,520,279	0.060	91,217	17,497,760
40	39.5	6,474,136	3,968,674	480,018	2,505,462	2,025,444	585,151	459,570	-	1,460,741	0.056	81,801	17,579,561
41	40.5	6,474,136	4,048,048	486,382	2,426,088	1,939,706	560,381	465,718	-	1,399,989	0.052	72,799	17,652,360
42	41.5	6,474,136	4,129,009	492,914	2,345,127	1,852,213	535,104	472,031	-	1,337,992	0.048	64,224	17,716,584
43	42.5	6,474,136	4,211,589	489,064	2,262,547	1,773,483	512,359	478,512	-	1,271,676	0.045	57,225	17,773,809
44	43.5	6,474,136	4,295,821	485,165	2,178,315	1,693,150	489,151	485,165	-	1,203,999	0.042	50,568	17,824,377
45	44.5	6,474,136	4,381,737	492,005	2,092,399	1,600,394	462,354	492,005	-	1,138,040	0.039	44,384	17,868,761
46	45.5	6,474,136	4,469,371	499,026	2,004,765	1,505,739	435,008	499,026	-	1,070,731	0.036	38,546	17,907,307
47	46.5	6,474,136	4,558,759	506,245	1,915,377	1,409,132	407,098	506,245	-	1,002,034	0.034	34,069	17,941,376
48	47.5	6,474,136	4,649,934	513,664	1,824,202	1,310,538	378,614	513,664	-	931,924	0.031	28,890	17,970,266
49	48.5	6,474,136	4,742,933	521,294	1,731,203	1,209,909	349,543	521,294	-	860,366	0.029	24,951	17,995,217
50	49.5	6,474,136	4,837,792	529,142	1,636,344	1,107,202	319,871	529,142	-	787,331	0.027	21,258	18,016,475
51	50.5	6,474,136	4,934,548	537,213	1,539,588	1,002,375	289,586	537,213	-	712,789	0.025	17,820	18,034,295
52	51.5	6,474,136	5,033,239	545,521	1,440,897	895,376	258,674	545,521	-	636,702	0.023	14,644	18,048,939
53	52.5	6,474,136	5,133,903	554,067	1,340,233	786,166	227,123	554,067	-	559,043	0.022	12,299	18,061,238
54	53.5	6,474,136	5,236,581	562,871	1,237,555	674,684	194,916	562,871	-	479,768	0.020	9,595	18,070,833
55	54.5	6,474,136	5,341,313	571,934	1,132,823	560,889	162,041	571,934	-	398,848	0.019	7,578	18,078,411
56	55.5	6,474,136	5,448,139	581,266	1,025,997	444,731	128,483	581,266	-	316,248	0.017	5,376	18,083,787
57	56.5	6,474,136	5,557,102	590,884	917,034	326,150	94,225	590,884	-	231,925	0.016	3,711	18,087,498
58	57.5	6,474,136	5,668,243	600,789	805,893	205,104	59,255	600,789	-	145,849	0.015	2,188	18,089,686
59	58.5	6,474,136	5,781,608	611,003	692,528	81,525	23,553	611,003	-	57,972	0.014	812	18,090,498
60	59.5	6,474,136	5,897,240	621,532	576,896	(44,636)	(12,895)	621,532	-	(31,741)	0.172	(5,459)	18,085,039
								19,305,307					

Age				59.5									
PW(Age) = 1/(1+Discount Rate)$^{(Age)}$				0.013				Net Plant		11,647,540			
PW to Perpetuity = 1/Capitalization Rate				13.210				ADIT		(1,584,623)			
PW$_{(20and Beyond)}$ = PW to Perpetuity * PW Factor$_{(19.5)}$				0.172				Rate Base		10,062,917	0.013	130,818	18,221,316
								Plant Construction Inflation Rate		0.0422 Input			
								Plant Inflation over 59.5 years		117,709,760	0.013	1,530,227	19,620,725
								PP	17,500,000				
								RCNLD	30,113,231				
								RCNLD/PP		1.720756057			
										17,315,824.90	0.013	225,106	18,315,604

Deferred Tax

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021
Calculated Rates of Return on Rate Base and Equity
(Years 1 through 20)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Period	Age	Revenues	O&M Expenses	Book Depreciation	Ratemaking Interest Expense	Book Taxable Income (Current + Deferred)	State and Federal Taxes @ 28.89%	Net Operating Income	Net (Equity) Income	Net Plant	Working Capital	Accumulated Deferred Income Taxes (ADIT)	Rate Base	Return on Rate Base	Net Equity	Return on Equity
						(3)-(4)-(5)-(6)	(7) *28.89%	(7)-(8)+(6)	(9) - (6)				(11)+(12)+(13)	(9)/(14)		(10)/(16)
20	19.5	5,435,809	2,670,802	493,386	125,232	2,146,389	620,092	1,651,529	1,526,297	15,660,079	293,534	(2,040,733)	13,912,880	11.87%	42,498,275	3.59%
20	20.5	5,761,958	2,724,218	497,637	121,058	2,419,045	698,862	1,841,241	1,720,183	15,529,495	311,145	(2,129,806)	13,710,834	13.43%	44,218,458	3.89%
20	21.5	5,761,958	2,778,702	501,732	117,023	2,364,501	683,104	1,798,420	1,681,397	15,398,755	311,145	(2,219,849)	13,490,051	13.33%	45,899,855	3.66%
20	22.5	5,761,958	2,834,276	505,088	113,122	2,309,472	667,206	1,755,388	1,642,266	15,268,680	311,145	(2,311,141)	13,268,684	13.23%	47,542,121	3.45%
20	23.5	6,107,675	2,890,961	507,292	109,351	2,600,071	751,160	1,958,262	1,848,911	15,140,510	329,814	(2,404,084)	13,066,240	14.99%	49,391,032	3.74%
20	24.5	6,107,675	2,948,781	512,412	105,706	2,540,776	734,030	1,912,452	1,806,746	15,011,418	329,814	(2,497,909)	12,843,323	14.89%	51,197,778	3.53%
20	25.5	6,107,675	3,007,757	512,916	102,183	2,484,819	717,864	1,869,138	1,766,955	14,886,114	329,814	(2,461,728)	12,754,200	14.66%	52,964,733	3.34%
20	26.5	6,474,136	3,067,912	517,883	98,777	2,789,564	805,905	2,082,436	1,983,659	14,760,232	349,603	(2,425,380)	12,684,455	16.42%	54,948,392	3.61%
20	27.5	6,474,136	3,129,270	519,196	95,484	2,730,186	788,751	2,036,919	1,941,435	14,637,524	349,603	(2,389,949)	12,597,178	16.17%	56,889,827	3.41%
20	28.5	6,474,136	3,191,856	528,361	92,301	2,661,618	768,941	1,984,978	1,892,677	14,510,241	349,603	(2,353,196)	12,506,648	15.87%	58,782,504	3.22%
20	29.5	6,474,136	3,255,693	526,774	89,225	2,602,444	751,846	1,939,823	1,850,598	14,389,240	349,603	(2,318,258)	12,420,585	15.62%	60,633,102	3.05%
20	30.5	6,474,136	3,320,808	537,045	86,250	2,530,033	730,927	1,885,356	1,799,106	14,262,777	349,603	(2,281,742)	12,330,638	15.29%	62,432,208	2.88%
20	31.5	6,474,136	3,387,224	536,628	83,375	2,466,909	712,690	1,837,594	1,754,219	14,141,653	349,603	(2,246,768)	12,244,488	15.01%	64,186,427	2.73%
20	32.5	6,474,136	3,454,969	541,579	80,596	2,396,992	692,491	1,785,097	1,704,501	14,020,616	349,603	(2,214,564)	12,155,655	14.69%	65,890,927	2.59%
20	33.5	6,474,136	3,524,068	544,071	77,910	2,328,087	672,584	1,733,413	1,655,503	13,902,249	349,603	(2,185,932)	12,065,920	14.37%	67,546,430	2.45%
20	34.5	6,474,136	3,594,549	544,150	75,313	2,260,124	652,950	1,682,487	1,607,174	13,789,094	349,603	(2,158,865)	11,979,832	14.04%	69,153,604	2.32%
20	35.5	6,474,136	3,666,440	551,805	72,802	2,183,089	630,694	1,625,197	1,552,395	13,673,704	349,603	(2,131,211)	11,892,096	13.67%	70,705,999	2.20%
20	36.5	6,474,136	3,739,769	552,869	70,376	2,111,122	609,903	1,571,595	1,501,219	13,562,804	349,603	(2,104,915)	11,807,492	13.31%	72,207,218	2.08%
20	37.5	6,474,136	3,814,564	563,534	68,030	2,028,008	585,892	1,510,146	1,442,116	13,446,936	349,603	(2,077,245)	11,719,294	12.89%	73,649,334	1.96%
20	38.5	6,474,136	3,890,856	564,000	65,762	1,953,518	564,371	1,454,909	1,389,147	13,336,444	349,603	(2,051,188)	11,634,859	12.50%	75,038,481	1.85%
20	39.5	6,474,136	3,968,674	566,914	63,570	1,874,978	541,681	1,396,867	1,333,297	13,229,035	349,603	(2,026,083)	11,552,555	12.09%	76,371,779	1.75%
20	40.5	6,474,136	4,048,048	572,753	61,451	1,791,884	517,675	1,335,660	1,274,209	13,121,934	349,603	(2,001,130)	11,470,407	11.64%	77,645,988	1.64%
20	41.5	6,474,136	4,129,009	573,208	59,403	1,712,516	494,746	1,277,173	1,217,770	13,020,691	349,603	(1,977,933)	11,392,361	11.21%	78,863,758	1.54%
20	42.5	6,474,136	4,211,589	579,883	57,422	1,625,242	469,532	1,213,132	1,155,710	12,919,254	349,603	(1,951,695)	11,317,162	10.72%	80,019,468	1.44%
20	43.5	6,474,136	4,295,821	584,252	55,508	1,538,555	444,488	1,149,575	1,094,067	12,820,100	349,603	(1,923,068)	11,246,635	10.22%	81,113,534	1.35%
20	44.5	6,474,136	4,381,737	586,276	53,658	1,452,465	419,617	1,086,506	1,032,848	12,725,763	349,603	(1,895,833)	11,179,533	9.72%	82,146,382	1.26%
20	45.5	6,474,136	4,469,371	592,013	51,870	1,360,882	393,159	1,019,593	967,723	12,632,710	349,603	(1,868,969)	11,113,344	9.17%	83,114,106	1.16%
20	46.5	6,474,136	4,558,759	597,061	50,141	1,268,175	366,376	951,940	901,799	12,541,826	349,603	(1,842,733)	11,048,696	8.62%	84,015,904	1.07%
20	47.5	6,474,136	4,649,934	599,683	48,469	1,176,050	339,761	884,758	836,289	12,455,740	349,603	(1,817,882)	10,987,461	8.05%	84,852,193	0.99%
20	48.5	6,474,136	4,742,933	606,973	46,854	1,077,376	311,254	812,976	766,122	12,369,995	349,603	(1,793,129)	10,926,469	7.44%	85,618,316	0.89%
20	49.5	6,474,136	4,837,792	611,146	45,292	979,906	283,095	742,103	696,811	12,287,924	349,603	(1,769,438)	10,868,089	6.83%	86,315,127	0.81%
20	50.5	6,474,136	4,934,548	613,445	43,782	882,361	254,914	671,229	627,447	12,211,625	349,603	(1,747,414)	10,813,814	6.21%	86,942,574	0.72%
20	51.5	6,474,136	5,033,239	620,825	42,323	777,749	224,692	595,380	553,057	12,136,255	349,603	(1,725,659)	10,760,199	5.53%	87,495,632	0.63%
20	52.5	6,474,136	5,133,903	622,810	40,912	676,511	195,444	521,979	481,067	12,067,445	349,603	(1,705,799)	10,711,249	4.87%	87,976,699	0.55%
20	53.5	6,474,136	5,236,581	631,767	39,548	566,240	163,587	442,201	402,653	11,998,481	349,603	(1,685,895)	10,662,189	4.15%	88,379,351	0.46%
20	54.5	6,474,136	5,341,313	644,616	38,230	449,977	129,998	358,209	319,979	11,925,732	349,603	(1,664,897)	10,610,438	3.38%	88,699,330	0.36%
20	55.5	6,474,136	5,448,139	645,272	36,956	343,769	99,315	281,410	244,454	11,861,659	349,603	(1,646,406)	10,564,856	2.66%	88,943,784	0.27%
20	56.5	6,474,136	5,557,102	648,387	35,724	232,923	67,291	201,356	165,632	11,804,089	349,603	(1,629,793)	10,523,899	1.91%	89,109,416	0.19%
20	57.5	6,474,136	5,668,243	658,237	34,533	113,123	32,681	114,975	80,442	11,746,574	349,603	(1,613,196)	10,482,981	1.10%	89,189,858	0.09%
20	58.5	6,474,136	5,781,608	663,636	33,382	(4,490)	(1,297)	30,189	(3,193)	11,693,874	349,603	(1,597,990)	10,445,487	0.29%	89,186,665	0.00%
20	59.5	6,474,136	5,897,240	667,800	32,269	(123,173)	(35,585)	(55,319)	(87,588)	11,647,540	349,603	(1,584,623)	10,412,520	-0.53%	89,099,078	-0.10%

Deferred Tax

Water and Wastewater Cost of Capital
First Quarter 2021 (0-01-2021)

As an Investor-Owned Utility

Weighted Cost of Capital (Discount Rate)

(1)	(2)	(2a)	(3)	(3a)	(4)	(4a)	(5)
	Portion of Capital AUS Input	Type of Data	Capital Cost AUS Input	Type of Data	Tax Rate	Tax affect on cost of capital	After-tax Market Capital Cost (2)*(3)*(4a)
Debt	29%	Market	2.79%	Market	28.89%	71.11%	0.58%
Equity	71%	Market	9.85%	Market	0.0%	100.0%	6.99%
Total Capital r	100.0%						7.57%
Growth (g)							1.82%
Rate without Growth: [(1+r)/(1+g)]-1							5.65%

Water and Wastewater Cost of Capital
First Quarter 2021 (0-01-2021)

As an Investor-Owned Utility

Weighted Cost of Capital (Capitlization Rate)

(1)	(2)	(2a)	(3)	(3a)	(4)	(4a)	(5)
	Portion of Capital AUS Input	Type of Data	Capital Cost AUS Input	Type of Data	Tax Rate	Tax affect on cost of capital	Market Capital Cost (2)*(3)
Debt	29%	Market	2.79%	Market	Not Applicable	Not Applicable	0.81%
Equity	71%	Market	9.85%	Market	Not Applicable	Not Applicable	6.99%
Total Capital r	100.0%						7.80%
Growth (g)							1.82%
Rate without Growth: [(1+r)/(1+g)]-1							5.87%

Water and Wastewater Cost of Capital
First Quarter 2021 (0-01-2021)

As an Investor-Owned Utility

Weighted Cost of Capital (Rate of Return on Rate Base)

(1)	(2)	(2a)	(3)	(3a)	(4)	(4a)	(5)
	Portion of Capital AUS Input	Type of Data	Capital Cost AUS Input	Type of Data	Tax Rate	Tax affect on cost of capital	Required Return on Rate Base (2)*(3)
Debt	44%	Embedded	3.84%	Embedded	Not Applicable	Not Applicable	1.69%
Equity	56%	Embedded	9.85%	Market	Not Applicable	Not Applicable	5.52%
Total Capital r	100.0%						7.21%
Growth (g)						Not Applicable	0.00%
Rate without Growth: [(1+r)/(1+g)]-1							7.21%

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Market Approach

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Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
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As of January 20, 2021

Comparable Sales Approach

Market Sales Data

Central Tendancy and Reliability Analysis

Market Sales Analysis - PP/OCLD

	Simple	Weighted	
Mean	1.7594	1.8494	
Standard Deviation	0.5882	0.5292	
Median	1.49	1.4375	
Mode	1.4418	1.4418	
Conclusion		1.8494	AUS Input
Willistown Wastewater Collection System OCLD		13,524,101	Cost Approach - OCLD
Market Value Indication		**25,011,472**	

Market Sales Analysis - PP/CORLD

	Simple	Weighted	
Mean	0.8087	0.8533	
Standard Deviation	0.1746	0.1493	
Median	0.8229	0.7558	
Mode	0.6918	0.6918	
Conclusion		0.8533	AUS Input
Willistown Wastewater Collection System CORLD		30,113,231	Cost Approach - CORLD
Market Value Indication		**25,695,620**	

Market Sales Analysis - PP/Customer

	Simple	Weighted	
Water & Wastewater Industryn			
Mean	7,963	10,962	
Standard Deviation	3,637	4,613	
Median	8,315	4,963	
Mode	7,243	7,243	
Water Tretment & Distribution			
Mean	6,123		
Standard Deviation			
Median	5,021		
Wastewater Collection & Treatment			
Mean	9,579		
Standard Deviation		-	AUS Input
Median	8,754		
Wastewater Collection			
Mean	6,507		
Standard Deviation			
Median	6,636		
Watewater Treatment Only			
Mean	3,072		
Standard Deviation			
Median	2,118		
Willistown Wastewater Collection System Customers		2,294	AUS Input
Wastewater Collection & Treatment PP/Customer		9,579	AUS Input
Collection and Treatement Customers Market Value Indic		**21,974,226**	
Treatement Only Market Value Indication			
Treatment Only PP/customer		2,118	AUS Input
Treatment Only Customers		-	AUS Input
Market Value Indication Treatment Only		-	
Total Market Value Indication		**21,974,226**	

Financial Basis[1]

Financial Markets	Market Value per Share to Book Value per Share	
Market to Book (equity)	3.40	
Market to Book (equity and debt)	2.11	
Use (equity and debt)	2.11	AUS Input
Willistown Wastewater Collection System OCLD	13,524,101	Cost Approach - OCLD
Market Value Indication	**28,535,853**	

Market Sales Analysis - PP/Cash Flows (EBITDA Period 1-5)

	Simple	Weighted	
Mean	17.48	15.32	
Standard Deviation	5.71	5.10	
Median	17.41	18.13	
Mode	10.68	10.68	
Forecast			
Conclusion		18.00	AUS Input
Willistown Wastewater Collection System Cash Flows		892,978	Income Approach
Market Value Indication		**16,073,611**	

Market Sales Analysis - PP/Cash Flows (EBITDA Period 1-13)

	Simple	Weighted	
Mean	11.62	11.45	
Standard Deviation	2.67	2.14	
Median	11.65	12.07	
Mode	9.55	9.55	
Forecast			
Conclusion		12.00	AUS Input
Willistown Wastewater Collection System Cash Flows		1,168,600	Income Approach
Market Value Indication		**14,023,202**	

Summary of Market Analyses

Indicators	
OCLD	25,011,472
CORLD	25,695,620
Customers	21,974,226
Cash Flows	
EBITDA Periods 1-5	16,073,611
EBITDA Periods 1-13	14,023,202
Value Line	28,535,853
Mean	21,885,664
Median	23,492,849
Conclusion	**25,695,620**

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Data

RowID	Approximate Date	Buyer	Seller	County	Type of Facility	Initial Purchase Price	Final Purchase Price[1]	Number of Total Customers	Relationship to the passage of Section 1329
1	9/1/2016	PA American Water	City of McKeesport	Allegheny	Wastewater Collection and Treatment	156,000,000	159,000,000	21,953	Post
2	8/1/2016	Aqua PA	New Garden Twp. SA	Chester	Wastewater Collection and Paid for and Owned Treatment	29,500,000	29,500,000	2,106	Post
3	11/16/2016	Aqua PA	Limerick Township	Montgomery	Wastewater Collection and Treatment System	75,100,000	64,373,378	5,434	Post
4	12/10/2017	Aqua PA	East Bradford Township	Chester	Wastewater Collection and paid for treatment	5,000,000	5,000,000	1,248	Post
5	4/20/2018	SUEZ	Mahoning	Carbon	Water Distribution System	4,734,800	4,734,800	1,186	Post
6	4/20/2018	SUEZ	Mahoning	Carbon	Wastewater Collection	4,765,200	4,765,200	1,451	Post
7	6/1/2018	Aqua PA	Cheltenham	Montgomery	Wastewater Collection	50,250,000	50,250,000	10,500	Post
8	11/14/2018	PA American Water	Steelton	Dauphin	Water Distribution and Treatment	22,500,000	21,750,000	2,325	Post
9	1/1/2017	PA American Water	Sadsbury	Chester	Wastewater Collection	9,250,000	8,600,000	998	Post
10	5/28/2018	PA American Water	Exeter	Berks	Wastewater Collection and Treatment	96,000,000	93,500,000	9,000	Post
11	10/29/2018	Aqua PA	East Norriton	Montgomery	Wastewater Collection	21,000,000	21,000,000	4,950	Post
12	9/30/2018	PA American	Kane	McKean	Wastewater Collection and Treatment	17,560,000	17,560,000	2,006	Post
13	12/10/2019	PA American	Royersford	Montgomery	Wastewater Collection and Treatment	13,000,000	13,000,000	1,596	Post
14	12/17/2019	PA American	Valley	Chester	Water Treatment and Distribution System	7,325,000	7,325,000	1,459	Post
15	12/17/2019	PA American	Valley	Chester	Wastewater Collection System	13,950,000	13,950,000	1,644	Post
16	12/31/2019	Aqua PA	Delaware County Regional Wa	Delaware	Wastewater Collection and Treatment	276,500,000	276,500,000	16,473	Post
17	4/28/2020	PA American Water	Upper Pottsgrove	Montgomery	Wastewater Collection	13,750,000	13,750,000	1,428	Post
18	9/17/2020	Aqua PA	Lower Makefield	Bucks	Wastewater Collection and Purchased Treatment Capacity	53,000,000	53,000,000	11,151	Post

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Comparable Sales Approach

Financial Basis[1]

	Industry Averages	American & Aqua Averages	American States Water	American Water	Aqua America	California Water	Consol. Water Co.	Middlesex Water	SJW Corp	York	Totals
Price per Share			87.33	123.05	47.08	51.52	16.46	63.56	71.79	46.38	
Book value per share			16.1	34.4	18	15.85	10.95	15.7	31.2	10.4	
Market to Book Equity Ratio			5.42	3.58	2.62	3.25	1.5	4.05	2.3	4.46	
Minimum	1.5	2.62									
Mean	3.40	3.1		3.58	2.62						
Standard Deviation	1.18	0.480									
Weighted Market to Debt Ratio	3.41		20,013.22	112,367.28	34,710.24	11,207.07	371.03	5,481.74	5,874.18	3,135.10	193,159.86
Median	3.415	3.1									
Maximum	5.42	3.58									
Debt (Total) $s millions			475.3	9,143.0	3,086.4	967.9	-	294.0	511.1	100.7	
Outstanding Shares (millions)			36.84	180.78	215.84	48.15	15.03	16.67	28.46	12.98	
Debt per share			12.9	50.58	14.3	20.1	0	17.64	17.96	7.76	
Equity (Total) $s millions			3,217.18	22,244.51	10,161.78	2,480.43	247.35	1,059.52	2,042.89	602.24	
Total Capital (Debt + Equity)			3,692.48	31,387.51	13,248.18	3,448.33	247.35	1,353.52	2,553.99	702.94	56,634.30
			0.07	0.55	0.23	0.06	-	0.02	0.05	0.01	0.99
Market Value per Share (Equity+Debt)			100.23	173.63	61.38	71.62	16.46	81.2	89.75	54.14	
Book Value per Share (Equity+Debt)			29	84.98	32.3	35.95	10.95	33.34	49.16	18.16	
Market to Book (Total Capital) Ratio			3.46	2.04	1.9	1.99	1.5	2.44	1.83	2.98	
Minimum	1.5	1.9									
Mean	2.27	1.97		2.04	1.9						
Standard Deviation	0.61	0.070									
Weighted Market to Book (Debt&Equity) Ratio	2.11		12,775.97	64,030.52	25,171.55	6,862.18	371.03	3,302.58	4,673.80	2,094.75	119,282.38
Variance to Wtd Mean	0.1392		1.35	(0.07)	(0.21)	(0.12)	(0.61)	0.33	(0.28)	0.87	
Median	2.015	1.97									
Maximum	3.46	2.04									

1. Value Line Investment Survey January 10, 2020
2. Value Line dropped Connecticut Water in its January 10, 2020 publication

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Cost Approach

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Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

	Column Reference in OCLD & RCNLD	Amount in $s		
Depreciated Replacement Cost (RCNLD)			18,235,751	Income
Original Cost (OC)	(9)	19,641,520	25,695,620	Market
Replacement Cost New (RCN)	(16)	49,898,907	18,500,000	Conclusion
Replacement Cost New less Depreciation (RCNLD)	(31)	30,113,231	17,500,000	Purchase Price
Intangible Assets - Treatment Contracts				
				Economic
Fair Market Vaue (FMV)	(41)	18,498,555	(11,613,231)	Obsolescence
			38.57%	EO %
Depreciated Original Cost (OCLD)				
Original Cost (OC)	(46)	19,641,520		
Original Cost less Depreciation (OCLD)	(57)	13,524,101		
Intangible Assets - Treatment Contracts		-		
Depreciated Original Cost (OCLD)		13,524,101		
Cost Approach Conclusion		18,498,555		

Township of Willistown, PA's Wastewater System

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Cost Approach
Replacement Cost New

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Willistown Township, Pennsylvania
Willistown Wastewater Collection System
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Investor-Owned Utility
As of January 20, 2021

Replacement Cost New (RCN)

(1)	(2)	(3)	(9)	(10)	(13)	(14)	(15)	(16)
Account	Account	Asset Description	Original Cost	Costing Parameter	Cost Translator	Reproduction Cost New (RCN)	Reproduction Cost New (RCN) to Replacement Cost New (COR)	Replacement Cost New (COR)
			OC $s			RCN $s	COR $s / RCN $s	COR $s
Input	Input	Input	Input	Input	Calculation	Calculation	Input	Calculation
Eng Assmnt	AUS Input	Willistown Township Wastewater Assets Detail by Pennoni Associates, Inc.	Eng Assmnt	AUS Input			AUS Input	Col (14) * (15)
NARUC Code	NARUC Code	Asset Description	Original Cost	Cost Index Table	Translator	RCN	COR / RCN Factor	COR
353.20	353.20	Land & Land Rights - Collection System	216.00	USBLS1	1.61	347	644.89	223,776
353.30	353.30	Land & Land Rights - Pumping	21,606.00	USBLS1	4.85	104,817	1.05	109,988
353.40	353.40	Land & Land Rights - Treatment	1,500,007.00	USBLS1	1.30	1,945,510	1.00	1,945,510
354.30	354.30	Stuctures & Improvements - Pumping	2,146,252.31	HWW-18	2.36	5,065,392	1.00	5,065,392
354.40	354.40	Stuctures & Improvements - Treatment	1,448,500.00	HWW-115	2.26	3,275,059	1.00	3,275,059
355.30	355.30	Generating Equipment - Pumping	344,586.01	USBLS4	1.17	401,787	1.00	401,787
360.21	360.21	Collection Sewers - Force - Mains	6,823,585.73	HWW-144	2.18	14,857,717	1.00	14,857,717
361.21	361.21	Collection Sewers - Gravity - Mains	3,807,421.45	HWW-144	3.97	15,110,171	1.00	15,110,171
361.22	361.22	Collection Sewers - Gravity - Mains Relining	956,037.32	HWW-138	1.15	1,096,644	1.00	1,096,644
361.23	361.23	Collection Sewers - Gravity - Manholes	1,562,320.53	HWW-145	3.19	4,989,198	1.00	4,989,198
363.20	363.20	Service Laterals	698,453.71	HWW-139	3.43	2,394,359	1.00	2,394,359
		Grand Total	19,641,519.75		2.53	49,670,307	1.01	49,898,907

Wilistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(3a)	(3b)	(3c)	(3d)	(3e)
Account Number	Description	Costing Parameters				Reproduction to Replacement Cost Factor
		Index Series	Table	Line Reference	Lookup	AUS Input
353.20	Land & Land Rights - Collection System	USBLS	PPI	1.00	USBLS1	1.00
353.30	Land & Land Rights - Pumping	USBLS	PPI	1.00	USBLS1	1.00
353.40	Land & Land Rights - Treatment	USBLS	PPI	1.00	USBLS1	1.00
354.30	Stuctures & Improvements - Pumping	HW	W-1	8.00	HWW-18	1.00
354.40	Stuctures & Improvements - Treatment	HW	W-1	15.00	HWW-11S	1.00
355.30	Generating Equipment - Pumping	USBLS	PPI	4.00	USBLS4	1.00
360.21	Collection Sewers - Force - Mains	HW	W-1	44.00	HWW-144	1.00
361.21	Collection Sewers - Gravity - Mains	HW	W-1	44.00	HWW-144	1.00
361.22	Collection Sewers - Gravity - Mains Relining	HW	W-1	38.00	HWW-138	1.00
361.23	Collection Sewers - Gravity - Manholes	HW	W-1	45.00	HWW-145	1.00
363.20	Service Laterals	HW	W-1	39.00	HWW-139	1.00
364.30	Flow Measuring Devices - Pumping	HW	W-1	40.00	HWW-140	1.00
390.70	Office Furniture and Equipment	AUS	T-1	15.00	AUST-115	1.00

Current cost of Easements

Activity	Engineer	Legal	Fees	Total
Determine the facilities for which a Easment is need	1	0	0	
Locate the Land owner for the property needing a easement	1	1	0	
Develop a diagram o the Property, the facilities, and the easement	2	0	0	
Develop the easement document	1	1	0	
Visit the property owner to obtain permission for the easement and sign the easment documentation	4	0	0	
Register the easement with the Municipal Clerk	0	1	250	
Total	9	3	250	
Labor Costs per Hour	54	100		
Total Cost	486	300	250	1,036

Easement Costing

1	2	3	4	5	6	7	8	9.00	10	11	12	13	14	15	16
Willistown Township, Pennsylvania **Willistown Wastewater Collection System** **Wastewater Collection System and Treatment** **Investor-Owned Utility** **As of January 20, 2021**															
Replacement Cost New (RCN)															
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Account	Account	Asset Description	Year Installed	Effective Installation Year	Units	Quantity	Replacement cost per unit	Original Cost	Costing Parameter	Placement Date Cost Index	Appraisal Date Cost Index	Cost Translator	Reproduction Cost New (RCN)	Reproduction Cost New (RCN) to Replacement Cost New (COR)	Replacement Cost New (COR)
								OC $s					RCN $s	COR $s / RCN $s	COR $s
Input	Input	Input	Input	Input				Input	Input	Input	Input	Calculation	Calculation	Input	Calculation
Eng Assmnt	AUS Input	Willistown Township Wastewater Assets Detail by Pennoni Associates, Inc.	Eng Assmnt	AUS Input				Eng Assmnt	AUS Input	Cost Indices Lookup Cols(10) & (5)	Cost Indices Lookup Cols(10) & Study YR	Col (12) / (11)	Col (5) * (13)	AUS Input	Col (14) * (15)
NARUC Code	NARUC Code	Asset Description	Service Date					Original Cost	Cost Index Table	YearIndex	APPCostIndex	Translator	RCN	COR / RCN Factor	COR
353.20	353.20	Land & Land Rights - Collection System						216.00	USBLS1			1.606	347	644.888	223,776
353.30	353.30	Land & Land Rights - Pumping						21,606.00	USBLS1			4.851	104,817	1.049	109,988
353.40	353.40	Land & Land Rights - Treatment						1,500,007.00	USBLS1			1.297	1,945,510	1.000	1,945,510
354.30	354.30	Stuctures & Improvements - Pumping						2,146,252.31	HWW-18			2.360	5,065,392	1.000	5,065,392
354.40	354.40	Stuctures & Improvements - Treatment						1,448,500.00	HWW-115			2.261	3,275,059	1.000	3,275,059
355.30	355.30	Generating Equipment - Pumping						344,586.01	USBLS4			1.166	401,787	1.000	401,787
360.21	360.21	Collection Sewers - Force - Mains						6,823,585.73	HWW-144			2.177	14,857,717	1.000	14,857,717
361.21	361.21	Collection Sewers - Gravity - Mains						3,807,421.45	HWW-144			3.969	15,110,171	1.000	15,110,171
361.22	361.22	Collection Sewers - Gravity - Mains Relining						956,037.32	HWW-138			1.147	1,096,644	1.000	1,096,644
361.23	361.23	Collection Sewers - Gravity - Manholes						1,562,320.53	HWW-145			3.193	4,989,198	1.000	4,989,198
363.20	363.20	Service Laterals						698,453.71	HWW-139			3.428	2,394,359	1.000	2,394,359
364.30	364.30	Flow Measuring Devices - Pumping						23,240.21	HWW-140			4.139	96,197	1.000	96,197
390.70	390.70	Office Furniture and Equipment						309,293.46	AUST-115			1.077	333,109	1.000	333,109
400.00	400.00	Not Used						-	AUST-18			1.000	-	1.000	-
400.00	400.00	Not Used						-	AUST-18			1.000	-	1.000	-
Grand Total	**Grand Total**	**Grand Total**						**19,641,519.75**				**2.529**	**49,670,307**	**1.005**	**49,898,907**
Check totals								19,641,519.75					49,670,307		49,898,907
Difference								-					-		-

1	2	3	4	5	6	7	8	9.00	10	11	12	13	14	15

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Replacement Cost New (RCN)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Account	Account	Asset Description	Year Installed	Effective Installation Year	Units	Quantity	Replacement cost per unit	Original Cost	Costing Parameter	Placement Date Cost Index	Appraisal Date Cost Index	Cost Translator	Reproduction Cost New (RCN)	Reproduction Cost New (RCN) to Replacement Cost New (COR)
								OC $s					RCN $s	COR $s / RCN $s
Input	Input	Input	Input	Input				Input	Input	Input	Input	Calculation	Calculation	Input
Eng Asmnt	AUS Input	Willistown Township Wastewater Assets Detail by Pennoni Associates, Inc.	Eng Asmnt	AUS Input				Eng Asmnt	AUS Input	Cost Indices Lookup Cols(10) & (5)	Cost Indices Lookup Cols(10) & Study YR	Col (12) / (11)	Col (5) * (13)	AUS Input
NARUC Code	NARUC Code	Asset Description	Service Date					Original Cost	Cost Index Table	YearIndex	APPCostIndex	Translator	RCN	COR / RCN Factor
ACCOUNT	ACCOUNT	DESCRIPTION	YEAR	YEAR		QUANTITY	UNIT COST	ORIGINAL COST						
353.20	353.20	LAND AND LAND RIGHTS - COLLECTION												
353.20	353.20	Fox Ridge Gravity Sewer Easements (UPI: 54-2-62.30, 54-2-62.29, 54-2-62.28, 54-2-62.27)	2012	2012		-	1,036	1.00	USBLS1	230	262	1.139	1	1.000
353.20	353.20	Fox Ridge Gravity Sewer Easements (UPI: 54-2-62, 54-2-62.18, 54-2-62.19)	2015	2015		-	1,036	1.00	USBLS1	237	262	1.105	1	1.000
353.20	353.20	2291 South Valley Rd (UPI: 54-4-8) Easement	2018	2018		-	1,036	1.00	USBLS1	251	262	1.044	1	1.000
353.20	353.20	Applebrook Meadows Gravity Sewer (UPI: 54-2-95.5) Easement	2018	2018		-	1,036	1.00	USBLS1	251	262	1.044	1	1.000
353.20	353.20	15 Long Ln (UPI: 54-3-33) Easement	2018	2018		-	1,036	1.00	USBLS1	251	262	1.044	1	1.000
353.20	353.20	2 McKinley Ave (UPI: 54-3-50) Easement	2018	2018		-	1,036	1.00	USBLS1	251	262	1.044	1	1.000
353.20	353.20	285 W Central Ave (UPI: 54-1K-1.7) Easement	2020	2020		-	1,036	1.00	USBLS1	259	262	1.012	1	1.000
353.20	353.20	209 Sewer Easements	1997	1997		-	1,036	209.00	USBLS1	161	262	1.627	340	1.000
		TOTAL LAND AND LAND RIGHTS - COLLECTION						**216.00**					**347**	
353.30	353.30	LAND AND LAND RIGHTS - PUMPING												
353.30	353.30	Pump Station #1 Property (UPI: 54-1-33.3A)	1975	1975		-	-	8,601.00	USBLS1	54	262	4.852	41,732	1.000
353.30	353.30	Pump Station #2 Property (UPI: 54-3-343.1)	1975	1975		-	-	5,500.00	USBLS1	54	262	4.852	26,686	1.000
353.30	353.30	Pump Station #3 Property (UPI: 54-3-212.1)	1975	1975		-	-	7,500.00	USBLS1	54	262	4.852	36,390	1.000
353.30	353.30	Booster Pump Station #1 Property (UPI: 54-3-315)	1978	1978		-	1,036	1.00	USBLS1	65	262	4.031	4	1.000
353.30	353.30	Penn's Preserve/PS #5 Easements (UPI: 54-8-14, 54-8-14.2, 54-8-14.2A, 54-8-14.2B)	1999	1999		-	1,036	1.00	USBLS1	167	262	1.569	2	1.000
353.30	353.30	Booster Pump Station #2 Easement (UPI: 54-3-300.17)	2001	2001		-	1,036	1.00	USBLS1	177	262	1.480	1	1.000
353.30	353.30	Pump Station #4 Force Main Easements (UPI: 54-2-95, 54-2-95.1, 54-2-95.2, 54-2-95.5, 54-2-115)	2006	2006		-	1,036	1.00	USBLS1	202	262	1.297	1	1.000
353.30	353.30	Dovecote Pump Station Easements (UPI: 54-3-449, 54-3-450, 54-3-451, 54-3-452, 54-3-460, 54-3-461)	2018	2018		-	1,036	1.00	USBLS1	251	262	1.044	1	1.000
		TOTAL LAND AND LAND RIGHTS - PUMPING						**21,606.00**					**104,817**	
353.40	353.40	LAND AND LAND RIGHTS - TREATMENT												
353.40	353.40	Penn's Preserve (UPIs: 54-8-14.1, 54-8-14.3, 54-8-14.4, 54-8-14.5)	2001	2001		-	-	4.00	USBLS1	177	262	1.480	6	1.000
353.40	353.40	Penn's Preserve (UPI: 54-8-14.2)	2002	2002		-	-	1.00	USBLS1	180	262	1.456	1	1.000
353.40	353.40	Penn's Preserve (UPIs: 54-8-14.2B, 54-8-2679)	2003	2003		-	-	2.00	USBLS1	184	262	1.424	3	1.000
353.40	353.40	Penn's Preserve (UPI: 54-8-14.2A)	2006	2006		-	-	1,500,000.00	USBLS1	202	262	1.297	1,945,500	1.000
		TOTAL LAND AND LAND RIGHTS - TREATMENT						**1,500,007.00**					**1,945,510**	
354.30	354.30	STRUCTURES AND IMPROVEMENTS - PUMPING												
354.30	354.30	Pump Station #1 - Initial Facility	1977	1977		-	-	135,577.68	HWW-18	137	762	5.562	754,083	1.000
354.30	354.30	Pump Station #2 - Initial Facility	1977	1977		-	-	135,577.68	HWW-18	137	762	5.562	754,083	1.000
354.30	354.30	Pump Station #3 - Initial Facility	1977	1977		-	-	135,577.68	HWW-18	137	762	5.562	754,083	1.000
354.30	354.30	Pump Station #5 - Initial Facility	1997	1997		-	-	306,628.72	HWW-18	331	762	2.302	705,859	1.000
354.30	354.30	Dovecote Pump Station - Initial Facility	1998	1998		-	-	148,622.00	HWW-18	337	762	2.261	336,034	1.000
354.30	354.30	Booster Pump Station #1 - Initial Facility	2001	2001		-	-	30,426.04	HWW-18	378	762	2.016	61,339	1.000
354.30	354.30	Booster Pump Station #2 - Initial Facility	2001	2001		-	-	30,426.04	HWW-18	378	762	2.016	61,339	1.000

1	2	3	4	5	6	7	8	9.00	10	11	12	13	14	15

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Replacement Cost New (RCN)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Account	Account	Asset Description	Year Installed	Effective Installation Year	Units	Quantity	Replacement cost per unit	Original Cost	Costing Parameter	Placement Date Cost Index	Appraisal Date Cost Index	Cost Translator	Reproduction Cost New (RCN)	Reproduction Cost New (RCN) to Replacement Cost New (COR)
								OC $s					RCN $s	COR $s / RCN $s
Input	Input	Input	Input	Input				Input	Input	Input	Input	Calculation	Calculation	Input
Eng Asmnt	AUS Input	Willistown Township Wastewater Assets Detail by Pennoni Associates, Inc.	Eng Asmnt	AUS Input				Eng Asmnt	AUS Input	Cost Indices Lookup Cols(10) & (5)	Cost Indices Lookup Cols(10) & Study YR	Col (12) / (11)	Col (5) * (13)	AUS Input
NARUC Code	NARUC Code	Asset Description	Service Date					Original Cost	Cost Index Table	YearIndex	APPCostIndex	Translator	RCN	COR / RCN Factor
354.30	354.30	Pump Station #4 - Initial Facility	2006	2006		-	-	407,943.57	HWW-18	466.3	762	1.634	666,580	1.000
354.30	354.30	Pump Station #5 - Building Improvements	2011	2011		-	-	1,650.00	HWW-18	583.5	762	1.306	2,155	1.000
354.30	354.30	Pump Station #3 - Pump Upgrades and Station Improvements	2014	2014		-	-	859,984.75	HWW-18	630.8	762	1.208	797,262	1.000
354.30	354.30	Pump Station #1 - Pump Upgrades	2015	2015		-	-	34,406.50	HWW-18	847.3	762	1.177	40,496	1.000
354.30	354.30	Pump Station #2 - Pump Upgrades	2015	2015		-	-	43,811.62	HWW-18	847.3	762	1.177	51,331	1.000
354.30	354.30	Pump Station #5 - Pump Upgrades	2019	2019		-	-	75,820.00	HWW-18	715.5	762	1.065	80,748	1.000
		TOTAL STRUCTURES AND IMPROVEMENTS - PUMPING						**2,146,252.31**					**5,065,392**	
354.40	354.40	STRUCTURES AND IMPROVEMENTS - TREATMENT PLANT												
354.40	354.40	Initial facility cost including pumps, building, treatment structures, fencing, property, etc.	1998	1998		-	-	1,448,500.00	HWW-115	337	762	2.261	3,275,059	1.000
		TOTAL STRUCTURES AND IMPROVEMENTS - TREATMENT PLANT						**1,448,500.00**					**3,275,059**	
355.30	355.30	POWER GENERATION - PUMPING												
355.30	355.30	Pump Station #3 Generator	2010	2010		-	-	344,586.01	USBLS4	185.4	216.2	1.166	401,787	1.000
		TOTAL POWER GENERATION - PUMPING						**344,586.01**					**401,787**	
360.21	360.21	COLLECTION SEWERS - FORCE/PRESSURE MAINS												
360.21	360.21	DIP - 4-inch	1977	1977		820.00	25.12	20,601.17	HWW-144	137.1	674.5	4.920	101,358	1.000
360.21	360.21	DIP - 8-inch	1977	1977		1,555.00	48.77	75,837.35	HWW-144	137.1	674.5	4.920	373,120	1.000
360.21	360.21	DIP - 14-inch	1977	1977		6,264.00	61.00	382,124.04	HWW-144	137.1	674.5	4.920	1,880,050	1.000
360.21	360.21	PVC - 1.5-inch	1993	1993		921.00	54.00	49,729.40	HWW-144	264.5	674.5	2.550	126,810	1.000
360.21	360.21	PVC - 2-inch	1993	1993		20,614.00	54.51	1,123,751.60	HWW-144	264.5	674.5	2.550	2,865,567	1.000
360.21	360.21	PVC - 2.5-inch	1993	1993		1,832.00	55.03	100,821.01	HWW-144	264.5	674.5	2.550	257,094	1.000
360.21	360.21	PVC - 2-inch	1996	1996		1,874.00	58.81	110,204.32	HWW-144	284.9	674.5	2.367	260,854	1.000
360.21	360.21	PVC - 2-inch	1997	1997		892.00	60.96	54,375.96	HWW-144	291.1	674.5	2.317	125,989	1.000
360.21	360.21	PVC - 1.5-inch	1998	1998		3,400.00	54.20	184,292.58	HWW-144	295	674.5	2.286	421,293	1.000
360.21	360.21	PVC - 2-inch	1998	1998		11,595.00	61.94	718,231.40	HWW-144	295	674.5	2.286	1,641,877	1.000
360.21	360.21	PVC - 2.5-inch	1998	1998		1,281.00	62.53	80,104.90	HWW-144	295	674.5	2.286	183,120	1.000
360.21	360.21	PVC - 3-inch	1998	1998		3,743.00	63.12	236,269.76	HWW-144	295	674.5	2.286	540,113	1.000
360.21	360.21	PVC - 4-inch	1998	1998		5,406.00	61.07	330,119.01	HWW-144	295	674.5	2.286	754,652	1.000
360.21	360.21	PVC - 6-inch	1998	1998		3,169.00	65.34	207,068.80	HWW-144	295	674.5	2.286	473,359	1.000
360.21	360.21	PVC - 4-inch	1999	1999		1,839.00	69.02	126,935.14	HWW-144	299.7	674.5	2.251	285,731	1.000
360.21	360.21	PVC - 2-inch	2001	2001		755.00	66.37	50,108.75	HWW-144	327.2	674.5	2.061	103,274	1.000
360.21	360.21	HDPE - 6-inch	2006	2006		9,702.00	244.38	2,370,976.70	HWW-144	433.5	674.5	1.556	3,689,240	1.000
360.21	360.21	HDPE - 4-inch	2009	2009		2,475.00	243.25	602,033.85	HWW-144	524.3	674.5	1.286	774,216	1.000
		TOTAL COLLECTION SEWERS - FORCE/PRESSURE MAINS						**6,823,585.73**					**14,857,717**	
361.21	361.21	COLLECTION SEWERS - GRAVITY MAINS												
361.21	361.21	VP - 8-inch	1977	1977	LF	59,472.00	22.83	1,357,563.07	HWW-144	137.1	674.5	4.920	6,679,210	1.000
361.21	361.21	CIP - 8-inch	1977	1977	LF	775.00	14.12	10,941.90	HWW-144	137.1	674.5	4.920	53,834	1.000
361.21	361.21	ACP - 8-inch	1977	1977	LF	26,773.00	23.38	625,962.82	HWW-144	137.1	674.5	4.920	3,079,737	1.000
361.21	361.21	VP - 10-inch	1977	1977	LF	1,453.00	27.28	39,603.80	HWW-144	137.1	674.5	4.920	194,851	1.000

1	2	3	4	5	6	7	8	9.00	10	11	12	13	14	15

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Replacement Cost New (RCN)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Account	Account	Asset Description	Year Installed	Effective Installation Year	Units	Quantity	Replacement cost per unit	Original Cost	Costing Parameter	Placement Date Cost Index	Appraisal Date Cost Index	Cost Translator	Reproduction Cost New (RCN)	Reproduction Cost New (RCN) to Replacement Cost New (COR)
								OC $s					RCN $s	COR $s / RCN $s
Input	Input	Input	Input	Input				Input	Input	Input	Input	Calculation	Calculation	Input
Eng Assmnt	AUS Input	Willistown Township Wastewater Assets Detail by Pennoni Associates, Inc.	Eng Assmnt	AUS Input				Eng Assmnt	AUS Input	Cost Indices Lookup Cols(10) & (5)	Cost Indices Lookup Cols(10) & Study YR	Col (12) / (11)	Col (5) * (13)	AUS Input
NARUC Code	NARUC Code	Asset Description	Service Date					Original Cost	Cost Index Table	YearIndex	APPCostIndex	Translator	RCN	COR / RCN Factor
361.21	361.21	ACP - 10-inch	1977	1977	LF	4,559.00	21.89	101,970.53	HWW-144	137.1	674.5	4.920	501,695	1.000
361.21	361.21	VP - 12-inch	1977	1977	LF	497.00	23.10	11,482.26	HWW-144	137.1	674.5	4.920	56,493	1.000
361.21	361.21	ACP - 12-inch	1977	1977	LF	2,062.00	29.38	60,577.87	HWW-144	137.1	674.5	4.920	298,043	1.000
361.21	361.21	VP - 15-inch	1977	1977	LF	360.00	24.13	8,686.78	HWW-144	137.1	674.5	4.920	42,739	1.000
361.21	361.21	RCP - 15-inch	1977	1977	LF	1,679.00	24.83	41,697.28	HWW-144	137.1	674.5	4.920	205,151	1.000
361.21	361.21	ACP - 15-inch	1977	1977	LF	1,498.00	43.92	65,786.92	HWW-144	137.1	674.5	4.920	323,672	1.000
361.21	361.21	DIP - 16-inch	1977	1977	LF	166.00	46.72	7,755.47	HWW-144	137.1	674.5	4.920	38,157	1.000
361.21	361.21	RCP - 18-inch	1977	1977	LF	3,933.00	29.26	115,095.22	HWW-144	137.1	674.5	4.920	566,268	1.000
361.21	361.21	DIP - 18-inch	1977	1977	LF	105.00	29.26	3,072.72	HWW-144	137.1	674.5	4.920	15,118	1.000
361.21	361.21	Unknown - 8-inch	1978	1978	LF	4,737.00	16.51	78,212.82	HWW-144	145.4	674.5	4.639	362,829	1.000
361.21	361.21	ACP - 8-inch	1980	1980	LF	3,047.00	18.18	55,387.89	HWW-144	173	674.5	3.899	215,957	1.000
361.21	361.21	PVC - 8-inch	1987	1987	LF	5,100.00	24.15	123,157.25	HWW-144	217.2	674.5	3.105	382,403	1.000
361.21	361.21	PVC - 8-inch	1989	1989	LF	3,484.00	39.23	135,906.86	HWW-144	270.8	674.5	2.491	338,544	1.000
361.21	381.21	PVC - 8-inch	1998	1998	LF	3,806.00	49.07	186,760.37	HWW-144	295	674.5	2.286	426,934	1.000
361.21	361.21	DIP - 8-inch	1998	1998	LF	7,803.00	45.54	355,322.31	HWW-144	295	674.5	2.286	812,267	1.000
361.21	361.21	PVC - 8-inch	2009	2009	LF	585.00	46.97	27,477.80	HWW-144	524.3	674.5	1.286	35,336	1.000
361.21	361.21	PVC - 8-inch	2013	2013	LF	3,667.00	95.23	349,216.32	HWW-144	551.7	674.5	1.223	427,092	1.000
361.21	361.21	PVC - 8-inch	2017	2017	LF	778.00	58.85	45,763.38	HWW-144	573.5	674.5	1.176	53,841	1.000
		TOTAL COLLECTION SEWERS - GRAVITY MAINS						**3,807,421.45**					**15,110,171**	
361.22	361.22	COLLECTION SEWERS - GRAVITY MAINS - REPAIRS/UPGRADES												
361.22	361.22	Fox Ridge Sewer Upgrades	2009	2009		-	-	71,101.25	HWW-138	397	471	1.186	84,326	1.000
361.22	361.22	Long Lane Emergency Sewer Repair	2019	2019		-	-	336,363.30	HWW-138	405	471	1.163	391,191	1.000
361.22	361.22	McKinley Avenue Emergency Sewer Repair	2019	2019		-	-	307,674.90	HWW-138	405	471	1.163	357,826	1.000
361.22	361.22	Jacqueline Drive Emergency Sewer Repair	2020	2020		-	-	39,259.67	HWW-138	431	471	1.093	42,911	1.000
361.22	361.22	Martin Drive & Eisenhower Drive Sewer Replacement	2020	2020		-	-	201,838.00	HWW-138	431	471	1.093	220,390	1.000
		TOTAL COLLECTION SEWERS - GRAVITY MAINS - REPAIRS/UPGRADES						**956,037.32**					**1,096,644**	
361.23	361.23	COLLECTION SEWERS - GRAVITY - MANHOLES												
361.23	361.23	Initial Installation - Original System	1977	1977		519.00	1,842.78	852,602.51	HWW-145	138.5	586.4	4.234	3,609,919	1.000
361.23	361.23	Initial Installation - Weatherstone	1978	1978		34.00	1,770.32	60,191.03	HWW-145	148.4	586.4	3.951	237,815	1.000
361.23	361.23	Initial Installation - Rustmont	1980	1980		14.00	2,064.32	28,900.41	HWW-145	185.7	586.4	3.158	91,267	1.000
361.23	361.23	Initial Installation - Brampton Chase	1987	1987		28.00	2,809.82	78,674.85	HWW-145	255.6	586.4	2.294	180,480	1.000
361.23	361.23	Initial Installation - Fox Ridge	1989	1989		15.00	2,949.80	44,246.95	HWW-145	254.4	586.4	2.305	101,989	1.000
361.23	361.23	Initial Installation - Pump Station 5	1998	1998		6.00	3,775.33	22,651.99	HWW-145	326.7	586.4	1.795	40,660	1.000
361.23	361.23	Initial Installation - Quaker Farms	1998	1998		50.00	3,775.33	188,766.58	HWW-145	326.7	586.4	1.795	338,836	1.000
361.23	361.23	Initial Installation - Dovecote	1998	1998		21.00	3,775.33	79,281.97	HWW-145	326.7	586.4	1.795	142,311	1.000
361.23	361.23	Initial Installation - Applebrook Meadows	2013	2013		34.00	6,066.36	207,004.24	HWW-145	493.6	586.4	1.188	245,921	1.000
		TOTAL COLLECTION SEWERS - GRAVITY - MANHOLES						**1,582,320.53**					**4,989,198**	
363.20	363.20	SERVICE TO CUSTOMERS												
363.20	363.20	PVC - 4-inch	1977	1977		19,860.00	14.12	280,395.10	HWW-139	139	712	5.122	1,436,184	1.000

S:\water industry\Willistown Township\Willistown Wastewater System Valuation as of 6-27-2021

1	2	3	4	5	6	7	8	9.00	10	11	12	13	14	15

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Replacement Cost New (RCN)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Account	Account	Asset Description	Year Installed	Effective Installation Year	Units	Quantity	Replacement cost per unit	Original Cost	Costing Parameter	Placement Date Cost Index	Appraisal Date Cost Index	Cost Translator	Reproduction Cost New (RCN)	(15) Reproduction Cost New (RCN) to Replacement Cost New (COR)
								OC $s					RCN $s	COR $s / RCN $s
Input	Input	Input	Input	Input				Input	Input	Input	Input	Calculation	Calculation	Input
Eng Asmnt	AUS Input	Willistown Township Wastewater Assets Detail by Pennoni Associates, Inc.	Eng Asmnt	AUS Input				Eng Asmnt	AUS Input	Cost Indices Lookup Cols(10) & (5)	Cost Indices Lookup Cols(10) & Study YR	Col (12) / (11)	Col (5) * (13)	AUS Input
NARUC Code	NARUC Code	Asset Description	Service Date					Original Cost	Cost Index Table	YearIndex	APPCostIndex	Translator	RCN	COR / RCN Factor
363.20	363.20	PVC - 4-inch	1978	1978		1,755.00	15.21	26,701.88	HWW-139	145	712	4.910	131,106	1.000
363.20	363.20	PVC - 4-inch	1980	1980		1,215.00	17.74	21,555.81	HWW-139	175	712	4.069	87,711	1.000
363.20	363.20	PVC - 4-inch	1987	1987		420.00	24.15	10,142.36	HWW-139	230	712	3.096	31,401	1.000
363.20	363.20	PVC - 4-inch	1989	1989		390.00	25.29	9,864.65	HWW-139	258	712	2.760	27,226	1.000
363.20	363.20	PVC - 4-inch	1993	1993		1,995.00	28.56	56,967.34	HWW-139	292	712	2.438	138,886	1.000
363.20	363.20	PVC - 4-inch	1996	1996		225.00	30.80	6,930.49	HWW-139	321	712	2.218	15,372	1.000
363.20	363.20	PVC - 4-inch	1997	1997		45.00	31.93	1,438.91	HWW-139	323	712	2.204	3,167	1.000
363.20	363.20	PVC - 4-inch	1998	1998		3,195.00	32.45	103,666.37	HWW-139	330	712	2.158	223,712	1.000
363.20	363.20	PVC - 4-inch	2001	2001		2,130.00	34.76	74,049.07	HWW-139	304	712	2.342	173,423	1.000
363.20	363.20	PVC - 4-inch	2013	2013		2,040.00	52.33	106,743.74	HWW-139	602.3	712	1.182	126,171	1.000
		TOTAL SERVICE TO CUSTOMERS						**698,453.71**					**2,394,359**	
364.30	364.30	FLOW MEASURING DEVICES												
364.30	364.30	Cedar Hollow Flow Meter	1977	1977		-	-	9,195.07	HWW-140	101	485	4.802	44,155	1.000
364.30	384.30	Pheasant Run Flow Meter	1978	1978		-	-	9,908.97	HWW-140	105	485	4.619	45,770	1.000
364.30	364.30	Flow Meter	2007	2007		-	-	2,380.00	HWW-140	289.3	485	1.676	3,989	1.000
364.30	364.30	Counter	2008	2008		-	-	1,756.17	HWW-140	373	485	1.300	2,283	1.000
		TOTAL FLOW MEASURING DEVICES						**23,240.21**					**96,197**	
390.70	390.70	EQUIPMENT - GENERAL												
390.70	390.70	ICOM3 Software	2015	2015		-	-	36,843.75	AUST-115	284.8	306.6	1.077	39,681	1.000
390.70	390.70	Video Pipe Inspection Trailer	2015	2015		-	-	71,730.00	AUST-115	284.8	306.6	1.077	77,253	1.000
390.70	390.70	Jet Truck	2015	2015		-	-	200,719.71	AUST-115	284.8	306.6	1.077	216,175	1.000
		TOTAL EQUIPMENT - GENERAL						**309,293.46**					**333,109**	
		Grand Total						**19,641,519.75**					**49,670,307**	
		Check Total						19,841,519.75						
		Difference						-						

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Cost Approach
Replacement Cost New less Depreciation

AUS Consultants
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8555 West Forest Home Avenue
Greenfield, Wisconsin 53228
Office Telephone: 414-529-5755
J. Weinert's Cell: 414-698-8371
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Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Replacement Cost New less Depreciation (RCNLD)

(18)	(19)	(21)	(22)	(23)	(24)	(28)	(29)	(30)	(31)
Account	Description	Age at January 20, 2021 Appraisal Date	Replacement Cost New (COR)	Retirement Dispersion Iowa type	Normal Service Life (NSL)	Normal Remaining Life	Total Life Expectancy	Condition	Preliminary Cost Approach (COR less Normal Depreciation)
		years	COR $s		years	years	years	% of COR	CORLD $s
Input	Input	Calculation	Calculation	Input	Input	Calculation	Calculation	Calculation	Calculation
Eng Assmnt	Willistown Township Wastewater Assets Detail by Pennoni Associates, Inc.		Col (16)	AUS Input	AUS Input		Col (21) + (28)	Col (28) / (29)	Col (22) * (30)
Account	Description	Age	RCN	Iowa	NL	Rem Life	Total Life	Condition	CORLD
353.20	Land & Land Rights - Collection System	22.85	223,776	ZNonDep	-	-	-	-	223,776
353.30	Land & Land Rights - Pumping	44.30	109,988	ZNonDep	-	-	-	-	109,988
353.40	Land & Land Rights - Treatment	14.50	1,945,510	ZNonDep	-	-	-	-	1,945,510
354.30	Stuctures & Improvements - Pumping	27.73	5,065,392	R4.0	45.00	20.06	47.78	45.00	2,218,402
354.40	Stuctures & Improvements - Treatment	22.50	3,275,059	R4.0	55.00	32.77	55.27	55.00	1,941,807
355.30	Generating Equipment - Pumping	10.50	401,787	R3.0	35.00	24.95	35.45	35.00	282,781
360.21	Collection Sewers - Force - Mains	24.37	14,857,717	R3.0	75.00	52.04	76.41	75.00	10,144,396
361.21	Collection Sewers - Gravity - Mains	39.95	15,110,171	R2.5	80.00	45.27	85.22	80.00	8,050,177
361.22	Collection Sewers - Gravity - Mains Relining	2.03	1,096,644	R2.5	60.00	57.89	59.92	60.00	1,059,746
361.23	Collection Sewers - Gravity - Manholes	38.82	4,989,198	R2.5	80.00	46.21	85.03	80.00	2,721,303
363.20	Service Laterals	36.39	2,394,359	R3.0	70.00	36.94	73.33	70.00	1,213,391
Grand Total		30.28	49,898,907		67.83	41.31	70.83	0.60	30,113,231

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(4)	(4a)	(4b)	(5)	(6)	(6a)	(6b)
Account Number	Description		Iowa Survivor / Retirement Curve	Normal Service Life	Economic Obsolescence		Tax Depreciation	
				years	% of CORLD		Table	Life
353.20	Land & Land Rights - Collection System		ZNonDep	0.00	0.00%		Non-Depr	0.00
353.30	Land & Land Rights - Pumping		ZNonDep	0.00	0.00%		Non-Depr	0.00
353.40	Land & Land Rights - Treatment		ZNonDep	0.00	0.00%		Non-Depr	0.00
354.30	Stuctures & Improvements - Pumping		R4.0	55.00	0.00%		MACRS	25.00
354.40	Stuctures & Improvements - Treatment		R4.0	55.00	0.00%		MACRS	25.00
355.30	Generating Equipment - Pumping		R3.0	35.00	0.00%		MACRS	25.00
360.21	Collection Sewers - Force - Mains		R3.0	75.00	0.00%		MACRS	25.00
361.21	Collection Sewers - Gravity - Mains		R2.5	80.00	0.00%		MACRS	25.00
361.22	Collection Sewers - Gravity - Mains Relining		R2.5	60.00	0.00%		MACRS	25.00
361.23	Collection Sewers - Gravity - Manholes		R2.5	80.00	0.00%		MACRS	25.00
363.20	Service Laterals		R3.0	70.00	0.00%		MACRS	25.00
364.30	Flow Measuring Devices - Pumping		S2.0	25.00	0.00%		MACRS	25.00
390.70	Office Furniture and Equipment		R3.0	15.00	0.00%		MACRS	15.00

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Willistown Township, Pennsylvania																	
Willistown Wastewater Collection System																	
Wastewater Collection System and Treatment																	
Investor-Owned Utility																	
As of January 20, 2021																	
Replacement Cost New less Depreciation (RCNLD)																	
(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)
Account	Description	Placement Year	Age at January 20, 2021 Appraisal Date	Replacement Cost New (COR)	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Age as % of NSL	Iowa Lookup	Iowa Condition Percent of Percent New	Normal Remaining Life	Total Life Expectancy	Condition	Preliminary Cost Approach (COR less Normal Depreciation)	COR Weighted Age	COR Weighted Normal Remaining Life	COR Weighted Total Life Expectancy	COR Weighted Normal Service Life (NSL)
			years	COR $s		years	% of NSL	Lookup	%	years	years	% of COR	CORLD $s	COR $s * Years	COR $s * Years	COR $s * Years	COR $s * Years
Input	Input	Input	Calculation	Calculation	Input	Input	Calculation	Calculation	Lookup Lookup Iowa Curves Life Tables @ col (26)	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation
Eng Asemnt	Eng Asemnt	Eng Asemnt	2021-[(20)+0.5]	Col (16)	AUS Input	AUS Input	Col (21) / (24)	Col (23) & (25)		Col (24) * (27)	Col (21) + (28)	Col (28) / (29)	Col (22) * (30)	Col (22) * (21)	Col (22) * (28)	Col (22) * (29)	Col (22) * (24)
Account	Description	Year1	Age	RCN	Iowa	NL	AgeP	IowaLookup	IowaCondition	Rem Life	Total Life	Condition	CORLD	COR * Age	COR * RL	COR * TL	COR * NL
353.20	Land & Land Rights - Collection System		22.85	223,776	ZNonDep	-				-	-	-	223,776	5,113,696	-	-	-
353.30	Land & Land Rights - Pumping		44.30	109,988	ZNonDep	-				-	-	-	109,988	4,872,882	-	-	-
353.40	Land & Land Rights - Treatment		14.50	1,945,510	ZNonDep	-				-	-	-	1,945,510	28,209,939	-	-	-
354.30	Stuctures & Improvements - Pumping		27.73	5,065,392	R4.0	45.00				20.06	47.78	45.00	2,218,402	140,442,764	101,597,459	242,040,218	227,942,640
354.40	Stuctures & Improvements - Treatment		22.50	3,275,059	R4.0	55.00				32.77	55.27	55.00	1,941,807	73,688,828	107,323,683	181,012,511	180,128,245
355.30	Generating Equipment - Pumping		10.50	401,787	R3.0	35.00				24.95	35.45	35.00	282,781	4,218,764	10,024,586	14,243,349	14,062,545
360.21	Collection Sewers - Force - Mains		24.37	14,857,717	R3.0	75.00				52.04	76.41	75.00	10,144,396	362,012,927	773,195,526	1,135,208,449	1,114,328,775
361.21	Collection Sewers - Gravity - Mains		39.95	15,110,171	R2.5	80.00				45.27	85.22	80.00	8,050,177	603,712,262	684,033,715	1,287,745,969	1,208,813,680
361.22	Collection Sewers - Gravity - Mains Relining		2.03	1,096,644	R2.5	80.00				57.89	59.92	60.00	1,059,746	2,224,926	63,484,747	65,709,672	65,798,640
361.23	Collection Sewers - Gravity - Manholes		38.82	4,989,198	R2.5	80.00				46.21	85.03	80.00	2,721,303	193,678,729	230,532,882	424,211,607	399,135,840
363.20	Service Laterals		36.39	2,394,359	R3.0	70.00				36.94	73.33	70.00	1,213,391	87,139,814	88,443,281	175,583,094	167,605,130
364.30	Flow Measuring Devices - Pumping		41.04	96,197	S2.0	30.00				5.35	46.39	30.00	17,072	3,948,358	514,419	4,462,775	2,885,910
390.70	Office Furniture and Equipment		5.50	333,109	R3.0	12.00				6.86	12.36	12.00	184,882	1,832,101	2,285,129	4,117,227	3,997,308
400.00	Not Used			-	R3.0	-				-	-	-	-	-	-	-	-
400.00	Not Used			-	R3.0	-				-	-	-	-	-	-	-	-
Grand Total			30.28	49,898,907		67.83				41.31	70.83	60.35%	30,113,231	1,511,095,990	2,061,435,427	3,534,334,871	3,384,698,713
				49,898,907									30,113,231	1,511,095,990	2,061,435,427	3,534,334,871	3,384,698,713
				-									-	-	-	-	-

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Replacement Cost New less Depreciation (RCNLD)

(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)
Account	Description	Placement Year	Age at January 20, 2021 Appraisal Date	Replacement Cost New (COR)	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Age as % of NSL	Iowa Lookup	Iowa Condition Percent of Percent New	Normal Remaining Life	Total Life Expectancy	Condition	Preliminary Cost Approach (COR less Normal Depreciation)	COR Weighted Age	COR Weighted Normal Remaining Life	COR Weighted Total Life Expectancy	COR Weighted Normal Service Life (NSL)
			years	COR $s		years	% of NSL	Lookup	%	years	years	% of COR	CORLD $s	COR $s * Years	COR $s * Years	COR $s * Years	COR $s * Years
Input	Input	Input	Calculation	Calculation	Input	Input	Calculation	Calculation	Lookup Lookup Iowa Curves Life Tables @ col (28)	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation
Eng Assmnt	Eng Assmnt	Eng Assmnt	2021-[(20)=0.5]	Col (18)	AUS Input	AUS Input	Col (21) / (24)	Col (23) & (25)		Col (24) * (27)	Col (21) + (28)	Col (25) / (29)	Col (22) * (30)	Col (22) * (21)	Col (22) * (28)	Col (22) * (29)	Col (22) * (24)
Account	Description	Year1	Age	RCN	Iowa	NL	AgeP	IowaLookup	IowaCondition	Rem Life	Total Life	Condition	CORLD	COR * Age	COR * RL	COR * TL	COR * NL
ACCOUNT	DESCRIPTION	YEAR															
353.2	Fox Ridge Gravity Sewer Easements(UPI: 54-2-62.30, 54-2-62.29, 54-2-62.28, 54-2-62.27)	2012	8.50	1,036	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	1,036	8,806	-	-	-
353.2	Fox Ridge Gravity Sewer Easements(UPI: 54-2-62, 54-2-62.19, 54-2-62.19)	2015	5.50	1,036	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	1,036	5,698	-	-	-
353.2	2291 South Valley Rd (UPI: 54-4-8) Easement	2018	2.50	1,036	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	1,036	2,590	-	-	-
353.2	Applebrook Meadows Gravity Sewer (UPI: 54-2-95.5) Easement	2018	2.50	1,036	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	1,036	2,590	-	-	-
353.2	15 Long Ln (UPI: 54-3-33) Easement	2018	2.50	1,036	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	1,036	2,590	-	-	-
353.2	2 McKinley Ave (UPI: 54-3-50) Easement	2018	2.50	1,036	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	1,036	2,590	-	-	-
353.2	285 W Central Ave (UPI: 54-1K-1.7) Easement	2020	0.50	1,036	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	1,036	518	-	-	-
353.2	209 Sewer Easements	1997	23.50	216,524	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	216,524	5,088,314	-	-	-
				223,776									223,776	5,113,696	-	-	-
353.3	LAND AND LAND RIGHTS - PUMPING																
353.3	Pump Station #1 Property (UPI: 54-1-33.3A)	1975	45.50	41,732	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	41,732	1,898,806	-	-	-
353.3	Pump Station #2 Property (UPI: 54-3-343.1)	1975	45.50	26,686	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	26,686	1,214,213	-	-	-
353.3	Pump Station #3 Property (UPI: 54-3-212.1)	1976	45.50	36,390	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	36,390	1,655,745	-	-	-
353.3	Booster Pump Station #1 Property (UPI: 54-3-315)	1978	42.50	1,036	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	1,036	44,030	-	-	-
353.3	Penn's Preserve/PS #5 Easements(UPI: 54-8-14, 54-8-14.2, 54-8-14.2A, 54-8-14.2B)	1999	21.50	1,036	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	1,036	22,274	-	-	-
353.3	Booster Pump Station #2 Easement (UPI: 54-3-300.17)	2001	19.50	1,036	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	1,036	20,202	-	-	-
353.3	Pump Station #4 Force Main Easements(UPI: 54-2-95, 54-2-95.1, 54-2-95.2, 54-2-95.5, 54-2-115)	2006	14.50	1,036	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	1,036	15,022	-	-	-
353.3	Dovecote Pump Station Easements(UPI: 54-3-449, 54-3-450, 54-3-451, 54-3-452, 54-3-460, 54-3-461)	2018	2.50	1,036	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	1,036	2,590	-	-	-
				109,888									109,888	4,872,882	-	-	-
353.4	LAND AND LAND RIGHTS - TREATMENT																
353.4	Penn's Preserve (UPIs: 54-8-14.1, 54-8-14.3, 54-8-14.4, 54-8-14.5)	2001	19.50	6	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	6	117	-	-	-
353.4	Penn's Preserve (UPI: 54-8-14.2)	2002	18.50	1	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	1	19	-	-	-
353.4	Penn's Preserve (UPIs: 54-8-14.28, 54-8-2679)	2003	17.50	3	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	3	53	-	-	-
353.4	Penn's Preserve (UPI: 54-8-14.2A)	2006	14.50	1,945,500	ZNonDep	0.0	0	ZNonDep000	0.00000	0.00	0.00	100.000000%	1,945,500	28,209,750	-	-	-
				1,945,510									1,945,510	28,209,939	-	-	-
354.3	STRUCTURES AND IMPROVEMENTS - PUMPING																
354.3	Pump Station #1 - Initial Facility	1977	43.50	754,083	R4.0	45.0	97	R4.0097	0.16103	7.25	50.75	15.000000%	113,112	32,802,811	5,467,102	38,269,712	33,933,735
354.3	Pump Station #2 - Initial Facility	1977	43.50	754,083	R4.0	45.0	97	R4.0097	0.16103	7.25	50.75	15.000000%	113,112	32,802,811	5,467,102	38,269,712	33,933,735
354.3	Pump Station #3 - Initial Facility	1977	43.50	754,083	R4.0	45.0	97	R4.0097	0.16103	7.25	50.75	15.000000%	113,112	32,802,811	5,467,102	38,269,712	33,933,735
354.3	Pump Station #5 - Initial Facility	1997	23.50	705,859	R4.0	45.0	52	R4.0052	0.49388	22.23	45.73	48.611415%	343,128	16,587,587	15,691,246	32,278,932	31,763,855
354.3	Dovecote Pump Station - Initial Facility	1998	22.50	336,034	R4.0	45.0	50	R4.0050	0.51202	23.04	45.54	50.592865%	170,009	7,560,765	7,742,223	15,302,988	15,121,530
354.3	Booster Pump Station #1 - Initial Facility	2001	19.50	81,339	R4.0	45.0	43	R4.0043	0.57696	25.96	45.46	57.105147%	35,028	1,196,111	1,592,360	2,788,471	2,760,255
354.3	Booster Pump Station #2 - Initial Facility	2001	19.50	81,339	R4.0	45.0	43	R4.0043	0.57696	25.96	45.46	57.105147%	35,028	1,196,111	1,592,360	2,788,471	2,760,255
354.3	Pump Station #4 - Initial Facility	2006	14.50	686,580	R4.0	45.0	32	R4.0032	0.68258	30.72	45.22	67.934542%	462,836	9,865,410	20,477,338	30,142,748	29,996,100
354.3	Pump Station #5 - Building Improvements	2011	9.50	2,155	R4.0	45.0	21	R4.0021	0.79078	35.59	45.09	78.931027%	1,701	20,473	76,896	97,189	96,975
354.3	Pump Station #3 - Pump Upgrades and Station Improvements	2014	6.50	797,282	R4.0	45.0	14	R4.0014	0.86031	38.71	45.21	85.622650%	682,637	5,182,203	30,862,012	36,044,215	35,876,790
354.3	Pump Station #1 - Pump Upgrades	2015	5.50	40,498	R4.0	45.0	12	R4.0012	0.88023	39.61	45.11	87.807581%	35,556	222,728	1,604,047	1,826,775	1,822,320
354.3	Pump Station #2 - Pump Upgrades	2015	5.50	51,331	R4.0	45.0	12	R4.0012	0.88023	39.61	45.11	87.807581%	45,073	282,321	2,033,221	2,315,541	2,309,895
354.3	Pump Station #5 - Pump Upgrades	2019	1.50	90,748	R4.0	45.0	3	R4.0003	0.97003	43.65	45.15	96.677741%	78,065	121,122	3,524,850	3,645,772	3,633,860
				5,668,392									2,218,462	140,442,764	101,897,459	242,640,218	227,942,646
354.4	STRUCTURES AND IMPROVEMENTS - TREATMENT PLANT																
354.4	Initial facility cost including pumps, building, treatment structures, fencing, property, etc.	1998	22.50	3,275,059	R4.0	55.0	41	R4.0041	0.59569	32.77	55.27	59.290754%	1,941,807	73,688,828	107,323,683	181,012,511	180,128,245
				3,275,059									1,941,807	73,688,828	107,323,683	181,012,511	180,128,245
355.3	POWER GENERATION - PUMPING																
355.3	Pump Station #3 Generator	2010	10.50	401,787	R3.0	35.0	30	R3.0030	0.71294	24.95	35.45	70.380818%	282,781	4,218,764	10,024,586	14,243,349	14,062,545

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Willistown Township, Pennsylvania **Willistown Wastewater Collection System** **Wastewater Collection System and Treatment** **Investor-Owned Utility** **As of January 20, 2021**																	
Replacement Cost New less Depreciation (RCNLD)																	
(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)
Account	Description	Placement Year	Age at January 20, 2021 Appraisal Date	Replacement Cost New (COR)	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Age as % of NSL	Iowa Lookup	Iowa Condition Percent of Percent New	Normal Remaining Life	Total Life Expectancy	Condition	Preliminary Cost Approach (COR less Normal Depreciation)	COR Weighted Age	COR Weighted Normal Remaining Life	COR Weighted Total Life Expectancy	COR Weighted Normal Service Life (NSL)
			years	COR $s		years	% of NSL	Lookup	%	years	years	% of COR	CORLD $s	COR $s * Years	COR $s * Years	COR $s * Years	COR $s * Years
Input	Input	Input	Calculation	Calculation	Input	Input	Calculation	Calculation	Lookup Lookup Iowa Curves Life Tables @ col (28)	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation
Eng Assmnt	Eng Assmnt	Eng Assmnt	2021-((20)+0.5)	Col (16)	AUS Input	AUS Input	Col (21) / (24)	Col (23) & (25)	Iowa Curves Life Tables @ col (28)	Col (24) * (27)	Col (21) + (28)	Col (28) / (29)	Col (22) * (30)	Col (22) * (21)	Col (22) * (28)	Col (22) * (29)	Col (22) * (24)
Account	Description	Year1	Age	RCN	Iowa	NL	Age%	IowaLookup	IowaCondition	Rem Life	Total Life	Condition	CORLD	COR * Age	COR * RL	COR * TL	COR * NL
				401,787									**282,781**	**4,218,764**	**10,024,586**	**14,243,349**	**14,062,545**
360.21	COLLECTION SEWERS - FORCE/PRESSURE MAINS																
360.21	DIP - 4-Inch	1977	43.50	101,358	R3.0	75.0	58	R3.0058	0.47316	35.49	78.99	44.929736%	45,540	4,409,073	3,597,195	8,006,268	7,601,850
360.21	DIP - 8-Inch	1977	43.50	373,120	R3.0	75.0	58	R3.0058	0.47316	35.49	78.99	44.929736%	167,642	16,230,720	13,242,029	29,472,748	27,984,000
360.21	DIP - 14-Inch	1977	43.50	1,860,050	R3.0	75.0	58	R3.0058	0.47316	35.49	78.99	44.929736%	844,702	81,782,175	66,722,975	148,505,150	141,003,750
360.21	PVC - 1.5-Inch	1993	27.50	128,810	R3.0	75.0	37	R3.0037	0.84975	48.73	76.23	63.924964%	81,083	3,487,275	6,179,451	9,666,726	9,510,750
360.21	PVC - 2-Inch	1993	27.50	2,866,567	R3.0	75.0	37	R3.0037	0.84975	48.73	76.23	63.924964%	1,831,813	78,803,093	139,639,080	218,442,172	214,917,525
360.21	PVC - 2.5-Inch	1993	27.50	257,094	R3.0	75.0	37	R3.0037	0.84975	48.73	76.23	63.924964%	164,347	7,070,085	12,526,191	19,596,276	19,282,050
360.21	PVC - 2-Inch	1998	24.50	260,854	R3.0	75.0	33	R3.0033	0.86563	51.42	75.92	67.729188%	179,674	6,390,923	13,413,113	19,804,036	19,564,050
360.21	PVC - 2-Inch	1997	23.50	125,989	R3.0	75.0	31	R3.0031	0.70380	52.79	76.29	69.196487%	87,180	2,960,742	6,650,959	9,611,701	9,449,175
360.21	PVC - 1.5-Inch	1998	22.50	421,293	R3.0	75.0	30	R3.0030	0.71294	53.47	75.97	70.383046%	296,519	9,479,093	22,526,537	32,005,629	31,596,975
360.21	PVC - 2-Inch	1998	22.50	1,841,877	R3.0	75.0	30	R3.0030	0.71294	53.47	75.97	70.383046%	1,155,603	36,942,233	87,791,163	124,733,396	123,140,775
360.21	PVC - 2.5-Inch	1998	22.50	183,120	R3.0	75.0	30	R3.0030	0.71294	53.47	75.97	70.383046%	128,885	4,120,200	9,791,426	13,911,626	13,734,000
360.21	PVC - 3-Inch	1998	22.50	540,113	R3.0	75.0	30	R3.0030	0.71294	53.47	75.97	70.383046%	380,148	12,152,543	28,879,842	41,032,385	40,506,675
360.21	PVC - 4-Inch	1998	22.50	764,852	R3.0	75.0	30	R3.0030	0.71294	53.47	75.97	70.383046%	531,147	16,979,670	40,351,242	57,330,912	56,598,900
360.21	PVC - 6-Inch	1998	22.50	479,359	R3.0	75.0	30	R3.0030	0.71294	53.47	75.97	70.383046%	333,164	10,650,578	25,310,508	35,961,083	35,501,925
360.21	PVC - 4-Inch	1999	21.50	285,731	R3.0	75.0	29	R3.0029	0.72212	54.16	75.66	71.583399%	204,536	6,143,217	15,475,191	21,618,407	21,429,825
360.21	PVC - 2-Inch	2001	19.50	103,274	R3.0	75.0	26	R3.0026	0.74986	56.24	75.74	74.254027%	76,685	2,013,843	5,008,130	7,021,973	7,746,550
360.21	HDPE - 6-Inch	2006	14.50	3,669,240	R3.0	75.0	19	R3.0019	0.81568	61.18	75.68	80.840361%	2,962,396	53,493,960	225,707,703	279,201,663	276,893,000
360.21	HDPE - 4-Inch	2009	11.50	774,216	R3.0	75.0	15	R3.0015	0.85389	64.04	75.54	84.776277%	656,352	8,903,484	49,580,793	58,484,277	58,066,200
			34.51	**14,687,717**									**10,144,396**	**362,612,927**	**773,196,526**	**1,135,809,453**	**1,114,329,775**
361.21	COLLECTION SEWERS - GRAVITY MAINS																
361.21	VP - 6-Inch	1977	43.50	6,679,210	R2.5	60.0	54	R2.5054	0.52940	42.35	85.85	49.330227%	3,294,869	290,545,635	282,864,544	573,410,179	534,336,800
361.21	CIP - 8-Inch	1977	43.50	53,834	R2.5	60.0	54	R2.5054	0.52940	42.35	85.85	49.330227%	26,556	2,341,779	2,279,870	4,621,649	4,306,720
361.21	ACP - 8-Inch	1977	43.50	3,079,737	R2.5	60.0	54	R2.5054	0.52940	42.35	85.85	49.330227%	1,519,241	133,968,569	130,426,862	264,395,431	246,378,960
361.21	VP - 10-Inch	1977	43.50	194,851	R2.5	60.0	54	R2.5054	0.52940	42.35	85.85	49.330227%	96,120	8,476,019	8,251,940	16,727,956	15,588,080
361.21	ACP - 10-Inch	1977	43.50	501,695	R2.5	60.0	54	R2.5054	0.52940	42.35	85.85	49.330227%	247,487	21,823,733	21,246,783	43,070,516	40,135,800
361.21	VP - 12-Inch	1977	43.50	56,483	R2.5	60.0	54	R2.5054	0.52940	42.35	85.85	49.330227%	27,868	2,457,448	2,392,479	4,849,924	4,519,440
361.21	ACP - 12-Inch	1977	43.50	298,043	R2.5	60.0	54	R2.5054	0.52940	42.35	85.85	49.330227%	147,025	12,964,871	12,622,121	25,586,992	23,843,440
361.21	VP - 15-Inch	1977	43.50	42,739	R2.5	60.0	54	R2.5054	0.52940	42.35	85.85	49.330227%	21,083	1,859,147	1,809,397	3,669,143	3,419,126
361.21	RCP - 15-Inch	1977	43.50	205,151	R2.5	60.0	54	R2.5054	0.52940	42.35	85.85	49.330227%	101,201	8,924,089	8,688,145	17,612,213	16,412,080
361.21	ACP - 15-Inch	1977	43.50	323,672	R2.5	60.0	54	R2.5054	0.52940	42.35	85.85	49.330227%	159,686	14,079,732	13,707,509	27,787,241	25,893,760
361.21	DIP - 16-Inch	1977	43.50	38,157	R2.5	60.0	54	R2.5054	0.52940	42.35	85.85	49.330227%	18,823	1,659,830	1,615,948	3,275,778	3,052,560
361.21	RCP - 18-Inch	1977	43.50	566,268	R2.5	60.0	54	R2.5054	0.52940	42.35	85.85	49.330227%	279,341	24,632,558	23,981,450	48,614,108	45,301,440
361.21	DIP - 18-Inch	1977	43.50	15,118	R2.5	60.0	54	R2.5054	0.52940	42.35	85.85	49.330227%	7,456	657,633	640,247	1,297,880	1,209,440
361.21	Unknown - 8-Inch	1978	42.50	362,829	R2.5	60.0	53	R2.5053	0.53711	42.97	85.47	50.274950%	182,412	15,420,233	15,590,782	31,010,995	29,026,320
361.21	ACP - 8-Inch	1980	40.50	215,957	R2.5	60.0	51	R2.5051	0.55289	44.22	84.72	52.195467%	112,720	8,748,259	9,549,619	18,295,877	17,276,560
361.21	PVC - 8-Inch	1987	33.50	382,403	R2.5	60.0	42	R2.5042	0.62498	50.00	83.50	59.880240%	228,984	12,810,501	19,120,150	31,930,851	30,582,240
361.21	PVC - 8-Inch	1989	31.50	336,544	R2.5	60.0	39	R2.5039	0.64984	51.99	83.49	62.270931%	210,815	10,964,136	17,600,903	28,265,039	27,083,520
361.21	PVC - 8-Inch	1998	22.50	426,934	R2.5	60.0	28	R2.5028	0.74396	59.52	82.02	72.567666%	309,816	9,606,015	25,411,112	35,017,127	34,154,720
361.21	DIP - 8-Inch	1998	22.50	812,267	R2.5	60.0	28	R2.5028	0.74396	59.52	82.02	72.567666%	589,443	18,276,008	48,340,132	66,622,139	64,981,360
361.21	PVC - 8-Inch	2009	11.50	35,336	R2.5	60.0	14	R2.5014	0.88951	69.56	81.06	85.812978%	30,323	406,364	2,457,972	2,864,336	2,826,880
361.21	PVC - 8-Inch	2013	7.50	427,092	R2.5	60.0	9	R2.5009	0.91563	73.25	80.75	90.712074%	387,424	3,203,190	31,264,489	34,467,679	34,167,360
361.21	PVC - 8-Inch	2017	3.50	53,841	R2.5	60.0	4	R2.5004	0.96231	76.98	80.48	95.651093%	51,500	188,444	4,144,880	4,333,124	4,307,280
			39.95	**16,110,171**									**8,050,177**	**663,712,282**	**684,033,715**	**1,287,746,969**	**1,268,813,680**
361.22	COLLECTION SEWERS - GRAVITY MAINS - REPAIRS/UPGRADES																
361.22	Fox Ridge Sewer Upgrades	2009	11.50	84,326	R2.5	60.0	19	R2.5019	0.82402	49.44	80.94	61.128979%	68,413	969,749	4,169,077	5,138,826	5,059,560
361.22	Long Lane Emergency Sewer Repair	2019	1.50	391,191	R2.5	60.0	3	R2.5003	0.97170	58.30	59.80	97.491639%	381,379	586,787	22,808,435	23,393,222	23,471,460
361.22	McKinley Avenue Emergency Sewer Repair	2019	1.50	357,826	R2.5	60.0	3	R2.5003	0.97170	58.30	59.80	97.491639%	348,850	536,739	20,861,256	21,397,995	21,489,560
361.22	Jacqueline Drive Emergency Sewer Repair	2020	0.50	42,911	R2.5	60.0	1	R2.5001	0.99055	59.43	59.93	99.165693%	42,553	21,456	2,550,201	2,571,656	2,574,860
361.22	Martin Drive & Eisenhower Drive Sewer Replacement	2020	0.50	220,390	R2.5	60.0	1	R2.5001	0.99055	59.43	59.93	99.165693%	218,551	110,195	13,097,778	13,207,973	13,223,400
				1,096,644									**1,059,746**	**2,224,926**	**63,484,747**	**65,709,672**	**65,798,640**
361.23	COLLECTION SEWERS - GRAVITY - MANHOLES																

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Replacement Cost New less Depreciation (RCNLD)

(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)
Account	Description	Placement Year	Age at January 20, 2021 Appraisal Date	Replacement Cost New (COR)	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Age as % of NSL	Iowa Lookup	Iowa Condition Percent of Percent New	Normal Remaining Life	Total Life Expectancy	Condition	Preliminary Cost Approach (COR less Normal Depreciation)	COR Weighted Age	COR Weighted Normal Remaining Life	COR Weighted Total Life Expectancy	COR Weighted Normal Service Life (NSL)
			years	COR $s		years	% of NSL	Lookup	%	years	years	% of COR	CORLD $s	COR $s * Years	COR $s * Years	COR $s * Years	COR $s * Years
Input	Input	Input	Calculation	Calculation	Input	Input	Calculation	Calculation	Lookup Iowa Curves Life Tables @ col (26)	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation
Eng Assmnt	Eng Assmnt	Eng Assmnt	2021-[(20)+0.5]	Col (16)	AUS Input	AUS Input	Col (21) / (24)	Col (23) & (25)		Col (24) * (27)	Col (21) + (28)	Col (28) / (29)	Col (22) * (30)	Col (22) * (21)	Col (22) * (28)	Col (22) * (29)	Col (22) * (24)
Account	Description	Year1	Age	RCN	Iowa	NL	AgeP	IowaLookup	IowaCondition	Rem Life	Total Life	Condition	CORLD	COR * Age	COR * RL	COR * TL	COR * NL
361.23	Initial Installation - Original System	1977	43.50	3,609,918	R2.5	60.0	54	R2.5054	0.52940	42.35	85.85	49.330227%	1,780,781	157,031,477	152,880,070	309,911,546	286,793,520
361.23	Initial Installation - Weatherstone	1978	42.50	237,815	R2.5	80.0	53	R2.5053	0.53711	42.97	85.47	50.274950%	119,561	10,107,136	10,218,911	20,326,048	19,025,200
361.23	Initial Installation - Rustmont	1980	40.50	91,257	R2.5	80.0	51	R2.5051	0.55289	44.22	84.72	52.196457%	47,637	3,696,314	4,035,827	7,732,140	7,301,360
361.23	Initial Installation - Brampton Chase	1987	33.50	180,480	R2.5	80.0	42	R2.5042	0.62498	50.00	83.50	59.880240%	108,072	6,048,080	9,024,000	15,070,080	14,438,400
361.23	Initial Installation - Fox Ridge	1989	31.50	101,589	R2.5	80.0	39	R2.5039	0.64984	51.99	83.49	62.270931%	63,509	3,212,654	5,302,408	8,515,062	8,159,120
361.23	Initial Installation - Pump Station 5	1998	22.50	40,660	R2.5	80.0	28	R2.5028	0.74396	59.52	82.02	72.567666%	29,506	914,850	2,420,063	3,334,933	3,252,800
361.23	Initial Installation - Quaker Farms	1998	22.50	338,836	R2.5	80.0	28	R2.5028	0.74396	59.52	82.02	72.567666%	245,885	7,623,810	20,167,519	27,791,329	27,106,880
361.23	Initial Installation - Dovecote	1998	22.50	142,311	R2.5	80.0	28	R2.5028	0.74396	59.52	82.02	72.567666%	103,272	3,201,998	8,470,351	11,672,348	11,384,880
361.23	Initial Installation - Applebrook Meadows	2013	7.50	245,921	R2.5	80.0	9	R2.5009	0.91563	73.25	80.75	90.712074%	223,080	1,844,408	16,013,713	19,858,121	19,673,680
	TOTAL COLLECTION SEWERS - GRAVITY - MANHOLES			**4,952,196**									**2,721,363**	**193,678,729**	**230,532,882**	**424,211,667**	**399,135,840**
363.2	SERVICE TO CUSTOMERS																
363.2	PVC - 4-inch	1977	43.50	1,436,164	R3.0	70.0	62	R3.0062	0.44205	30.94	74.44	41.563675%	596,831	62,474,004	44,435,533	106,909,537	100,532,880
363.2	PVC - 4-inch	1978	42.50	131,106	R3.0	70.0	61	R3.0061	0.44974	31.48	73.98	42.552041%	55,788	5,572,005	4,127,217	9,699,222	9,177,420
363.2	PVC - 4-inch	1980	40.50	87,711	R3.0	70.0	58	R3.0058	0.47318	33.12	73.62	44.987775%	39,459	3,552,296	2,904,988	6,457,284	6,139,770
363.2	PVC - 4-inch	1987	33.50	31,401	R3.0	70.0	48	R3.0048	0.55461	38.82	72.32	53.676097%	16,855	1,051,934	1,216,967	2,270,920	2,198,070
363.2	PVC - 4-inch	1988	31.50	27,226	R3.0	70.0	45	R3.0045	0.58001	40.60	72.10	56.310680%	15,331	857,619	1,105,376	1,962,995	1,905,820
363.2	PVC - 4-inch	1993	27.50	138,586	R3.0	70.0	39	R3.0039	0.63205	44.24	71.74	61.667131%	85,847	3,819,365	6,144,317	9,963,682	9,722,020
363.2	PVC - 4-inch	1996	24.50	16,372	R3.0	70.0	35	R3.0035	0.66761	46.73	71.23	65.604380%	10,065	376,614	718,334	1,094,948	1,076,040
363.2	PVC - 4-inch	1997	23.50	3,167	R3.0	70.0	34	R3.0034	0.67660	47.36	70.86	66.836015%	2,117	74,425	149,889	224,414	221,890
363.2	PVC - 4-inch	1998	22.50	223,712	R3.0	70.0	32	R3.0032	0.69469	48.63	71.13	68.367777%	152,947	5,033,520	10,579,115	15,612,635	15,659,840
363.2	PVC - 4-inch	2001	19.50	173,423	R3.0	70.0	28	R3.0028	0.73133	51.19	70.69	72.414769%	125,584	3,381,749	8,877,523	12,259,272	12,139,610
363.2	PVC - 4-inch	2013	7.50	126,171	R3.0	70.0	11	R3.0011	0.89247	62.47	69.97	89.261120%	112,647	946,283	7,881,902	8,828,185	8,831,970
	TOTAL SERVICE TO CUSTOMERS			**2,394,359**									**1,213,391**	**87,139,814**	**88,443,281**	**175,583,094**	**167,805,130**
364.3	FLOW MEASURING DEVICES																
364.3	Cedar Hollow Flow Meter	1977	43.50	44,155	S2.0	30.0	145	S2.0145	0.15000	4.50	48.00	15.000000%	6,623	1,920,743	198,698	2,119,440	1,324,650
364.3	Pheasant Run Flow Meter	1978	42.50	45,770	S2.0	30.0	142	S2.0142	0.15000	4.50	47.00	15.000000%	6,866	1,945,225	205,965	2,151,190	1,373,100
364.3	Flow Meter	2007	13.50	3,969	S2.0	30.0	45	S2.0045	0.57419	17.23	30.73	56.068868%	2,237	53,852	68,730	122,582	119,070
364.3	Counter	2008	12.50	2,283	S2.0	30.0	42	S2.0042	0.59897	17.97	30.47	58.976042%	1,346	28,538	41,026	69,563	68,490
	TOTAL FLOW MEASURING DEVICES			**96,197**									**17,072**	**3,948,358**	**514,419**	**4,462,775**	**2,885,310**
390.7	EQUIPMENT - GENERAL																
390.7	ICOM3 Software	2015	5.50	39,681	R3.0	12.0	46	R3.0046	0.57150	6.86	12.36	55.501618%	22,024	218,246	272,212	490,457	476,172
390.7	Video Pipe Inspection Trailer	2015	5.50	77,253	R3.0	12.0	46	R3.0046	0.57150	6.86	12.36	55.501618%	42,877	424,892	529,956	954,847	927,036
390.7	Jet Truck	2015	5.50	216,175	R3.0	12.0	46	R3.0046	0.57150	6.86	12.36	55.501618%	119,981	1,188,963	1,482,961	2,671,923	2,594,100
	TOTAL EQUIPMENT - GENERAL			**333,109**									**184,882**	**1,832,101**	**2,285,129**	**4,117,227**	**3,997,308**
				46,898,907									**30,113,231**	**1,511,095,990**	**2,081,435,427**	**3,534,334,871**	**3,384,688,713**

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Cost Approach

Replacement Cost New less Depreciation to Fair Market Value

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Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Fair Market Value

(36)	(37)	(39)	(40)	(41)
Account	Description	Preliminary Cost Approach	Economic Obsolescence	Fair Market Value
		CORLD $s	% of Preliminary Cost Approach	Appraisal Date Value $s
Input	Input	Calculation	Input	Calculation
Eng Assmnt	Eng Assmnt	Col (31)	AUS Economic Obsolescence Analysis	(39) * [1.00-Col (40)]
Account	Description	Prelim CORLD	EO%	FMV
353.20	Land & Land Rights - Collection System	223,776	38.57%	137,463
353.30	Land & Land Rights - Pumping	109,988	38.57%	67,563
353.40	Land & Land Rights - Treatment	1,945,510	38.57%	1,195,128
354.30	Stuctures & Improvements - Pumping	2,218,402	38.57%	1,362,766
354.40	Stuctures & Improvements - Treatment	1,941,807	38.57%	1,192,852
355.30	Generating Equipment - Pumping	282,781	38.57%	173,712
360.21	Collection Sewers - Force - Mains	10,144,396	38.57%	6,231,703
361.21	Collection Sewers - Gravity - Mains	8,050,177	38.57%	4,945,223
361.22	Collection Sewers - Gravity - Mains Relining	1,059,746	38.57%	651,002
361.23	Collection Sewers - Gravity - Manholes	2,721,303	38.57%	1,671,697
363.20	Service Laterals	1,213,391	38.57%	745,386
	Grand Total	30,113,231	38.57%	18,498,555

36	37	38	39	40	41

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Fair Market Value

(36)	(37)	(38)	(39)	(40)	(41)
Account	Description	Placement Year	Preliminary Cost Approach	Economic Obsolescence	Fair Market Value
			CORLD $s	% of Preliminary Cost Approach	Appraisal Date Value $s
Input	Input	Input	Calculation	Input	Calculation
Eng Assmnt	Eng Assmnt	Eng Assmnt	Col (31)	AUS Economic Obsolescence Analysis	(39) * [1.00-Col (40)]
Account	Description	Year	Prelim CORLD	EO%	FMV
353.4	LAND AND LAND RIGHTS - TREATMENT				
353.4	Penn's Preserve (UPIs: 54-8-14.1,	2001	6	38.57%	4
353.4	Penn's Preserve (UPI: 54-8-14.2)	2002	1	38.57%	1
353.4	Penn's Preserve (UPIs: 54-8-14.2E	2003	3	38.57%	2
353.4	Penn's Preserve (UPI: 54-8-14.2A	2006	1,945,500	38.57%	1,195,121
			1,945,510		**1,195,128**
354.3	STRUCTURES AND IMPROVEMENTS - PUMPING				
354.3	Pump Station #1 - Initial Facility	1977	113,112	38.57%	69,485
354.3	Pump Station #2 - Initial Facility	1977	113,112	38.57%	69,485
354.3	Pump Station #3 - Initial Facility	1977	113,112	38.57%	69,485
354.3	Pump Station #5 - Initial Facility	1997	343,128	38.57%	210,784
354.3	Dovecote Pump Station - Initial Fa	1998	170,009	38.57%	104,437
354.3	Booster Pump Station #1 - Initial F.	2001	35,028	38.57%	21,518
354.3	Booster Pump Station #2 - Initial F.	2001	35,028	38.57%	21,518
354.3	Pump Station #4 - Initial Facility	2006	452,838	38.57%	278,178
354.3	Pump Station #5 - Building Improv	2011	1,701	38.57%	1,045
354.3	Pump Station #3 - Pump Upgrades	2014	682,637	38.57%	419,344
354.3	Pump Station #1 - Pump Upgrades	2015	35,559	38.57%	21,844
354.3	Pump Station #2 - Pump Upgrades	2015	45,073	38.57%	27,688
354.3	Pump Station #5 - Pump Upgrades	2019	78,065	38.57%	47,955
			2,218,402		**1,362,766**
354.4	STRUCTURES AND IMPROVEMENTS - TREATMENT PLANT				

36	37	38	39	40	41

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Fair Market Value

(36)	(37)	(38)	(39)	(40)	(41)

Account	Description	Placement Year	Preliminary Cost Approach	Economic Obsolescence	Fair Market Value
			CORLD $s	% of Preliminary Cost Approach	Appraisal Date Value $s
Input	Input	Input	Calculation	Input	Calculation
Eng Assmnt	Eng Assmnt	Eng Assmnt	Col (31)	AUS Economic Obsolescence Analysis	(39) * [1.00-Col (40)]
Account	Description	Year	Prelim CORLD	EO%	FMV
354.4	Initial facility cost including pumps,	1998	1,941,807	38.57%	1,192,852
			1,941,807		**1,192,852**
355.3	POWER GENERATION - PUMPING				
355.3	Pump Station #3 Generator	2010	282,781	38.57%	173,712
			282,781		**173,712**
360.21	COLLECTION SEWERS - FORCE/PRESSURE MAINS				
360.21	DIP - 4-inch	1977	45,540	38.57%	27,975
360.21	DIP - 8-inch	1977	167,642	38.57%	102,982
360.21	DIP - 14-inch	1977	844,702	38.57%	518,900
360.21	PVC - 1.5-inch	1993	81,063	38.57%	49,797
360.21	PVC - 2-inch	1993	1,831,813	38.57%	1,125,283
360.21	PVC - 2.5-inch	1993	164,347	38.57%	100,958
360.21	PVC - 2-inch	1996	176,674	38.57%	108,531
360.21	PVC - 2-inch	1997	87,180	38.57%	53,555
360.21	PVC - 1.5-inch	1998	296,519	38.57%	182,152
360.21	PVC - 2-inch	1998	1,155,603	38.57%	709,887
360.21	PVC - 2.5-inch	1998	128,885	38.57%	79,174
360.21	PVC - 3-inch	1998	380,148	38.57%	233,525
360.21	PVC - 4-inch	1998	531,147	38.57%	326,284
360.21	PVC - 6-inch	1998	333,164	38.57%	204,663
360.21	PVC - 4-inch	1999	204,536	38.57%	125,646
360.21	PVC - 2-inch	2001	76,685	38.57%	47,108
360.21	HDPE - 6-inch	2006	2,982,396	38.57%	1,832,086

36	37	38	39	40	41

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Fair Market Value

(36)	(37)	(38)	(39)	(40)	(41)

Account	Description	Placement Year	Preliminary Cost Approach	Economic Obsolescence	Fair Market Value
			CORLD $s	% of Preliminary Cost Approach	Appraisal Date Value $s
Input	Input	Input	Calculation	Input	Calculation
Eng Assmnt	Eng Assmnt	Eng Assmnt	Col (31)	AUS Economic Obsolescence Analysis	(39) * [1.00-Col (40)]
Account	Description	Year	Prelim CORLD	EO%	FMV
360.21	HDPE - 4-inch	2009	656,352	38.57%	403,197
			10,144,396		**6,231,703**
361.21	COLLECTION SEWERS - GRAVITY MAINS				
361.21	VP - 8-inch	1977	3,294,869	38.57%	2,024,038
361.21	CIP - 8-inch	1977	26,556	38.57%	16,313
361.21	ACP - 8-inch	1977	1,519,241	38.57%	933,270
361.21	VP - 10-inch	1977	96,120	38.57%	59,047
361.21	ACP - 10-inch	1977	247,487	38.57%	152,031
361.21	VP - 12-inch	1977	27,868	38.57%	17,119
361.21	ACP - 12-inch	1977	147,025	38.57%	90,317
361.21	VP - 15-inch	1977	21,083	38.57%	12,951
361.21	RCP - 15-inch	1977	101,201	38.57%	62,168
361.21	ACP - 15-inch	1977	159,668	38.57%	98,084
361.21	DIP - 16-inch	1977	18,823	38.57%	11,563
361.21	RCP - 18-inch	1977	279,341	38.57%	171,599
361.21	DIP - 18-inch	1977	7,458	38.57%	4,581
361.21	Unknown - 8-inch	1978	182,412	38.57%	112,056
361.21	ACP - 8-inch	1980	112,720	38.57%	69,244
361.21	PVC - 8-inch	1987	228,984	38.57%	140,665
361.21	PVC - 8-inch	1989	210,815	38.57%	129,504
361.21	PVC - 8-inch	1998	309,816	38.57%	190,320
361.21	DIP - 8-inch	1998	589,443	38.57%	362,095
361.21	PVC - 8-inch	2009	30,323	38.57%	18,627
361.21	PVC - 8-inch	2013	387,424	38.57%	237,995
361.21	PVC - 6-inch	2017	51,500	38.57%	31,636

36	37	38	39	40	41

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Fair Market Value

(36)	(37)	(38)	(39)	(40)	(41)
Account	Description	Placement Year	Preliminary Cost Approach	Economic Obsolescence	Fair Market Value
			CORLD $s	% of Preliminary Cost Approach	Appraisal Date Value $s
Input	Input	Input	Calculation	Input	Calculation
Eng Assmnt	Eng Assmnt	Eng Assmnt	Col (31)	AUS Economic Obsolescence Analysis	(39) * [1.00-Col (40)]
Account	Description	Year	Prelim CORLD	EO%	FMV
			8,050,177		**4,945,223**
361.22	COLLECTION SEWERS - GRAVITY MAINS - REPAIRS/UPGRADES				
361.22	Fox Ridge Sewer Upgrades	2009	68,413	38.57%	42,026
361.22	Long Lane Emergency Sewer Rep	2019	381,379	38.57%	234,281
361.22	McKinley Avenue Emergency Sew	2019	348,850	38.57%	214,299
361.22	Jacqueline Drive Emergency Sewe	2020	42,553	38.57%	26,140
361.22	Marlin Drive & Eisenhower Drive S	2020	218,551	38.57%	134,256
			1,059,746		**651,002**
361.23	COLLECTION SEWERS - GRAVITY - MANHOLES				
361.23	Initial Installation - Original System	1977	1,780,781	38.57%	1,093,934
361.23	Initial Installation - Weatherstone	1978	119,561	38.57%	73,446
361.23	Initial Installation - Rustmont	1980	47,637	38.57%	29,263
361.23	Initial Installation - Brampton Chas	1987	108,072	38.57%	66,389
361.23	Initial Installation - Fox Ridge	1989	63,509	38.57%	39,014
361.23	Initial Installation - Pump Station 5	1998	29,506	38.57%	18,126
361.23	Initial Installation - Quaker Farms	1998	245,885	38.57%	151,047
361.23	Initial Installation - Dovecote	1998	103,272	38.57%	63,440
361.23	Initial Installation - Applebrook Mea	2013	223,080	38.57%	137,038
	TOTAL COLLECTION SEWERS - GRAVITY - M		**2,721,303**		**1,671,697**
363.2	SERVICE TO CUSTOMERS				
363.2	PVC - 4-inch	1977	596,931	38.57%	366,695
363.2	PVC - 4-inch	1978	55,788	38.57%	34,271

36	37	38	39	40	41

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Fair Market Value

(36)	(37)	(38)	(39)	(40)	(41)

Account	Description	Placement Year	Preliminary Cost Approach	Economic Obsolescence	Fair Market Value
			CORLD $s	% of Preliminary Cost Approach	Appraisal Date Value $s
Input	Input	Input	Calculation	Input	Calculation
Eng Assmnt	Eng Assmnt	Eng Assmnt	Col (31)	AUS Economic Obsolescence Analysis	(39) * [1.00-Col (40)]
Account	Description	Year	Prelim CORLD	EO%	FMV
363.2	PVC - 4-inch	1980	39,459	38.57%	24,240
363.2	PVC - 4-inch	1987	16,855	38.57%	10,354
363.2	PVC - 4-inch	1989	15,331	38.57%	9,418
363.2	PVC - 4-inch	1993	85,647	38.57%	52,613
363.2	PVC - 4-inch	1996	10,085	38.57%	6,195
363.2	PVC - 4-inch	1997	2,117	38.57%	1,300
363.2	PVC - 4-inch	1998	152,947	38.57%	93,955
363.2	PVC - 4-inch	2001	125,584	38.57%	77,146
363.2	PVC - 4-inch	2013	112,647	38.57%	69,199
	TOTAL SERVICE TO CUSTOMERS		**1,213,391**		**745,386**
364.3	FLOW MEASURING DEVICES				
364.3	Cedar Hollow Flow Meter	1977	6,623	38.57%	4,069
364.3	Pheasant Run Flow Meter	1978	6,866	38.57%	4,218
364.3	Flow Meter	2007	2,237	38.57%	1,374
364.3	Counter	2008	1,346	38.57%	827
	TOTAL FLOW MEASURING DEVICES		**17,072**		**10,488**
390.7	EQUIPMENT - GENERAL				
390.7	ICOM3 Software	2015	22,024	38.57%	13,529
390.7	Video Pipe Inspection Trailer	2015	42,877	38.57%	26,339
390.7	Jet Truck	2015	119,981	38.57%	73,704
	TOTAL EQUIPMENT - GENERAL		**184,882**		**113,572**
			30,113,231		**18,498,555**

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Original Cost less Depreciation

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Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Determination of the Depreciated Original Cost

(43)	(44)	(46)	(47)	(48)	(49)	(53)	(54)	(55)	(56)	(57)
Account	Description	Original Costs	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Age at January 20, 2021 Appraisal Date	Normal Remaining Life	Total Life Expectancy	Theoretical Reserve Percent	Theoretical Reserve	Depreciated Original Cost
Input	Input	Input	Input	Input	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation
AUS Input	Eng Assmnt	Eng Assmnt	AUS Input	AUS Input			Col (46) + (53)	Col (53) / (54)	Col (46) * (55)	Col (46) - (56)
Acct	Descrip	Original Cost	Iowa	Normal Life	age	Rem Life	Total Life	Theo%	Theo Reserve	Net Book
353.20	Land & Land Rights - Collection System	216	ZNonDep	-	-	-	-	0.00%	-	216
353.30	Land & Land Rights - Pumping	21,606	ZNonDep	-	-	-	-	0.00%	-	21,606
353.40	Land & Land Rights - Treatment	1,500,007	ZNonDep	-	-	-	-	0.00%	-	1,500,007
354.30	Stuctures & Improvements - Pumping	2,146,252	R4.0	45.00	18.73	27.63	46.36	39.00%	840,900	1,305,352
354.40	Stuctures & Improvements - Treatment	1,448,500	R4.0	55.00	22.50	32.77	55.27	41.00%	589,670	858,830
355.30	Generating Equipment - Pumping	344,586	R3.0	35.00	10.50	24.95	35.45	30.00%	102,063	242,523
360.21	Collection Sewers - Force - Mains	6,823,586	R3.0	75.00	21.16	54.93	76.09	28.00%	1,890,569	4,933,017
361.21	Collection Sewers - Gravity - Mains	3,807,421	R2.5	80.00	35.68	48.87	84.55	42.00%	1,594,598	2,212,823
361.22	Collection Sewers - Gravity - Mains Relining	956,037	R2.5	60.00	1.99	57.93	59.92	3.00%	31,579	924,458
361.23	Collection Sewers - Gravity - Manholes	1,562,321	R2.5	80.00	33.89	50.36	84.24	40.00%	622,990	939,331
363.20	Service Laterals	698,454	R3.0	70.00	30.36	42.15	72.50	41.00%	289,416	409,038
Grand Total		19,641,520		63.15	22.16	42.87	65.03	31.15%	6,117,419	13,524,101

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(4)	(4a)	(4b)	(5)	(6)	(6a)	(6b)
Account Number	Description		Iowa Survivor / Retirement Curve	Normal Service Life	Economic Obsolescence		Tax Depreciation	
				years	% of CORLD		Table	Life
353.20	Land & Land Rights - Collection System		ZNonDep	0.00	0.00%		Non-Depr	0.00
353.30	Land & Land Rights - Pumping		ZNonDep	0.00	0.00%		Non-Depr	0.00
353.40	Land & Land Rights - Treatment		ZNonDep	0.00	0.00%		Non-Depr	0.00
354.30	Stuctures & Improvements - Pumping		R4.0	55.00	0.00%		MACRS	25.00
354.40	Stuctures & Improvements - Treatment		R4.0	55.00	0.00%		MACRS	25.00
355.30	Generating Equipment - Pumping		R3.0	35.00	0.00%		MACRS	25.00
360.21	Collection Sewers - Force - Mains		R3.0	75.00	0.00%		MACRS	25.00
361.21	Collection Sewers - Gravity - Mains		R2.5	80.00	0.00%		MACRS	25.00
361.22	Collection Sewers - Gravity - Mains Relining		R2.5	60.00	0.00%		MACRS	25.00
361.23	Collection Sewers - Gravity - Manholes		R2.5	80.00	0.00%		MACRS	25.00
363.20	Service Laterals		R3.0	70.00	0.00%		MACRS	25.00
364.30	Flow Measuring Devices - Pumping		S2.0	25.00	0.00%		MACRS	25.00
390.70	Office Furniture and Equipment		R3.0	15.00	0.00%		MACRS	15.00

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Determination of the Depreciated Original Cost

(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)	(51)	(52)	(53)	(54)	(55)	(56)	(57)	(58)	(59)	(60)	(61)
Account	Description	Placement Year	Original Costs	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Age at January 20, 2021 Appraisal Date	Age as % of NSL	Iowa Lookup	Iowa Condition Percent of Percent New	Normal Remaining Life	Total Life Expectancy	Theoretical Reserve Percent	Theoretical Reserve	Depreciated Original Cost	OC Weighted Age	OC Weighted Normal Remaining Life	OC Weighted Total Life Expectancy	Normal Service Life (NSL)
Input		Input	Input	Input	Input	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation
AUS Input	Eng Assmnt	Eng Assmnt	Eng Assmnt	AUS Input	AUS Input	2021-[(43)+0.5]	Col (49) / (48)	Col (47) & (50)	Lookup Iowa Curves Life Tables @ col (51)	Col (48) * (52)	Col (48) + (53)	Col (53) / (54)	Col (48) * (55)	Col (48) - (56)	Col (48) * (49)	Col (48) * (53)	Col (48) * (54)	Col (48) * (48)
Acct	Descrip	Year	Original Cost	Iowa	Normal Life	age	AgeP	IowaLookup	Iowa Condition	Rem Life	Total Life	Theo%	Theo Reserve	Net Book	OC wtd Age	OC wtd Rem Life	OC wtd Total Life	OC wtd Normal Life
353.20	Land & Land Rights - Collection System		216	ZNonDep	-	-				-	-	0.00%	-	216	-	-	-	-
353.30	Land & Land Rights - Pumping		21,606	ZNonDep	-	-				-	-	0.00%	-	21,606	-	-	-	-
353.40	Land & Land Rights - Treatment		1,500,007	ZNonDep	-	-				-	-	0.00%	-	1,500,007	-	-	-	-
354.30	Structures & Improvements - Pumping		2,146,252	R4.0	45.00	18.73				27.63	46.36	39.00%	840,900	1,305,352	40,192,861	59,307,742	99,500,603	96,581,356
354.40	Structures & Improvements - Treatment		1,448,500	R4.0	55.00	22.50				32.77	55.27	41.00%	589,670	858,830	32,591,250	47,467,345	80,058,595	79,667,500
355.30	Generating Equipment - Pumping		344,586	R3.0	35.00	10.50				24.95	35.45	30.00%	102,063	242,523	3,618,153	8,597,421	12,215,574	12,060,510
360.21	Collection Sewers - Force - Mains		6,823,586	R3.0	75.00	21.16				54.93	76.09	28.00%	1,890,569	4,933,017	144,359,341	374,819,604	519,178,942	511,768,931
361.21	Collection Sewers - Gravity - Mains		3,807,421	R2.5	80.00	35.68				48.87	84.55	42.00%	1,594,598	2,212,823	135,849,856	186,080,154	321,930,009	304,593,714
361.22	Collection Sewers - Gravity - Mains Relining		956,037	R2.5	60.00	1.99				57.93	59.92	3.00%	31,579	924,458	1,904,170	55,379,233	57,283,403	57,362,239
361.23	Collection Sewers - Gravity - Manholes		1,562,321	R2.5	80.00	33.89				50.36	84.24	40.00%	622,990	939,331	52,939,476	78,671,800	131,611,273	124,985,643
363.20	Service Laterals		698,454	R3.0	70.00	30.36				42.15	72.50	41.00%	289,416	409,038	21,202,726	29,436,455	50,639,184	48,891,761
364.30	Flow Measuring Devices - Pumping		23,240	S2.0	30.00	37.66				6.82	44.48	77.00%	18,005	5,235	875,199	158,533	1,033,732	697,206
390.70	Office Furniture and Equipment		309,293	R3.0	12.00	5.50				6.86	12.36	44.00%	137,629	171,664	1,701,114	2,121,753	3,822,868	3,711,522
400.00	Not Used		-	R3.0	-	-				-	-	0.00%	-	-	-	-	-	-
400.00	Not Used		-	R3.0	-	-				-	-	0.00%	-	-	-	-	-	-
Grand Total	Not Used		19,641,520		63.15	22.16				42.87	65.03	0.31145	6,117,419	13,524,101	435,234,146	842,040,040	1,277,274,183	1,240,320,382
			19,641,520										6,117,419	13,524,101	435,234,146	842,040,040	1,277,274,183	1,240,320,382
			-										-	-	-	-	-	-

43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Determination of the Depreciated Original Cost

(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)	(51)	(52)	(53)	(54)	(55)	(56)	(57)	(58)	(59)	(60)	(61)
Account	Description	Placement Year	Original Costs	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Age at January 20, 2021 Appraisal Date	Age as % of NSL	Iowa Lookup	Iowa Condition Percent of Percent New	Normal Remaining Life	Total Life Expectancy	Theoretical Reserve Percent	Theoretical Reserve	Depreciated Original Cost	OC Weighted Age	OC Weighted Normal Remaining Life	OC Weighted Total Life Expectancy	Normal Service Life (NSL)
Input	Input	Input	Input	Input	Input	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation
AUS Input	Eng Assmt	Eng Assmt	Eng Assmt	AUS Input	AUS Input	2021-[(45)-0.5]	Col (49) / (48)	Col (47) & (50)	Lookup Iowa Curves Life Tables @ col (51)	Col (48) * (52)	Col (48) * (53)	Col (53) / (54)	Col (48) * (55)	Col (48) - (56)	Col (46) * (49)	Col (46) * (53)	Col (46) * (54)	Col (46) * (48)
Acct	Descrip	Year	Original Cost	Iowa	Normal Life	age	AgeP	IowaLookup	Iowa Condition	Rem Life	Total Life	Theo%	Theo Reserve	Net Book	OC wtd Age	OC wtd Rem Life	OC wtd Total Life	OC wtd Normal Life
ACCOUNT	DESCRIPTION	YEAR	ORIGINAL COST															
353.2	Fox Ridge Gravity Sewer Easements(UPI: 54-2-62.30, 54-2-62.29, 54-2-62.28, 54-2-62.27)	2012	1	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	1	-	-	-	-
353.2	Fox Ridge Gravity Sewer Easements(UPI: 54-2-62, 54-2-62.18, 54-2-62.19)	2015	1	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	1	-	-	-	-
353.2	2291 South Valley Rd (UPI: 54-4-8) Easement	2018	1	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	1	-	-	-	-
353.2	Applebrook Meadows Gravity Sewer (UPI: 54-2-95.5) Easement	2018	1	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	1	-	-	-	-
353.2	15 Long Ln (UPI: 54-3-33) Easement	2018	1	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	1	-	-	-	-
353.2	2 McKinley Ave (UPI: 54-3-50) Easement	2018	1	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	1	-	-	-	-
353.2	285 W Central Ave (UPI: 54-1K-1.7) Easement	2020	1	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	1	-	-	-	-
353.2	209 Sewer Easements	1997	209	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	209	-	-	-	-
			216										-	216	-	-	-	-
353.3	LAND AND LAND RIGHTS - PUMPING																	
353.3	Pump Station #1 Property (UPI: 54-1-33.3A)	1975	8,601	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	8,601	-	-	-	-
353.3	Pump Station #2 Property (UPI: 54-3-343.1)	1976	5,500	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	5,500	-	-	-	-
353.3	Pump Station #3 Property (UPI: 54-3-212.1)	1975	7,500	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	7,500	-	-	-	-
353.3	Booster Pump Station #1 Property (UPI: 54-3-315)	1978	1	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	1	-	-	-	-
353.3	Penn's Preserve/PS #5 Easements(UPI: 54-8-14, 54-8-14.2, 54-8-14.2A, 54-8-14.2B)	1999	1	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	1	-	-	-	-
353.3	Booster Pump Station #2 Easement (UPI: 54-3-300.17)	2001	1	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	1	-	-	-	-
353.3	Pump Station #4 Force Main Easements(UPI: 54-2-95, 54-2-95.1, 54-2-95.2, 54-2-95.5, 54-2-115)	2006	1	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	1	-	-	-	-
353.3	Dowcole Pump Station Easements(UPI: 54-3-449, 54-3-450, 54-3-451, 54-3-452, 54-3-460, 54-3-481)	2018	1	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	1	-	-	-	-
			21,606										-	21,606	-	-	-	-
353.4	LAND AND LAND RIGHTS - TREATMENT																	
353.4	Penn's Preserve (UPIs: 54-8-14.1, 54-8-14.3, 54-8-14.4, 54-8-14.5)	2001	4	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	4	-	-	-	-
353.4	Penn's Preserve (UPI: 54-8-14.2)	2002	1	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	1	-	-	-	-
353.4	Penn's Preserve (UPIs: 54-8-14.2B, 54-8-2679)	2003	2	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	2	-	-	-	-
353.4	Penn's Preserve (UPI: 54-8-14.2A)	2006	1,500,000	ZNonDep	0	0	0	ZNonDep000	0.00000	0	0	0	-	1,500,000	-	-	-	-
			1,500,007										-	1,500,007	-	-	-	-
354.3	STRUCTURES AND IMPROVEMENTS - PUMPING																	
354.3	Pump Station #1 - Initial Facility	1977	135,578	R4.0	45	43.50	97	R4.0097	0.16103	7.25	50.75	0.85000	115,241	20,337	5,897,629	982,938	6,880,567	6,100,996
354.3	Pump Station #2 - Initial Facility	1977	135,578	R4.0	45	43.50	97	R4.0097	0.16103	7.25	50.75	0.85000	115,241	20,337	5,897,629	982,938	6,880,567	6,100,996
354.3	Pump Station #3 - Initial Facility	1977	135,578	R4.0	45	43.50	97	R4.0097	0.16103	7.25	50.75	0.85000	115,241	20,337	5,897,629	982,938	6,880,567	6,100,996
354.3	Pump Station #5 - Initial Facility	1967	306,629	R4.0	45	23.50	52	R4.0052	0.49389	22.23	45.73	0.51369	157,573	148,056	7,205,775	6,816,357	14,022,132	13,796,293
354.3	Dowcole Pump Station - Initial Facility	1998	148,822	R4.0	45	22.50	50	R4.0050	0.51202	23.04	45.54	0.49407	73,430	75,192	3,343,995	3,424,251	6,768,246	6,687,990
354.3	Booster Pump Station #1 - Initial Facility	2001	30,426	R4.0	45	19.50	43	R4.0043	0.57896	25.96	45.46	0.42895	13,051	17,375	593,308	789,860	1,383,168	1,369,172
354.3	Booster Pump Station #2 - Initial Facility	2001	30,426	R4.0	45	19.50	43	R4.0043	0.57896	25.96	45.46	0.42895	13,051	17,375	593,308	789,860	1,383,168	1,369,172
354.3	Pump Station #4 - Initial Facility	2006	407,944	R4.0	45	14.50	32	R4.0032	0.68258	30.72	45.22	0.32065	130,807	277,137	5,915,182	12,532,026	18,447,208	18,357,461
354.3	Pump Station #5 - Building Improvements	2011	1,650	R4.0	45	9.50	21	R4.0021	0.79078	35.59	45.09	0.21069	348	1,302	15,675	58,724	74,399	74,250
354.3	Pump Station #3 - Pump Upgrades and Station Improvements	2014	659,985	R4.0	45	6.50	14	R4.0014	0.86031	38.71	45.21	0.14377	94,886	565,099	4,289,901	25,548,010	29,837,911	29,699,314
354.3	Pump Station #1 - Pump Upgrades	2015	34,407	R4.0	45	5.50	12	R4.0012	0.88023	39.61	45.11	0.12192	4,195	30,212	189,236	1,362,841	1,552,077	1,548,293
354.3	Pump Station #2 - Pump Upgrades	2015	43,612	R4.0	45	5.50	12	R4.0012	0.88023	39.61	45.11	0.12192	5,317	38,295	239,864	1,727,456	1,967,320	1,962,523
354.3	Pump Station #5 - Pump Upgrades	2019	75,820	R4.0	45	1.50	3	R4.0003	0.97003	43.65	45.15	0.03322	2,519	73,301	113,730	3,309,543	3,423,273	3,411,900
			2,146,252										640,900	1,505,352	40,192,851	69,307,742	99,500,683	96,561,356
354.4	STRUCTURES AND IMPROVEMENTS - TREATMENT PLANT																	
354.4	Initial facility cost including pumps, building, treatment structures, fencing, property, etc.	1998	1,448,500	R4.0	55	22.50	41	R4.0041	0.59589	32.77	55.27	0.40709	589,670	858,830	32,591,250	47,467,345	80,058,595	79,667,500
			1,448,500										589,670	858,830	32,591,250	47,467,345	80,058,595	79,667,500
355.3	POWER GENERATION - PUMPING																	
355.3	Pump Station #3 Generator	2010	344,586	R3.0	35	10.50	30	R3.0030	0.71294	24.95	35.45	0.29519	102,063	242,523	3,618,153	8,597,421	12,215,574	12,060,510
			344,586										102,063	242,523	3,618,153	8,597,421	12,215,574	12,060,510
360.21	COLLECTION SEWERS - FORCE/PRESSURE MAINS																	
360.21	DIP - 4-Inch	1977	20,601	R3.0	75	43.50	58	R3.0058	0.47316	35.49	78.99	0.55070	11,345	9,256	896,151	731,136	1,627,287	1,545,068

S:\water industry\Willistown Township\Willistown Wastewater System Valuation as of 6-27-2021

43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
Willistown Township, Pennsylvania																		
Willistown Wastewater Collection System																		
Wastewater Collection System and Treatment																		
Investor-Owned Utility																		
As of January 20, 2021																		
Determination of the Depreciated Original Cost																		
(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)	(51)	(52)	(53)	(54)	(55)	(56)	(57)	(58)	(59)	(60)	(61)
Account	Description	Placement Year	Original Costs	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Age at January 20, 2021 Appraisal Date	Age as % of NSL	Iowa Lookup	Iowa Condition Percent of Percent New	Normal Remaining Life	Total Life Expectancy	Theoretical Reserve Percent	Theoretical Reserve	Depreciated Original Cost	OC Weighted Age	OC Weighted Normal Remaining Life	OC Weighted Total Life Expectancy	Normal Service Life (NSL)
Input	Input	Input	Input	Input	Input	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation
AUS Input	Eng Assmnt	Eng Assmnt	Eng Assmnt	AUS Input	AUS Input	2021-[(43)-0.5]	Col (49) / (48)	Col (47) & (50)	Lookup Iowa Curves Life Tables @ col (51)	Col (48) * (52)	Col (48) + (53)	Col (53) / (54)	Col (48) * (55)	Col (48) - (56)	Col (48) * (49)	Col (48) * (53)	Col (48) * (54)	Col (48) * (48)
Acct	Descrip	Year	Original Cost	Iowa	Normal Life	age	AgeP	IowaLookup	Iowa Condition	Rem Life	Total Life	Theo%	Theo Reserve	Net Book	OC wtd Age	OC wtd Rem Life	OC wtd Total Life	OC wtd Normal Life
360.21 DIP - 8-inch		1977	75,837	R3.0	75	43.50	58	R3.0058	0.47316	35.49	78.99	0.55070	41,764	34,073	3,298,925	2,691,468	5,990,392	5,567,801
360.21 DIP - 14-inch		1977	382,124	R3.0	75	43.50	58	R3.0058	0.47316	35.49	78.99	0.55070	210,436	171,688	16,622,395	13,561,582	30,163,978	28,559,303
360.21 PVC - 1.5-inch		1993	49,729	R3.0	75	27.50	37	R3.0037	0.64975	48.73	78.23	0.36075	17,940	31,789	1,367,556	2,423,313	3,790,872	3,729,705
360.21 PVC - 2-inch		1993	1,123,752	R3.0	75	27.50	37	R3.0037	0.64975	48.73	78.23	0.36075	405,393	718,359	30,903,169	54,760,415	85,663,584	84,281,370
360.21 PVC - 2.5-inch		1993	100,821	R3.0	75	27.50	37	R3.0037	0.64975	48.73	78.23	0.36075	36,371	64,450	2,772,576	4,913,006	7,685,585	7,561,575
360.21 PVC - 2-inch		1996	110,204	R3.0	75	24.50	33	R3.0033	0.68563	51.42	75.92	0.32271	35,564	74,640	2,700,006	5,666,706	8,366,712	8,265,324
360.21 PVC - 2-inch		1997	54,378	R3.0	75	23.50	31	R3.0031	0.7038	52.79	76.29	0.30804	16,750	37,628	1,277,835	2,870,507	4,148,342	4,078,197
360.21 PVC - 1.5-inch		1998	184,293	R3.0	75	22.50	30	R3.0030	0.71294	53.47	75.97	0.29617	54,562	129,711	4,146,583	9,854,124	14,000,707	13,821,944
360.21 PVC - 2-inch		1998	718,231	R3.0	75	22.50	30	R3.0030	0.71294	53.47	75.97	0.29617	212,719	505,512	16,160,207	38,403,833	54,564,040	53,867,355
360.21 PVC - 2.5-inch		1998	80,105	R3.0	75	22.50	30	R3.0030	0.71294	53.47	75.97	0.29617	23,725	56,380	1,802,360	4,283,209	6,085,569	6,007,868
360.21 PVC - 3-inch		1998	236,270	R3.0	75	22.50	30	R3.0030	0.71294	53.47	75.97	0.29617	69,976	166,294	5,316,070	12,633,344	17,949,414	17,720,232
360.21 PVC - 4-inch		1998	330,119	R3.0	75	22.50	30	R3.0030	0.71294	53.47	75.97	0.29617	97,771	232,348	7,427,578	17,651,464	25,079,141	24,758,926
360.21 PVC - 8-inch		1998	207,069	R3.0	75	22.50	30	R3.0030	0.71294	53.47	75.97	0.29617	61,328	145,741	4,659,048	11,071,969	15,731,017	15,530,160
360.21 PVC - 4-inch		1999	126,935	R3.0	75	21.50	29	R3.0029	0.72212	54.16	75.66	0.28417	36,071	90,864	2,729,105	6,874,607	9,603,912	9,520,135
360.21 PVC - 2-inch		2001	50,109	R3.0	75	19.50	26	R3.0026	0.74986	56.24	75.74	0.25746	12,901	37,208	977,121	2,818,116	3,795,236	3,758,156
360.21 HDPE - 6-inch		2006	2,370,977	R3.0	75	14.50	19	R3.0019	0.81568	61.18	75.68	0.19160	454,279	1,916,698	34,379,152	145,056,355	179,435,517	177,823,253
360.21 HDPE - 4-inch		2009	602,034	R3.0	75	11.50	15	R3.0015	0.85369	64.04	75.54	0.15224	91,654	510,380	6,923,369	38,554,248	45,477,537	45,152,539
			6,823,586										**1,890,589**	**4,933,017**	**144,369,341**	**374,619,804**	**519,178,942**	**511,785,931**
361.21 COLLECTION SEWERS - GRAVITY MAINS																		
361.21 VP - 8-inch		1977	1,357,563	R2.5	60	43.50	54	R2.5054	0.5294	42.35	85.85	0.50670	687,877	669,686	59,053,994	57,492,796	116,546,790	108,605,046
361.21 CIP - 8-inch		1977	10,942	R2.5	60	43.50	54	R2.5054	0.5294	42.35	85.85	0.50670	5,544	5,398	475,973	463,390	939,362	875,352
361.21 ACP - 8-inch		1977	625,983	R2.5	60	43.50	54	R2.5054	0.5294	42.35	85.85	0.50670	317,175	308,798	27,228,383	26,509,526	53,738,909	50,077,026
361.21 VP - 10-inch		1977	39,504	R2.5	60	43.50	54	R2.5054	0.5294	42.35	85.85	0.50670	20,007	19,537	1,722,765	1,677,221	3,399,986	3,168,304
361.21 ACP - 10-inch		1977	101,971	R2.5	60	43.50	54	R2.5054	0.5294	42.35	85.85	0.50670	51,668	50,303	4,435,718	4,318,452	8,754,170	8,157,642
361.21 VP - 12-inch		1977	11,482	R2.5	60	43.50	54	R2.5054	0.5294	42.35	85.85	0.50670	5,818	5,664	499,478	486,274	985,752	918,581
361.21 ACP - 12-inch		1977	60,578	R2.5	60	43.50	54	R2.5054	0.5294	42.35	85.85	0.50670	30,695	29,883	2,635,137	2,565,473	5,200,610	4,846,229
361.21 VP - 15-inch		1977	8,567	R2.5	60	43.50	54	R2.5054	0.5294	42.35	85.85	0.50670	4,402	4,285	377,875	367,885	745,760	694,942
361.21 RCP - 15-inch		1977	41,897	R2.5	60	43.50	54	R2.5054	0.5294	42.35	85.85	0.50670	21,126	20,569	1,813,832	1,765,880	3,579,711	3,335,782
361.21 ACP - 15-inch		1977	65,787	R2.5	60	43.50	54	R2.5054	0.5294	42.35	85.85	0.50670	33,334	32,453	2,861,731	2,786,076	5,647,807	5,262,953
361.21 DIP - 16-inch		1977	7,755	R2.5	60	43.50	54	R2.5054	0.5294	42.35	85.85	0.50670	3,930	3,825	337,363	328,444	665,807	620,437
361.21 RCP - 18-inch		1977	115,095	R2.5	60	43.50	54	R2.5054	0.5294	42.35	85.85	0.50670	58,319	56,776	5,006,642	4,874,282	9,880,924	9,207,617
361.21 DIP - 18-inch		1977	3,073	R2.5	60	43.50	54	R2.5054	0.5294	42.35	85.85	0.50670	1,557	1,516	133,663	130,130	263,793	245,817
361.21 Unknown - 8-inch		1978	76,213	R2.5	60	42.50	53	R2.5053	0.53711	42.97	85.47	0.49725	38,891	39,322	3,324,045	3,360,805	6,684,850	6,257,026
361.21 ACP - 8-inch		1980	55,388	R2.5	60	40.50	51	R2.5051	0.55269	44.22	84.72	0.47805	26,478	28,910	2,243,210	2,449,252	4,692,462	4,431,031
361.21 PVC - 8-inch		1987	123,157	R2.5	60	33.50	42	R2.5042	0.62498	50	83.5	0.40120	49,411	73,746	4,125,768	6,157,862	10,283,630	9,852,580
361.21 PVC - 8-inch		1989	135,907	R2.5	60	31.50	39	R2.5039	0.64984	51.99	83.49	0.37729	51,278	84,631	4,281,060	7,065,788	11,346,849	10,872,535
361.21 PVC - 8-inch		1998	186,780	R2.5	60	22.50	28	R2.5028	0.74396	59.52	82.02	0.27432	51,232	135,528	4,202,108	11,115,977	15,318,085	14,940,829
361.21 DIP - 8-inch		1998	355,322	R2.5	60	22.50	28	R2.5028	0.74396	59.52	82.02	0.27432	97,472	257,850	7,994,752	21,148,784	29,143,536	28,425,785
361.21 PVC - 8-inch		2009	27,476	R2.5	60	11.50	14	R2.5014	0.86951	69.56	81.06	0.14187	3,898	23,580	315,995	1,911,356	2,227,351	2,196,224
361.21 PVC - 8-inch		2013	349,216	R2.5	60	7.50	9	R2.5009	0.91553	73.25	80.75	0.09288	32,435	316,781	2,619,122	25,580,096	28,199,218	27,937,306
361.21 PVC - 8-inch		2017	45,783	R2.5	50	3.50	4	R2.5004	0.96231	76.98	80.46	0.04349	1,991	43,792	160,242	3,524,405	3,684,647	3,662,670
			3,897,421										**1,594,588**	**2,212,823**	**135,849,856**	**186,686,154**	**321,839,009**	**304,583,714**
361.22 COLLECTION SEWERS - GRAVITY MAINS - REPAIRS/UPGRADES																		
361.22 Fox Ridge Sewer Upgrades		2009	71,101	R2.5	60	11.50	19	R2.5019	0.82402	49.44	60.94	0.18871	13,418	57,683	817,664	3,515,246	4,332,910	4,266,075
361.22 Long Lane Emergency Sewer Repair		2019	336,363	R2.5	60	1.50	3	R2.5003	0.9717	58.3	59.8	0.02508	8,436	327,927	504,545	19,609,980	20,114,525	20,181,798
361.22 McKinley Avenue Emergency Sewer Repair		2019	307,675	R2.5	60	1.80	3	R2.5003	0.9717	58.3	59.8	0.02508	7,716	299,959	461,512	17,937,447	18,398,959	18,460,494
361.22 Jacqueline Drive Emergency Sewer Repair		2020	39,260	R2.5	60	0.50	1	R2.5001	0.99055	59.43	59.93	0.00834	327	38,933	19,630	2,333,214	2,352,844	2,355,592
361.22 Martin Drive & Eisenhower Drive Sewer Replacement		2020	201,638	R2.5	60	0.50	1	R2.5001	0.99055	59.43	59.93	0.00834	1,682	199,956	100,819	11,983,346	12,084,165	12,098,280
			956,037										**31,579**	**924,458**	**1,904,170**	**58,379,233**	**57,283,493**	**57,362,239**
361.23 COLLECTION SEWERS - GRAVITY - MANHOLES																		
361.23 Initial Installation - Original System		1977	852,603	R2.5	60	43.50	54	R2.5054	0.5294	42.35	85.85	0.50670	432,014	420,589	37,088,209	36,107,716	73,195,925	68,208,201
361.23 Initial Installation - Weatherstone		1978	50,191	R2.5	60	42.50	53	R2.5053	0.53711	42.97	85.47	0.49725	29,930	30,261	2,558,119	2,586,409	5,144,527	4,815,263
361.23 Initial Installation - Rustmont		1980	28,900	R2.5	60	40.50	51	R2.5051	0.55269	44.22	84.72	0.47805	13,816	15,084	1,170,467	1,277,975	2,448,443	2,312,033
361.23 Initial Installation - Brampton Chase		1987	79,675	R2.5	60	33.50	42	R2.5042	0.62498	50	83.5	0.40120	31,564	47,111	2,635,608	3,933,743	6,569,350	6,293,988
361.23 Initial Installation - Fox Ridge		1989	44,247	R2.5	60	31.50	39	R2.5039	0.64984	51.99	83.49	0.37729	16,694	27,553	1,393,779	2,300,399	3,694,178	3,539,756
361.23 Initial Installation - Pump Station 5		1998	22,652	R2.5	60	22.50	28	R2.5028	0.74396	59.52	82.02	0.27432	6,214	16,438	509,670	1,346,246	1,857,916	1,812,159
361.23 Initial Installation - Quaker Farms		1998	188,767	R2.5	60	22.50	28	R2.5028	0.74396	59.52	82.02	0.27432	51,762	136,985	4,247,246	11,216,387	15,462,535	15,101,327
361.23 Initial Installation - Dovecote		1998	79,282	R2.5	60	22.50	28	R2.5028	0.74396	59.52	82.02	0.27432	21,748	57,533	1,783,844	4,718,863	6,502,707	6,342,557

43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
Willistown Township, Pennsylvania **Willistown Wastewater Collection System** **Wastewater Collection System and Treatment** **Investor-Owned Utility** **As of January 20, 2021**																		
Determination of the Depreciated Original Cost																		
(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)	(51)	(52)	(53)	(54)	(55)	(56)	(57)	(58)	(59)	(60)	(61)
Account	Description	Placement Year	Original Costs	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Age at January 20, 2021 Appraisal Date	Age as % of NSL	Iowa Lookup	Iowa Condition Percent of Percent New	Normal Remaining Life	Total Life Expectancy	Theoretical Reserve Percent	Theoretical Reserve	Depreciated Original Cost	OC Weighted Age	OC Weighted Normal Remaining Life	OC Weighted Total Life Expectancy	Normal Service Life (NSL)
Input	Input	Input	Input	Input	Input	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation	Calculation
AUS Input	Eng Assmt	Eng Assmt	Eng Assmt	AUS Input	AUS Input	2021-[(45)-0.5]	Col (49) / (48)	Col (47) & (50)	Lookup Iowa Curves Life Tables @ col (51)	Col (48) * (52)	Col (48) * (53)	Col (53) / (54)	Col (48) * (55)	Col (46) - (56)	Col (46) * (49)	Col (46) * (53)	Col (46) * (54)	Col (46) * (48)
Acct	Descrip	Year	Original Cost	Iowa	Normal Life	age	AgeP	IowaLookup	Iowa Condition	Rem Life	Total Life	Theo%	Theo Reserve	Net Book	OC wtd Age	OC wtd Rem Life	OC wtd Total Life	OC wtd Normal Life
361.23 Initial Installation - Applebrook Meadows		2013	207,004	R2.5	80	7.50	9	R2.5009	0.91563	73.25	80.75	0.09288	19,227	187,777	1,552,532	15,163,061	16,715,592	16,560,339
TOTAL COLLECTION SEWERS - GRAVITY - MANHOLES			1,562,321										622,990	939,331	52,939,476	78,671,800	131,611,273	124,985,643
363.2 SERVICE TO CUSTOMERS																		
363.2 PVC - 4-inch		1977	280,395	R3.0	70	43.50	62	R3.0062	0.44205	30.94	74.44	0.58436	163,852	116,543	12,197,187	8,675,424	20,872,611	19,627,657
363.2 PVC - 4-inch		1978	25,702	R3.0	70	42.50	61	R3.0061	0.44974	31.48	73.98	0.57448	15,340	11,362	1,134,630	840,575	1,975,405	1,869,132
363.2 PVC - 4-inch		1980	21,556	R3.0	70	40.50	58	R3.0058	0.47316	33.12	73.62	0.55012	11,858	9,698	873,010	713,928	1,586,939	1,508,907
363.2 PVC - 4-inch		1987	10,142	R3.0	70	33.50	48	R3.0048	0.55461	38.82	72.32	0.46322	4,696	5,444	339,769	393,726	733,496	709,965
363.2 PVC - 4-inch		1989	9,865	R3.0	70	31.50	45	R3.0045	0.58001	40.6	72.1	0.43689	4,310	5,555	310,736	400,505	711,241	690,525
363.2 PVC - 4-inch		1993	56,967	R3.0	70	27.50	39	R3.0039	0.63205	44.24	71.74	0.38333	21,837	35,130	1,566,602	2,520,235	4,086,837	3,967,714
363.2 PVC - 4-inch		1996	6,930	R3.0	70	24.50	35	R3.0035	0.66781	46.73	71.23	0.34396	2,384	4,546	169,797	323,952	493,659	485,135
363.2 PVC - 4-inch		1997	1,437	R3.0	70	23.50	34	R3.0034	0.6766	47.36	70.86	0.33164	477	960	33,767	68,052	101,819	100,583
363.2 PVC - 4-inch		1998	103,666	R3.0	70	22.50	32	R3.0032	0.69469	48.63	71.13	0.31632	32,792	70,874	2,332,493	5,041,295	7,373,789	7,256,646
363.2 PVC - 4-inch		2001	74,049	R3.0	70	19.50	28	R3.0028	0.73133	51.19	70.69	0.27585	20,428	53,623	1,443,957	3,790,572	5,234,529	5,183,435
363.2 PVC - 4-inch		2013	106,744	R3.0	70	7.50	11	R3.0011	0.88247	62.47	69.97	0.10719	11,442	95,302	800,578	6,668,281	7,468,859	7,472,062
TOTAL SERVICE TO CUSTOMERS			698,454										289,418	409,038	21,202,726	29,436,455	50,639,184	48,891,781
364.3 FLOW MEASURING DEVICES																		
364.3 Cedar Hollow Flow Meter		1977	9,195	S2.0	30	43.50	145	S2.0145	0.15	4.5	48	0.85000	7,816	1,379	399,966	41,378	441,363	275,852
364.3 Pheasant Run Flow Meter		1978	9,909	S2.0	30	42.50	142	S2.0142	0.15	4.5	47	0.85000	8,423	1,485	421,131	44,580	465,722	297,269
364.3 Flow Meter		2007	2,360	S2.0	30	13.50	45	S2.0045	0.57419	17.23	30.73	0.43931	1,046	1,334	32,130	41,007	73,137	71,400
364.3 Counter		2008	1,756	S2.0	30	12.50	42	S2.0042	0.59697	17.97	30.47	0.41024	720	1,036	21,952	31,558	53,510	52,585
TOTAL FLOW MEASURING DEVICES			23,240										18,005	5,235	875,199	158,533	1,033,732	697,206
390.7 EQUIPMENT - GENERAL																		
390.7 ICOM3 Software		2015	36,844	R3.0	12	5.50	48	R3.0046	0.6715	6.86	12.36	0.44498	16,395	20,449	202,641	252,748	455,389	442,125
390.7 Video Pipe Inspection Trailer		2015	71,730	R3.0	12	5.50	48	R3.0046	0.6715	6.86	12.36	0.44498	31,918	39,812	394,515	492,068	886,583	860,760
390.7 Jet Truck		2015	200,720	R3.0	12	5.50	46	R3.0046	0.6715	6.86	12.36	0.44498	89,316	111,404	1,103,956	1,376,937	2,480,896	2,408,637
TOTAL EQUIPMENT - GENERAL			309,293										137,629	171,664	1,701,114	2,121,753	3,822,868	3,711,522
			19,541,520										6,117,419	13,524,101	435,234,148	842,648,646	1,277,274,183	1,240,329,362

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Asset Inventory
Pennoni Associates, Inc.
Engineers Assessment

AUS Consultants
Suite 201
8555 West Forest Home Avenue
Greenfield, Wisconsin 53228
Office Telephone: 414-529-5755
J. Weinert's Cell: 414-698-8371
J. Weinert's E-Mail: weinertj@auswest.net

ACCOUNT	DESCRIPTION	YEAR	QUANTITY	UNIT COST	ORIGINAL COST	
353.2	LAND AND LAND RIGHTS - COLLECTION					
353.2	Fox Ridge Gravity Sewer Easements (UPI: 54-2-62.30, 54-2-62.29, 54-2-62.28, 54-2-62.27)	2012			$1.00	
353.2	Fox Ridge Gravity Sewer Easements (UPI: 54-2-62, 54-2-62.18, 54-2-62.19)	2015			$1.00	
353.2	2291 South Valley Rd (UPI: 54-4-8) Easement	2018			$1.00	
353.2	Applebrook Meadows Gravity Sewer (UPI: 54-2-95.5) Easement	2018			$1.00	
353.2	15 Long Ln (UPI: 54-3-33) Easement	2018			$1.00	
353.2	2 McKinley Ave (UPI: 54-3-50) Easement	2018			$1.00	
353.2	285 W Central Ave (UPI: 54-1K-1.7) Easement	2020			$1.00	
353.2	209 Sewer Easements	Varies			$209.00	
	TOTAL LAND AND LAND RIGHTS - COLLECTION				$216.00	
353.3	LAND AND LAND RIGHTS - PUMPING					
353.3	Pump Station #1 Property (UPI: 54-1-33.3A)	1975			$8,601.00	
353.3	Pump Station #2 Property (UPI: 54-3-343.1)	1975			$5,500.00	
353.3	Pump Station #3 Property (UPI: 54-3-212.1)	1975			$7,500.00	
353.3	Booster Pump Station #1 Property (UPI: 54-3-315)	1978			$1.00	
353.3	Penn's Preserve/PS #5 Easements (UPI: 54-8-14, 54-8-14.2, 54-8-14.2A, 54-8-14.2B)	1999			$1.00	
353.3	Booster Pump Station #2 Easement (UPI: 54-3-300.17)	2001			$1.00	
353.3	Pump Station #4 Force Main Easements (UPI: 54-2-95, 54-2-95.1, 54-2-95.2, 54-2-95.5, 54-2-115)	2006			$1.00	
353.3	Dovecote Pump Station Easements (UPI: 54-3-449, 54-3-450, 54-3-451, 54-3-452, 54-3-460, 54-3-461)	2018			$1.00	
	TOTAL LAND AND LAND RIGHTS - PUMPING				$21,606.00	
353.4	LAND AND LAND RIGHTS - TREATMENT					
353.4	Penn's Preserve (UPIs: 54-8-14.1, 54-8-14.3, 54-8-14.4, 54-8-14.5)	2001			$4.00	
353.4	Penn's Preserve (UPI: 54-8-14.2)	2002			$1.00	
353.4	Penn's Preserve (UPIs: 54-8-14.2B, 54-8-2679)	2003			$2.00	
353.4	Penn's Preserve (UPI: 54-8-14.2A)	2006			$1,500,000.00	
	TOTAL LAND AND LAND RIGHTS - TREATMENT				$1,500,007.00	
354.3	STRUCTURES AND IMPROVEMENTS - PUMPING					
354.3	Pump Station #1 - Initial Facility	1977			$135,577.68	
354.3	Pump Station #2 - Initial Facility	1977			$135,577.68	
354.3	Pump Station #3 - Initial Facility	1977			$135,577.68	
354.3	Pump Station #5 - Initial Facility	1997			$306,628.72	
354.3	Dovecote Pump Station - Initial Facility	1998			$148,622.00	
354.3	Booster Pump Station #1 - Initial Facility	2001			$30,426.04	
354.3	Booster Pump Station #2 - Initial Facility	2001			$30,426.04	
354.3	Pump Station #4 - Initial Facility	2006			$407,943.57	
354.3	Pump Station #5 - Building Improvements	2011			$1,650.00	
354.3	Pump Station #3 - Pump Upgrades and Station Improvements	2014			$659,984.76	
354.3	Pump Station #1 - Pump Upgrades	2015			$34,406.50	
354.3	Pump Station #2 - Pump Upgrades	2015			$43,611.62	
354.3	Pump Station #5 - Pump Upgrades	2019			$75,820.00	
	TOTAL STRUCTURES AND IMPROVEMENTS - PUMPING				$2,146,252.31	
354.4	STRUCTURES AND IMPROVEMENTS - TREATMENT PLANT					
354.4	Initial facility cost including pumps, building, treatment structures, fencing, property, etc.	1998			$1,448,500.00	
	TOTAL STRUCTURES AND IMPROVEMENTS - TREATMENT PLANT				$1,448,500.00	
355.3	POWER GENERATION - PUMPING					
355.3	Pump Station #3 Generator	2010			$344,586.01	
	TOTAL POWER GENERATION - PUMPING				$344,586.01	
360.21	COLLECTION SEWERS - FORCE/PRESSURE MAINS					
360.21	DIP - 4-inch	1977	820	$25.12	$20,601.17	
360.21	DIP - 8-inch	1977	1,555	$48.77	$75,837.35	
360.21	DIP - 14-inch	1977	6,264	$61.00	$382,124.04	
360.21	PVC - 1.5-inch	1993	921	$54.00	$49,729.40	
360.21	PVC - 2-inch	1993	20,614	$54.51	$1,123,751.60	
360.21	PVC - 2.5-inch	1993	1,832	$55.03	$100,821.01	
360.21	PVC - 2-inch	1996	1,874	$58.81	$110,204.32	
360.21	PVC - 2-inch	1997	892	$60.96	$54,375.96	
360.21	PVC - 1.5-inch	1998	3,400	$54.20	$184,292.58	
360.21	PVC - 2-inch	1998	11,595	$61.94	$718,231.40	
360.21	PVC - 2.5-inch	1998	1,281	$62.53	$80,104.90	
360.21	PVC - 3-inch	1998	3,743	$63.12	$236,269.76	
360.21	PVC - 4-inch	1998	5,406	$61.07	$330,119.01	
360.21	PVC - 6-inch	1998	3,169	$65.34	$207,068.80	
360.21	PVC - 4-inch	1999	1,839	$69.02	$126,935.14	
360.21	PVC - 2-inch	2001	755	$66.37	$50,108.75	
360.21	HDPE - 6-inch	2006	9,702	$244.38	$2,370,976.70	
360.21	HDPE - 4-inch	2009	2,475	$243.25	$602,033.85	
	TOTAL COLLECTION SEWERS - FORCE/PRESSURE MAINS				$6,823,585.73	
361.21	COLLECTION SEWERS - GRAVITY MAINS					
361.21	VP - 8-inch	1977	59,472	$22.83	$1,357,563.07	75% in roadway
361.21	CIP - 8-inch	1977	775	$14.12	$10,941.90	0% in roadway
361.21	ACP - 8-inch	1977	26,773	$23.38	$625,962.82	80% in roadway
361.21	VP - 10-inch	1977	1,453	$27.26	$39,603.80	98% in roadway
361.21	ACP - 10-inch	1977	4,659	$21.89	$101,970.53	54% in roadway
361.21	VP - 12-inch	1977	497	$23.10	$11,482.26	0% in roadway
361.21	ACP - 12-inch	1977	2,062	$29.38	$60,577.87	33% in roadway
361.21	VP - 15-inch	1977	360	$24.13	$8,686.78	0% in roadway
361.21	RCP - 15-inch	1977	1,679	$24.83	$41,697.28	4% in roadway
361.21	ACP - 15-inch	1977	1,498	$43.92	$65,786.92	100% in roadway
361.21	DIP - 16-inch	1977	166	$46.72	$7,755.47	100% in roadway
361.21	RCP - 18-inch	1977	3,933	$29.26	$115,095.22	0% in roadway
361.21	DIP - 18-inch	1977	105	$29.26	$3,072.72	0% in roadway
361.21	Unknown - 8-inch	1978	4,737	$16.51	$78,212.82	10% in roadway
361.21	ACP - 8-inch	1980	3,047	$18.18	$55,387.89	3% in roadway
361.21	PVC - 8-inch	1987	5,100	$24.15	$123,157.25	0% in roadway
361.21	PVC - 8-inch	1989	3,464	$39.23	$135,906.68	67% in roadway
361.21	PVC - 8-inch	1998	3,806	$49.07	$186,760.37	12% in roadway
361.21	DIP - 8-inch	1998	7,803	$45.54	$355,322.31	49% in roadway
361.21	PVC - 8-inch	2009	585	$46.97	$27,477.80	0% in roadway
361.21	PVC - 8-inch	2013	3,667	$95.23	$349,216.32	100% in roadway
361.21	PVC - 6-inch	2017	778	$58.85	$45,783.38	0% in roadway

ACCOUNT	DESCRIPTION	YEAR	QUANTITY	UNIT COST	ORIGINAL COST
	TOTAL COLLECTION SEWERS - GRAVITY MAINS				$3,807,421.45
361.22	**COLLECTION SEWERS - GRAVITY MAINS - REPAIRS/UPGRADES**				
361.22	Fox Ridge Sewer Upgrades	2009			$71,101.25
361.22	Long Lane Emergency Sewer Repair	2019			$336,363.30
361.22	McKinley Avenue Emergency Sewer Repair	2019			$307,674.90
361.22	Jacqueline Drive Emergency Sewer Repair	2020			$39,259.87
361.22	Marlin Drive & Eisenhower Drive Sewer Replacement	2020			$201,638.00
	TOTAL COLLECTION SEWERS - GRAVITY MAINS - REPAIRS/UPGRADES				$956,037.32
361.23	**COLLECTION SEWERS - GRAVITY - MANHOLES**				
361.23	Initial Installation - Original System	1977	519	$1,642.78	$852,602.51
361.23	Initial Installation - Weatherstone	1978	34	$1,770.32	$60,191.03
361.23	Initial Installation - Rustmont	1980	14	$2,064.32	$28,900.41
361.23	Initial Installation - Brampton Chase	1987	28	$2,809.82	$78,674.85
361.23	Initial Installation - Fox Ridge	1989	15	$2,949.80	$44,246.95
361.23	Initial Installation - Pump Station 5	1998	6	$3,775.33	$22,651.99
361.23	Initial Installation - Quaker Farms	1998	50	$3,775.33	$188,766.58
361.23	Initial Installation - Dovecote	1998	21	$3,775.33	$79,281.97
361.23	Initial Installation - Applebrook Meadows	2013	34	$6,088.36	$207,004.24
	TOTAL COLLECTION SEWERS - GRAVITY - MANHOLES				$1,562,320.53
363.20	**SERVICE TO CUSTOMERS**				
363.2	PVC - 4-inch	1977	19,860	$14.12	$280,395.10
363.2	PVC - 4-inch	1978	1,755	$15.21	$26,701.88
363.2	PVC - 4-inch	1980	1,215	$17.74	$21,555.81
363.2	PVC - 4-inch	1987	420	$24.15	$10,142.36
363.2	PVC - 4-inch	1989	390	$25.29	$9,864.65
363.2	PVC - 4-inch	1993	1,995	$28.56	$56,967.34
363.2	PVC - 4-inch	1996	225	$30.80	$6,930.49
363.2	PVC - 4-inch	1997	45	$31.93	$1,436.91
363.2	PVC - 4-inch	1998	3,195	$32.45	$103,666.37
363.2	PVC - 4-inch	2001	2,130	$34.76	$74,049.07
363.2	PVC - 4-inch	2013	2,040	$52.33	$106,743.74
	TOTAL SERVICE TO CUSTOMERS				$698,453.71
364.3	**FLOW MEASURING DEVICES**				
364.3	Cedar Hollow Flow Meter	1977			$9,195.07
364.3	Pheasant Run Flow Meter	1978			$9,908.97
364.3	Flow Meter	2007			$2,380.00
364.3	Counter	2008			$1,756.17
	TOTAL FLOW MEASURING DEVICES				$23,240.21
390.7	**EQUIPMENT - GENERAL**				
390.7	ICOM3 Software	2015			$36,843.75
390.7	Video Pipe Inspection Trailer	2015			$71,730.00
390.7	Jet Truck	2015			$200,719.71
	TOTAL EQUIPMENT - GENERAL				$309,293.46
					19,641,519.75
					19,641,519.75

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Income Approach

AUS Consultants
Suite 201
8555 West Forest Home Avenue
Greenfield, Wisconsin 53228
Office Telephone: 414-529-5755
J. Weinert's Cell: 414-698-8371
J. Weinert's E-Mail:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021
Discounted Cash Flow Analysis

Discount Rate: 7.57%
Capitalization Rate: 5.65%

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Period	Age	Revenues	O&M Expenses	Tax Depreciation	Cash Flow from Operations	Taxable Income before State & Federal Taxes	State and Federal Taxes @ 28.89%	Capital Expenditures	Change in Working Capital	Net Cash Flows	Period Present Worth Factor (PW)	PW of Cashflow	Accumulated PW of Cashflows
					(3)-(4)	(6)-(5)	(7) *28.89%			(3)-(4)-(8)-(9)-(10)		(11)*(12)	Sum (13)
1	0.5	2,659,679	1,833,318	773,554	826,361	52,807	15,256	417,347	-	393,758	0.964	379,583	379,583
2	1.5	2,659,679	1,869,985	782,619	789,694	7,075	2,044	420,814	-	366,836	0.896	328,685	708,268
3	2.5	3,457,583	1,907,385	791,937	1,550,198	758,261	219,062	424,334	43,086	863,716	0.833	719,475	1,427,743
4	3.5	3,457,583	1,945,533	801,513	1,512,050	710,537	205,274	427,902	-	878,874	0.775	681,127	2,108,870
5	4.5	3,457,583	1,984,444	811,355	1,473,139	661,784	191,190	431,525	-	850,424	0.720	612,305	2,721,175
6	5.5	4,149,100	2,024,133	821,467	2,124,967	1,303,500	376,581	435,202	37,342	1,275,842	0.669	853,538	3,574,713
7	6.5	4,149,100	2,064,616	800,818	2,084,484	1,283,666	370,851	319,482	-	1,394,151	0.622	867,162	4,441,875
8	7.5	4,149,100	2,105,908	808,887	2,043,192	1,234,305	356,591	322,486	-	1,364,115	0.579	789,823	5,231,698
9	8.5	4,564,010	2,148,026	817,198	2,415,984	1,598,786	461,889	325,541	22,406	1,606,148	0.538	864,108	6,095,806
10	9.5	4,564,010	2,190,987	825,760	2,373,023	1,547,263	447,004	328,654	-	1,597,365	0.500	798,683	6,894,489
11	10.5	4,564,010	2,234,806	834,578	2,329,204	1,494,626	431,797	331,824	-	1,565,583	0.465	727,996	7,622,485
12	11.5	4,837,851	2,279,503	843,663	2,558,348	1,714,685	495,373	335,055	14,787	1,713,133	0.432	740,073	8,362,558
13	12.5	4,837,851	2,325,093	853,018	2,512,758	1,659,740	479,499	338,345	-	1,694,914	0.402	681,355	9,043,913
14	13.5	4,837,851	2,371,595	862,653	2,466,256	1,603,603	463,281	341,698	-	1,661,277	0.373	619,656	9,663,569
15	14.5	5,128,122	2,419,027	872,580	2,709,095	1,836,515	530,569	345,119	15,674	1,817,733	0.347	630,753	10,294,322
16	15.5	5,128,122	2,467,408	771,844	2,660,714	1,888,870	545,694	348,603	-	1,766,417	0.323	570,553	10,864,875
17	16.5	5,128,122	2,516,756	778,275	2,611,366	1,833,091	529,580	352,158	-	1,729,628	0.300	518,888	11,383,763
18	17.5	5,435,809	2,567,092	784,893	2,868,717	2,083,824	602,017	355,784	16,616	1,894,300	0.279	528,510	11,912,273
19	18.5	5,435,809	2,618,434	791,709	2,817,375	2,025,666	585,215	359,487	-	1,872,673	0.259	485,022	12,397,295
20 and beyond	19.5	5,435,809	2,670,802	798,726	2,765,007	1,966,281	568,058	363,263	-	1,833,686	3.184	5,838,456	18,235,751
								7,324,623					

Age	19.5
PW(Age) = 1/(1+Discount Rate)$^{(Age)}$	0.241
PW to Perpetuity = 1/Capitalization Rate	13.210
$PW_{(20and\ Beyond)}$ = PW to Perpetuity * PW $Factor_{(19.5)}$	3.184

Net Plant		15,660,079			
ADIT		(2,040,733)			
Rate Base		13,619,346	0.241	3,282,262	15,679,557
Annual Plant Construction Inflation Rate		0.0422 Input			
Plant Inflation over 19.5 years		31,129,893	0.241	7,502,304	19,899,599
PP	17,500,000				
OCLD	13,524,101				
PP/OCLD	1.294				
RCNLD	30,113,231				
RCNLD/PP		1.720756057			
		23,435,572.16	0.241	5,647,973	18,045,268
Average					17,965,044

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021
Calculated Rates of Return on Rate Base and Equity
(Years 1 through 20)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Period	Age	Revenues	O&M Expenses	Book Depreciation	Ratemaking Interest Expense	Book Taxable Income (Current + Deferred)	State and Federal Taxes @ 28.89%	Net Operating Income	Net (Equity) Income	Net Plant	Working Capital	Accumulated Deferred Income Taxes (ADIT)	Rate Base	Return on Rate Base	Net Equity	Return on Equity
						(3)-(4)-(5)-(6)	(7) *28.89%	(7)-(8)+(6)	(9) - (6)				(11)+(12)+(13)	(9)/(14)		(10)/(16)
1	0.5	2,659,679	1,833,318	413,185	234,615	178,561	51,586	361,590	126,975	17,504,096	143,623	(104,110)	17,543,609	2.06%	20,714,910	0.61%
2	1.5	2,659,679	1,869,985	418,046	228,430	143,218	41,376	330,272	101,842	17,506,799	143,623	(209,435)	17,440,987	1.89%	20,816,752	0.49%
3	2.5	3,457,583	1,907,385	424,644	222,850	902,704	260,791	864,763	641,913	17,506,424	186,709	(315,546)	17,377,587	4.98%	21,458,665	2.99%
4	3.5	3,457,583	1,945,533	430,223	215,421	866,406	250,305	831,522	616,101	17,504,038	186,709	(422,812)	17,267,935	4.82%	22,074,766	2.79%
5	4.5	3,457,583	1,984,444	436,872	208,241	828,026	239,217	797,050	588,809	17,498,626	186,709	(531,000)	17,154,335	4.65%	22,663,575	2.60%
6	5.5	4,149,100	2,024,133	443,511	201,299	1,480,157	427,617	1,253,839	1,052,540	17,490,252	224,051	(640,191)	17,074,112	7.34%	23,716,115	4.44%
7	6.5	4,149,100	2,064,616	448,060	194,589	1,441,835	416,546	1,219,878	1,025,289	17,361,609	224,051	(742,103)	16,843,557	7.24%	24,741,404	4.14%
8	7.5	4,149,100	2,105,908	450,303	188,103	1,404,786	405,843	1,187,046	998,943	17,233,727	224,051	(845,698)	16,612,080	7.15%	25,740,347	3.88%
9	8.5	4,564,010	2,148,026	454,491	181,833	1,779,660	514,144	1,447,349	1,265,516	17,104,712	246,457	(950,484)	16,400,685	8.82%	27,005,863	4.69%
10	9.5	4,564,010	2,190,987	460,424	175,772	1,736,827	501,769	1,410,830	1,235,058	16,972,877	246,457	(1,056,029)	16,163,305	8.73%	28,240,921	4.37%
11	10.5	4,564,010	2,234,806	462,084	169,913	1,697,207	490,323	1,376,797	1,206,884	16,842,552	246,457	(1,163,642)	15,925,367	8.65%	29,447,805	4.10%
12	11.5	4,837,851	2,279,503	464,340	164,249	1,929,759	557,507	1,536,501	1,372,252	16,713,202	261,244	(1,273,228)	15,701,218	9.79%	30,820,057	4.45%
13	12.5	4,837,851	2,325,093	471,756	158,774	1,882,228	543,776	1,497,226	1,338,452	16,579,726	261,244	(1,383,375)	15,457,595	9.69%	32,158,509	4.16%
14	13.5	4,837,851	2,371,595	470,917	153,482	1,841,857	532,113	1,463,226	1,309,744	16,450,442	261,244	(1,496,548)	15,215,138	9.62%	33,468,253	3.91%
15	14.5	5,128,122	2,419,027	476,066	148,366	2,084,663	602,259	1,630,770	1,482,404	16,319,430	276,918	(1,611,101)	14,985,247	10.88%	34,950,657	4.24%
16	15.5	5,128,122	2,467,408	481,741	143,420	2,035,553	588,071	1,590,902	1,447,482	16,186,227	276,918	(1,694,912)	14,768,233	10.77%	36,398,140	3.98%
17	16.5	5,128,122	2,516,756	482,698	138,639	1,990,029	574,919	1,553,749	1,415,110	16,055,621	276,918	(1,780,304)	14,552,235	10.68%	37,813,250	3.74%
18	17.5	5,435,809	2,567,092	487,805	134,018	2,246,894	649,128	1,731,784	1,597,766	15,923,534	293,534	(1,866,133)	14,350,935	12.07%	39,411,016	4.05%
19	18.5	5,435,809	2,618,434	492,686	129,551	2,195,138	634,175	1,690,514	1,560,963	15,790,268	293,534	(1,952,520)	14,131,282	11.96%	40,971,978	3.81%
20	19.5	5,435,809	2,670,802	493,386	125,232	2,146,389	620,092	1,651,529	1,526,297	15,660,079	293,534	(2,040,733)	13,912,880	11.87%	42,498,275	3.59%
										3,774,079.04						

Deferred Tax

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021
Discounted Cash Flow Analysis

Discount Rate: 7.57%
Capitalization Rate: 5.65%

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Period	Age	Revenues	O&M Expenses	Tax Depreciation	Cash Flow from Operations	Taxable Income before State & Federal Taxes	State and Federal Taxes @ 28.89%	Capital Expenditures	Change in Working Capital	Net Cash Flows	Period Present Worth Factor (PW)	PW of Cashflow	Accumulated PW of Cashflows
					(3)-(4)	(6)-(5)	(7) *28.89%			(3)-(4)-(8)-(9)-(10)		(11)*(12)	Sum (13)
20	19.5	5,435,809	2,670,802	798,726	2,765,007	1,966,281	568,058	363,263	-	1,833,686	0.241	441,918	12,839,213
21	20.5	5,761,958	2,724,218	805,956	3,037,740	2,231,784	644,762	367,119	17,611	2,008,248	0.224	449,848	13,289,061
22	21.5	5,761,958	2,778,702	813,408	2,983,256	2,169,848	626,869	371,058	-	1,985,329	0.208	412,948	13,702,009
23	22.5	5,761,958	2,834,276	821,088	2,927,682	2,106,594	608,595	375,079	-	1,944,008	0.194	377,138	14,079,147
24	23.5	6,107,675	2,890,961	829,008	3,216,714	2,387,706	689,808	379,188	18,669	2,129,049	0.180	383,229	14,462,376
25	24.5	6,107,675	2,948,781	837,177	3,158,894	2,321,717	670,744	383,386	-	2,104,764	0.167	351,496	14,813,872
26	25.5	6,107,675	3,007,757	387,678	3,099,918	2,712,240	783,566	387,678	-	1,928,674	0.156	300,873	15,114,745
27	26.5	6,474,136	3,067,912	392,067	3,406,224	3,014,157	870,790	392,067	19,789	2,123,578	0.145	307,919	15,422,664
28	27.5	6,474,136	3,129,270	396,554	3,344,866	2,948,312	851,767	396,554	-	2,096,545	0.134	280,937	15,703,601
29	28.5	6,474,136	3,191,856	401,144	3,282,280	2,881,136	832,360	401,144	-	2,048,776	0.125	256,097	15,959,698
30	29.5	6,474,136	3,255,693	405,839	3,218,443	2,812,604	812,561	405,839	-	2,000,043	0.116	232,005	16,191,703
31	30.5	6,474,136	3,320,808	410,648	3,153,328	2,742,680	792,360	410,648	-	1,950,320	0.108	210,635	16,402,338
32	31.5	6,474,136	3,387,224	415,570	3,086,912	2,671,342	771,751	415,570	-	1,899,591	0.100	189,959	16,592,297
33	32.5	6,474,136	3,454,969	430,107	3,019,167	2,589,060	747,979	420,609	-	1,850,579	0.093	172,104	16,764,401
34	33.5	6,474,136	3,524,068	444,966	2,950,068	2,505,102	723,724	425,770	-	1,800,574	0.087	156,650	16,921,051
35	34.5	6,474,136	3,594,549	450,461	2,879,587	2,429,126	701,775	431,061	-	1,746,751	0.081	141,487	17,062,538
36	35.5	6,474,136	3,666,440	456,086	2,807,696	2,351,610	679,380	436,481	-	1,691,835	0.075	126,888	17,189,426
37	36.5	6,474,136	3,739,769	461,847	2,734,367	2,272,520	656,531	442,035	-	1,635,801	0.070	114,506	17,303,932
38	37.5	6,474,136	3,814,564	467,754	2,659,572	2,191,818	633,216	447,732	-	1,578,624	0.065	102,611	17,406,543
39	38.5	6,474,136	3,890,856	473,807	2,583,280	2,109,473	609,427	453,574	-	1,520,279	0.060	91,217	17,497,760
40	39.5	6,474,136	3,968,674	480,018	2,505,462	2,025,444	585,151	459,570	-	1,460,741	0.056	81,801	17,579,561
41	40.5	6,474,136	4,048,048	486,382	2,426,088	1,939,706	560,381	465,718	-	1,399,989	0.052	72,799	17,652,360
42	41.5	6,474,136	4,129,009	492,914	2,345,127	1,852,213	535,104	472,031	-	1,337,992	0.048	64,224	17,716,584
43	42.5	6,474,136	4,211,589	489,064	2,262,547	1,773,483	512,359	478,512	-	1,271,676	0.045	57,225	17,773,809
44	43.5	6,474,136	4,295,821	485,165	2,178,315	1,693,150	489,151	485,165	-	1,203,999	0.042	50,568	17,824,377
45	44.5	6,474,136	4,381,737	492,005	2,092,399	1,600,394	462,354	492,005	-	1,138,040	0.039	44,384	17,868,761
46	45.5	6,474,136	4,469,371	499,026	2,004,765	1,505,739	435,008	499,026	-	1,070,731	0.036	38,546	17,907,307
47	46.5	6,474,136	4,558,759	506,245	1,915,377	1,409,132	407,098	506,245	-	1,002,034	0.034	34,069	17,941,376
48	47.5	6,474,136	4,649,934	513,664	1,824,202	1,310,538	378,614	513,664	-	931,924	0.031	28,890	17,970,266
49	48.5	6,474,136	4,742,933	521,294	1,731,203	1,209,909	349,543	521,294	-	860,366	0.029	24,951	17,995,217
50	49.5	6,474,136	4,837,792	529,142	1,636,344	1,107,202	319,871	529,142	-	787,331	0.027	21,258	18,016,475
51	50.5	6,474,136	4,934,548	537,213	1,539,588	1,002,375	289,586	537,213	-	712,789	0.025	17,820	18,034,295
52	51.5	6,474,136	5,033,239	545,521	1,440,897	895,376	258,674	545,521	-	636,702	0.023	14,644	18,048,939
53	52.5	6,474,136	5,133,903	554,067	1,340,233	786,166	227,123	554,067	-	559,043	0.022	12,299	18,061,238
54	53.5	6,474,136	5,236,581	562,871	1,237,555	674,684	194,916	562,871	-	479,768	0.020	9,595	18,070,833
55	54.5	6,474,136	5,341,313	571,934	1,132,823	560,889	162,041	571,934	-	398,848	0.019	7,578	18,078,411
56	55.5	6,474,136	5,448,139	581,266	1,025,997	444,731	128,483	581,266	-	316,248	0.017	5,376	18,083,787
57	56.5	6,474,136	5,557,102	590,884	917,034	326,150	94,225	590,884	-	231,925	0.016	3,711	18,087,498
58	57.5	6,474,136	5,668,243	600,789	805,893	205,104	59,255	600,789	-	145,849	0.015	2,188	18,089,686
59	58.5	6,474,136	5,781,608	611,003	692,528	81,525	23,553	611,003	-	57,972	0.014	812	18,090,498
60	59.5	6,474,136	5,897,240	621,532	576,896	(44,636)	(12,895)	621,532	-	(31,741)	0.172	(5,459)	18,085,039
								19,305,307					

Age	59.5
PW(Age) = 1/(1+Discount Rate)$^{(Age)}$	0.013
PW to Perpetuity = 1/Capitalization Rate	13.210
PW$_{(20\text{and Beyond})}$ = PW to Perpetuity * PW Factor$_{(19.5)}$	0.172

Net Plant		11,647,540			
ADIT		(1,584,623)			
Rate Base		10,062,917	0.013	130,818	18,221,316
Plant Construction Inflation Rate		0.0422 Input			
Plant Inflation over 59.5 years		117,709,760	0.013	1,530,227	19,620,725
PP	17,500,000				
RCNLD	30,113,231				
RCNLD/PP		1.720756057			
		17,315,824.90	0.013	225,106	18,315,604

Deferred Tax

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021
Calculated Rates of Return on Rate Base and Equity
(Years 1 through 20)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Period	Age	Revenues	O&M Expenses	Book Depreciation	Ratemaking Interest Expense	Book Taxable Income (Current + Deferred)	State and Federal Taxes @ 28.89%	Net Operating Income	Net (Equity) Income	Net Plant	Working Capital	Accumulated Deferred Income Taxes (ADIT)	Rate Base	Return on Rate Base	Net Equity	Return on Equity
						(3)-(4)-(5)-(6)	(7) *28.89%	(7)-(8)+(6)	(9) - (6)				(11)+(12)+(13)	(9)/(14)		(10)/(16)
20	19.5	5,435,809	2,670,802	493,386	125,232	2,146,389	620,092	1,651,529	1,526,297	15,660,079	293,534	(2,040,733)	13,912,880	11.87%	42,498,275	3.59%
20	20.5	5,761,958	2,724,218	497,637	121,058	2,419,045	698,862	1,841,241	1,720,183	15,529,495	311,145	(2,129,806)	13,710,834	13.43%	44,218,458	3.89%
20	21.5	5,761,958	2,778,702	501,732	117,023	2,364,501	683,104	1,798,420	1,681,397	15,398,755	311,145	(2,219,849)	13,490,051	13.33%	45,899,855	3.66%
20	22.5	5,761,958	2,834,276	505,088	113,122	2,309,472	667,206	1,755,388	1,642,266	15,268,680	311,145	(2,311,141)	13,268,684	13.23%	47,542,121	3.45%
20	23.5	6,107,675	2,890,961	507,292	109,351	2,600,071	751,160	1,958,262	1,848,911	15,140,510	329,814	(2,404,084)	13,066,240	14.99%	49,391,032	3.74%
20	24.5	6,107,675	2,948,781	512,412	105,706	2,540,776	734,030	1,912,452	1,806,746	15,011,418	329,814	(2,497,909)	12,843,323	14.89%	51,197,778	3.53%
20	25.5	6,107,675	3,007,757	512,916	102,183	2,484,819	717,864	1,869,138	1,766,955	14,886,114	329,814	(2,461,728)	12,754,200	14.66%	52,964,733	3.34%
20	26.5	6,474,136	3,067,912	517,883	98,777	2,789,564	805,905	2,082,436	1,983,659	14,760,232	349,603	(2,425,380)	12,684,455	16.42%	54,948,392	3.61%
20	27.5	6,474,136	3,129,270	519,196	95,484	2,730,186	788,751	2,036,919	1,941,435	14,637,524	349,603	(2,389,949)	12,597,178	16.17%	56,889,827	3.41%
20	28.5	6,474,136	3,191,856	528,361	92,301	2,661,618	768,941	1,984,978	1,892,677	14,510,241	349,603	(2,353,196)	12,506,648	15.87%	58,782,504	3.22%
20	29.5	6,474,136	3,255,693	526,774	89,225	2,602,444	751,846	1,939,823	1,850,598	14,389,240	349,603	(2,318,258)	12,420,585	15.62%	60,633,102	3.05%
20	30.5	6,474,136	3,320,808	537,045	86,250	2,530,033	730,927	1,885,356	1,799,106	14,262,777	349,603	(2,281,742)	12,330,638	15.29%	62,432,208	2.88%
20	31.5	6,474,136	3,387,224	536,628	83,375	2,466,909	712,690	1,837,594	1,754,219	14,141,653	349,603	(2,246,768)	12,244,488	15.01%	64,186,427	2.73%
20	32.5	6,474,136	3,454,969	541,579	80,596	2,396,992	692,491	1,785,097	1,704,501	14,020,616	349,603	(2,214,564)	12,155,655	14.69%	65,890,927	2.59%
20	33.5	6,474,136	3,524,068	544,071	77,910	2,328,087	672,584	1,733,413	1,655,503	13,902,249	349,603	(2,185,932)	12,065,920	14.37%	67,546,430	2.45%
20	34.5	6,474,136	3,594,549	544,150	75,313	2,260,124	652,950	1,682,487	1,607,174	13,789,094	349,603	(2,158,865)	11,979,832	14.04%	69,153,604	2.32%
20	35.5	6,474,136	3,066,440	551,805	72,802	2,183,089	630,694	1,625,197	1,552,395	13,673,704	349,603	(2,131,211)	11,892,096	13.67%	70,705,999	2.20%
20	36.5	6,474,136	3,739,769	552,869	70,376	2,111,122	609,903	1,571,595	1,501,219	13,562,804	349,603	(2,104,915)	11,807,492	13.31%	72,207,218	2.08%
20	37.5	6,474,136	3,814,564	563,534	68,030	2,028,008	585,892	1,510,146	1,442,116	13,446,936	349,603	(2,077,245)	11,719,294	12.89%	73,649,334	1.96%
20	38.5	6,474,136	3,890,856	564,000	65,762	1,953,518	564,371	1,454,909	1,389,147	13,336,444	349,603	(2,051,188)	11,634,859	12.50%	75,038,481	1.85%
20	39.5	6,474,136	3,968,674	566,914	63,570	1,874,978	541,681	1,396,867	1,333,297	13,229,035	349,603	(2,026,083)	11,552,555	12.09%	76,371,779	1.75%
20	40.5	6,474,136	4,048,048	572,753	61,451	1,791,884	517,675	1,335,660	1,274,209	13,121,934	349,603	(2,001,130)	11,470,407	11.64%	77,645,988	1.64%
20	41.5	6,474,136	4,129,009	573,208	59,403	1,712,516	494,746	1,277,173	1,217,770	13,020,691	349,603	(1,977,933)	11,392,361	11.21%	78,863,758	1.54%
20	42.5	6,474,136	4,211,589	579,883	57,422	1,625,242	469,532	1,213,132	1,155,710	12,919,254	349,603	(1,951,695)	11,317,162	10.72%	80,019,468	1.44%
20	43.5	6,474,136	4,295,821	584,252	55,508	1,538,555	444,488	1,149,575	1,094,067	12,820,100	349,603	(1,923,068)	11,246,635	10.22%	81,113,534	1.35%
20	44.5	6,474,136	4,381,737	586,276	53,658	1,452,465	419,617	1,086,506	1,032,848	12,725,763	349,603	(1,895,833)	11,179,533	9.72%	82,146,382	1.26%
20	45.5	6,474,136	4,469,371	592,013	51,870	1,360,882	393,159	1,019,593	967,723	12,632,710	349,603	(1,868,969)	11,113,344	9.17%	83,114,106	1.16%
20	46.5	6,474,136	4,558,759	597,061	50,141	1,268,175	366,376	951,940	901,799	12,541,826	349,603	(1,842,733)	11,048,696	8.62%	84,015,904	1.07%
20	47.5	6,474,136	4,649,934	599,683	48,469	1,176,050	339,761	884,758	836,289	12,455,740	349,603	(1,817,882)	10,987,461	8.05%	84,852,193	0.99%
20	48.5	6,474,136	4,742,933	606,973	46,854	1,077,376	311,254	812,976	766,122	12,369,995	349,603	(1,793,129)	10,926,469	7.44%	85,618,316	0.89%
20	49.5	6,474,136	4,837,792	611,146	45,292	979,906	283,095	742,103	696,811	12,287,924	349,603	(1,769,438)	10,868,089	6.83%	86,315,127	0.81%
20	50.5	6,474,136	4,934,548	613,445	43,782	882,361	254,914	671,229	627,447	12,211,625	349,603	(1,747,414)	10,813,814	6.21%	86,942,574	0.72%
20	51.5	6,474,136	5,033,239	620,825	42,323	777,749	224,692	595,380	553,057	12,136,255	349,603	(1,725,659)	10,760,199	5.53%	87,495,632	0.63%
20	52.5	6,474,136	5,133,903	622,810	40,912	676,511	195,444	521,979	481,067	12,067,445	349,603	(1,705,799)	10,711,249	4.87%	87,976,699	0.55%
20	53.5	6,474,136	5,236,581	631,767	39,548	566,240	163,587	442,201	402,653	11,998,481	349,603	(1,685,895)	10,662,189	4.15%	88,379,351	0.46%
20	54.5	6,474,136	5,341,313	644,616	38,230	449,977	129,998	358,209	319,979	11,925,732	349,603	(1,664,897)	10,610,438	3.38%	88,699,330	0.36%
20	55.5	6,474,136	5,448,139	645,272	36,956	343,769	99,315	281,410	244,454	11,861,659	349,603	(1,646,406)	10,564,856	2.66%	88,943,784	0.27%
20	56.5	6,474,136	5,557,102	648,387	35,724	232,923	67,291	201,356	165,632	11,804,089	349,603	(1,629,793)	10,523,899	1.91%	89,109,416	0.19%
20	57.5	6,474,136	5,668,243	658,237	34,533	113,123	32,681	114,975	80,442	11,746,574	349,603	(1,613,196)	10,482,981	1.10%	89,189,858	0.09%
20	58.5	6,474,136	5,781,608	663,636	33,382	(4,490)	(1,297)	30,189	(3,193)	11,693,874	349,603	(1,597,990)	10,445,487	0.29%	89,186,665	0.00%
20	59.5	6,474,136	5,897,240	667,800	32,269	(123,173)	(35,585)	(55,319)	(87,588)	11,647,540	349,603	(1,584,623)	10,412,520	-0.53%	89,099,078	-0.10%

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Income Approach
Cost of Capital / Required Return

AUS Consultants
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8555 West Forest Home Avenue
Greenfield, Wisconsin 53228
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J. Weinert's Cell: 414-698-8371
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Water and Wastewater Cost of Capital
First Quarter 2021 (0-01-2021)

As an Investor-Owned Utility

Weighted Cost of Capital (Discount Rate)

(1)	(2)	(2a)	(3)	(3a)	(4)	(4a)	(5)
	Portion of Capital AUS Input	Type of Data	Capital Cost AUS Input	Type of Data	Tax Rate	Tax affect on cost of capital	After-tax Market Capital Cost (2)*(3)*(4a)
Debt	29%	Market	2.79%	Market	28.89%	71.11%	0.58%
Equity	71%	Market	9.85%	Market	0.0%	100.0%	6.99%
Total Capital r	100.0%						7.57%
Growth (g)							1.82%
Rate without Growth: [(1+r)/(1+g)]-1							5.65%

Water and Wastewater Cost of Capital
First Quarter 2021 (0-01-2021)

As an Investor-Owned Utility

Weighted Cost of Capital (Capitlization Rate)

(1)	(2)	(2a)	(3)	(3a)	(4)	(4a)	(5)
	Portion of Capital AUS Input	Type of Data	Capital Cost AUS Input	Type of Data	Tax Rate	Tax affect on cost of capital	Market Capital Cost (2)*(3)
Debt	29%	Market	2.79%	Market	Not Applicable	Not Applicable	0.81%
Equity	71%	Market	9.85%	Market	Not Applicable	Not Applicable	6.99%
Total Capital r	100.0%						7.80%
Growth (g)							1.82%
Rate without Growth: [(1+r)/(1+g)]-1							5.87%

Water and Wastewater Cost of Capital
First Quarter 2021 (0-01-2021)

As an Investor-Owned Utility

Weighted Cost of Capital (Rate of Return on Rate Base)

(1)	(2)	(2a)	(3)	(3a)	(4)	(4a)	(5)
	Portion of Capital AUS Input	Type of Data	Capital Cost AUS Input	Type of Data	Tax Rate	Tax affect on cost of capital	Required Return on Rate Base (2)*(3)
Debt	44%	Embedded	3.84%	Embedded	Not Applicable	Not Applicable	1.69%
Equity	56%	Embedded	9.85%	Market	Not Applicable	Not Applicable	5.52%
Total Capital r	100.0%						7.21%
Growth (g)						Not Applicable	0.00%
Rate without Growth: [(1+r)/(1+g)]-1							7.21%

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Income Approach

Discounted Cash Flow Analysis
Private Rate Regulated Wastewater System
Period 1 through 19 and 20 to perpetuity

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J. Weinert's Cell: 414-698-8371
J. Weinert's E-Mail:

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021

	Base	Periods 1-5	6-15	16-19	20-26	27-33	34-40	41-46	47-53	54-60
Income Statement										
Revenues										
Annual Revenue Growth rate										
Subscriber Growth Rate (Annually)		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Periodic Subscriber Growth										
Growth	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Period for Periodic Growth	5									
Rate Case Activities										
Periodic Rate Case (years)	typically 3 years									
Required Rate Increase	Calculated in DCF									
Proposed Rate Increase	Calculated in DCF									
Total Revenue Adjustments	Calculated									
Base and Forecast	2,659,679									
Operating Expenses										
Expense Level 1: Salaries, Wages & Benefits	264,869									
Expense Level 1: Salaries, Wages & Benefits Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 2: Materials & Supplies	1,446,497									
Expense Level 2: Materials & Supplies Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 3: Utilities	86,005									
Expense Level 3: Utilities Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 4: Not Used	-									
Expense Level 4: Not Used Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 5: Not Used	-									
Expense Level 5: Not Used Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 6: Not Used	-									
Expense Level 6: Not Used Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Property Taxes	28,997,091									
Begin Plant										
PT Rate % of beginning net plant	0.000%									
Book Depreciation (based on Beginning Year Property Plant & Equipment)										
Total Operating Expenses										
Cost of Operation as % of Revenues (Calculation)										
Operating Expenses less Depreciation										
Operating Income										
Nonoperating Revenues (Expenses)										
Interest Income										
Interest Expense										
Interest Exp as % of Debt	2.79%									
Total nonoperating revenues (expenses)	-									
Income (loss) before State and Federal Taxes	-									
State and Federal Taxes										
State and Federal Tax Rate	28.89%									
Income After Taxes	-									
Income After Taxes plus Interest										
Earnings before Interest, Taxes, Depreciation, & Amortization									EBITDA P1	723,189
									EBITDA P1-5	892,978
									EBITDA P1-13	1,168,600
Balance Statement										
Assets										
Current Assets										
Current Asset Balance	744,710									
CA as % of Revenues	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%
End Balance	28,997,091.00									

	0	1	2	3	4	5	6	7	8	9
Income Statement										
Revenues										
Annual Revenue Growth rate										
Subscriber Growth Rate (Annually)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Periodic Subscriber Growth										
Growth						0.0%				
Period for Periodic Growth										
Rate Case Activities										
Periodic Rate Case (years)										
Required Rate Increase	54.80%	54.58%	55.55%	20.60%	21.35%	22.16%	2.57%	2.97%	3.35%	5.60%
Proposed Rate Increase	0.0%	0.0%	0.0%	30.0%	0.0%	0.0%	20.0%	0.0%	0.0%	10.0%
Total Revenue Adjustments	0.0%	0.0%	0.0%	30.0%	0.0%	0.0%	20.0%	0.0%	0.0%	10.0%
Base and Forecast	2,659,679	2,659,679	2,659,679	3,457,583	3,457,583	3,457,583	4,149,100	4,149,100	4,149,100	4,564,010
Operating Expenses	10%	10%	10%	8%	8%	8%	7%	7%	7%	7%
Expense Level 1: Salaries, Wages & Benefits	264,869	270,166	275,569	281,080	286,702	292,436	298,285	304,251	310,336	316,543
Expense Level 1: Salaries, Wages & Benefits Rate of Change	0.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 2: Materials & Supplies	1,475,427	1,475,427	1,504,936	1,535,035	1,565,736	1,597,051	1,628,992	1,661,572	1,694,803	1,728,699
Expense Level 2: Materials & Supplies Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 3: Utilities	87,725	87,725	89,480	91,270	93,095	94,957	96,856	98,793	100,769	102,784
Expense Level 3: Utilities Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 4: Not Used										
Expense Level 4: Not Used Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 5: Not Used										
Expense Level 5: Not Used Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 6: Not Used										
Expense Level 6: Not Used Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Property Taxes										
Begin Plant	17,499,999	17,499,999	17,504,096	17,506,799	17,506,424	17,504,038	17,498,626	17,490,252	17,361,609	17,233,727
PT Rate % of beginning net plant	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Book Depreciation (based on Beginning Year Property Plant & Equipment)	413,185	413,185	418,046	424,644	430,223	436,872	443,511	448,060	450,303	454,491
Total Operating Expenses	2,241,206	2,246,503	2,288,031	2,332,029	2,375,756	2,421,316	2,467,644	2,512,676	2,556,211	2,602,517
Cost of Operation as % of Revenues (Calculation)	84.3%	84.5%	86.0%	67.4%	68.7%	70.0%	59.5%	60.6%	61.6%	57.0%
Operating Expenses less Depreciation	1,828,021	1,833,318	1,869,985	1,907,385	1,945,533	1,984,444	2,024,133	2,064,616	2,105,908	2,148,026
Operating Income	418,473	413,176	371,648	1,125,554	1,081,827	1,036,267	1,681,456	1,636,424	1,592,889	1,961,493
Nonoperating Revenues (Expenses)										
Interest Income										
Interest Expense	234,615	234,615	228,430	222,850	215,421	208,241	201,299	194,589	188,103	181,833
Interest Exp as % of Debt	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%
Total nonoperating revenues (expenses)	234,615.00	234,615.00	228,430.00	222,850.00	215,421.00	208,241.00	201,299.00	194,589.00	188,103.00	181,833.00
Income (loss) before State and Federal Taxes	183,858	178,561	143,218	902,704	866,406	828,026	1,480,157	1,441,835	1,404,786	1,779,660
State and Federal Taxes	53,117	51,586	41,376	260,791	250,305	239,217	427,617	416,546	405,843	514,144
State and Federal Tax Rate	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%
Income After Taxes	130,741	126,975	101,842	641,913	616,101	588,809	1,052,540	1,025,289	998,943	1,265,516
Income After Taxes plus Interest	365,356	361,590	330,272	864,763	831,522	797,050	1,253,839	1,219,878	1,187,046	1,447,349
Earnings before Interest, Taxes, Depreciation, & Amortization	725,424	723,189	706,942	1,028,616	1,011,440	994,705	1,268,733	1,251,392	1,331,506	1,387,886
	EBITDA Periods 1-5	892,978								
Income (loss) before State and Federal Taxes	183,858	178,561	143,218	902,704	866,406	828,026	1,480,157	1,441,835	1,404,786	1,779,660
Book Depreciation	(413,185)	(413,185)	(418,046)	(424,644)	(430,223)	(436,872)	(443,511)	(448,060)	(450,303)	(454,491)
Tax Depreciation		(773,554)	(782,619)	(791,937)	(801,513)	(811,355)	(821,467)	(800,818)	(808,887)	(817,198)
Difference Tax over Book Depreciation	413,185	(360,369)	(364,573)	(367,293)	(371,290)	(374,482)	(377,956)	(352,759)	(358,585)	(362,707)
Income Adjusted for Tax Deprecation	597,043	(181,808)	(221,355)	535,411	495,116	453,543	1,102,201	1,089,077	1,046,202	1,416,953
Income Tax Rate	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%
Income Taxes	172,486	(52,524)	(63,949)	154,680	143,039	131,029	318,426	314,634	302,248	409,358
Income After Tax	424,557	(129,284)	(157,406)	380,731	352,077	322,514	783,775	774,443	743,954	1,007,595
Deferred Income Taxes	119,369	(104,110)	(105,325)	(106,111)	(107,266)	(108,188)	(109,191)	(101,912)	(103,595)	(104,786)
Accumulated Deferred Income Taxes	15,259	(104,110)	(209,435)	(315,546)	(422,812)	(531,000)	(640,191)	(742,103)	(845,698)	(950,484)
Income After Taxes (Book Depreciation)	130,741	126,975	101,842	641,913	616,101	588,809	1,052,540	1,025,289	998,943	1,265,516
Plus Deferred Taxes	119,369	(104,110)	(105,325)	(106,111)	(107,266)	(108,188)	(109,191)	(101,912)	(103,595)	(104,786)
Plus Interest	234,615	234,615	228,430	222,850	215,421	208,241	201,299	194,589	188,103	181,833
After Tax Income Debt Free	245,987	465,700	435,597	970,874	938,788	905,238	1,363,030	1,321,790	1,290,641	1,552,135
Balance Statement										
Assets										
Current Assets										
Current Asset Balance	744,710	744,710	744,710	968,123	968,123	968,123	1,161,748	1,161,748	1,161,748	1,277,923
CA as % of Revenues	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%
Balance Statement										
Property Plant & Equipment										
Total PP&E										
Begin Balance		28,997,091.00	29,183,618.00	29,371,749.00	29,561,545.00	29,753,027.00	29,946,226.00	30,141,164.00	30,278,594.00	30,417,430.00
Additions		417,347.00	420,814.00	424,334.00	427,902.00	431,525.00	435,202.00	319,482.00	322,486.00	325,541.00
Retirements		(230,820.00)	(232,683.00)	(234,538.00)	(236,420.00)	(238,326.00)	(240,264.00)	(182,052.00)	(183,650.00)	(185,276.00)
End Balance		29,183,618.00	29,371,749.00	29,561,545.00	29,753,027.00	29,946,226.00	30,141,164.00	30,278,594.00	30,417,430.00	30,557,695.00
End Balance Check		29,183,618.00	29,371,749.00	29,561,545.00	29,753,027.00	29,946,226.00	30,141,164.00	30,278,594.00	30,417,430.00	30,557,695.00
Book Depreciation of Property, Plant, & Equipment										
Total Book Depreciation										

DCF Investor Owned

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser, Investor-Owned Utility
As of January 20, 2021

	Base	Periods 1-5	6-15	16-19	20-26	27-33	34-40	41-46	47-53	54-60
Current Liabilities	601,087									
Current Liabilities as % of Revenues	22.60%	22.60%	22.60%	22.60%	22.60%	22.60%	22.60%	22.60%	22.60%	22.60%
Long Term Debt, Notes payable, net of current portion Beg	8,409,156.00									
Debt Repayment years	30.00									
Proportion of Capital	71%									
Beginning Equity Capital	20,587,935									
Deductions from Equity Dividends	0									
Current Assets	744,710									
Current Liabilities	601,087									
Working Capital	143,623									
Discount Rate with growth	7.57%									

	0	1	2	3	4	5	6	7	8	9
Begin Balance		(11,497,092.00)	(11,679,522.07)	(11,864,950.32)	(12,055,121.29)	(12,248,989.01)	(12,447,600.21)	(12,650,912.40)	(12,916,984.94)	(13,183,702.72)
Depreciation		(413,185.07)	(418,046.25)	(424,644.97)	(430,222.72)	(436,872.70)	(443,511.09)	(448,059.64)	(450,402.78)	(454,491.25)
Retirements		240,755.00	232,618.00	234,473.00	236,455.00	238,261.00	240,199.00	181,987.00	183,585.00	185,211.00
End Balance		(11,679,522.07)	(11,864,950.32)	(12,055,121.29)	(12,248,989.01)	(12,447,600.21)	(12,650,912.40)	(12,916,984.94)	(13,183,702.72)	(13,452,982.97)
End Balance check		(11,679,522.07)	(11,864,950.32)	(12,055,121.29)	(12,248,989.01)	(12,447,600.21)	(12,650,912.40)	(12,916,984.94)	(13,183,702.72)	(13,452,982.97)
Net Plant										
Begin Balance		17,499,499.00	17,504,095.93	17,506,798.68	17,500,474.71	17,504,037.49	17,498,675.79	17,490,251.70	17,361,609.06	17,233,727.28
End Balance		17,504,095.93	17,506,798.68	17,500,474.71	17,504,037.49	17,498,675.79	17,490,251.70	17,361,609.06	17,233,727.28	17,104,712.03
Total Asset	744,710.00	18,248,805.93	18,251,508.68	18,474,546.71	18,477,162.99	18,466,746.79	18,651,999.70	18,523,357.06	18,395,475.28	18,382,655.03
Tax Depreciation of Property, Plant, & Equipment										
Total MACRS Depreciation										
Begin Balance										
Depreciation		(773,554.48)	(782,619.07)	(791,936.88)	(801,512.88)	(811,354.52)	(821,467.33)	(809,818.43)	(806,887.28)	(817,197.91)
Retirements		230,820.00	232,683.00	234,538.00	236,420.00	238,326.00	240,264.00	182,052.00	183,650.00	185,276.00
End Balance		(542,734.48)	(549,936.07)	(557,398.88)	(565,092.88)	(573,028.52)	(581,203.33)	(618,766.43)	(625,237.28)	(631,921.91)
End Balance check		(542,734.48)	(549,936.07)	(557,398.88)	(565,092.88)	(573,028.52)	(581,203.33)	(618,766.43)	(625,237.28)	(631,921.91)
Net Plant										
Begin Balance		28,997,093.00	29,183,818.00	29,371,749.00	29,561,545.00	29,753,037.00	29,946,226.00	30,143,164.00	30,278,594.00	30,417,430.00
End Balance		28,640,863.52	28,827,812.93	29,004,346.12	29,187,956.12	29,374,192.48	29,559,960.67	29,659,627.57	29,792,192.72	29,925,774.09
Tax		(773,554.48)	(782,619.07)	(791,936.88)	(801,512.88)	(811,354.52)	(821,467.33)	(809,818.43)	(808,887.28)	(817,197.91)
Book		(413,185.07)	(418,046.25)	(424,644.97)	(430,222.72)	(436,872.70)	(443,511.09)	(448,059.64)	(450,402.78)	(454,491.25)
		(360,369.41)	(364,572.82)	(367,292.91)	(371,290.16)	(374,482.32)	(377,956.24)	(361,758.79)	(358,584.50)	(362,706.66)
Balance Statement										
Liabilities										
Current Liabilities										
Current Liabilities	601,087	601,087	601,087	781,414	781,414	781,414	937,697	937,697	937,697	1,033,466
Current Liabilities as % of Revenues	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%
Noncurrent Liabilities										
Long Term Debt, Notes payable, net of current portion Beg	8,409,156.00	8,409,156.00	8,187,472.00	7,987,446.00	7,721,198.00	7,463,825.00	7,215,031.00	6,974,530.00	6,742,046.00	6,517,311.00
Additional Debt		58,621.00	72,890.00							
Debt Repayment	(280,305)	(280,305)	(272,916)	(266,248)	(257,373)	(248,794)	(240,501)	(232,484)	(224,735)	(217,244)
Debt Repayment years	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
End Long Term Debt, Notes payable, net of current portion End	8,128,851.00	8,187,472.00	7,987,446.00	7,721,198.00	7,463,825.00	7,215,031.00	6,974,530.00	6,742,046.00	6,517,311.00	6,300,067.00
Total noncurrent liabilities										
Deferred Tax Liabilities										
Begin Balance			104,110	209,435	315,546	422,812	531,000	640,191	742,103	845,698
Additions to Deferred Asset	(219,369)	104,110	105,325	106,111	107,266	108,188	109,191	101,912	103,595	104,786
Total Deferred Tax Liability	(219,369)	104,110	209,435	315,546	422,812	531,000	640,191	742,103	845,698	950,484
Total Liabilities	8,510,569.00	8,892,669.00	8,797,968.00	8,818,158.00	8,668,051.00	8,527,445.00	8,552,418.00	8,421,646.00	8,300,700.00	8,282,017.00
Equity										
Proportion of Capital										
Beginning Equity Capital	20,587,935	20,587,935	20,714,910	20,816,752	21,458,665	22,074,766	22,663,575	23,716,115	24,741,404	25,740,347
Additions to Equity (Retained Earnings)	130,741	126,975	101,842	641,913	616,101	588,809	1,052,540	1,025,289	998,943	1,265,518
Deductions from Equity Dividends	0		0	0	0	0	0	0	0	0
Additional Paid In Capital	0	0	0	0	0	0	0	0	0	0
Ending Equity Capital	20,718,676	20,714,910	20,816,752	21,458,665	22,074,766	22,663,575	23,716,115	24,741,404	25,740,347	27,005,865
Operating Income	418,474	413,176	371,648	1,125,554	1,083,877	1,046,267	1,661,450	1,636,424	1,597,880	1,961,493
Return On Equity	2.02%	1.99%	1.79%	5.29%	4.90%	4.57%	7.09%	6.61%	6.19%	7.26%
Total Liabilities & Stockholder's Equity	29,229,245	29,607,579	29,614,720	30,276,823	30,742,817	31,190,020	32,268,533	33,163,250	34,041,053	35,287,860
Assets	744,710	18,248,806	18,251,509	18,474,547	18,472,161	18,466,749	18,652,000	18,523,357	18,395,475	18,382,645
Liabilities & Stockholder's Equity less Assets		11,358,773	11,363,211	11,802,276	12,270,656	12,724,271	13,616,533	14,639,893	15,645,578	16,905,215
Dividend		11,358,773	11,363,211	11,802,276	12,270,656	12,724,271	13,616,533	14,639,893	15,645,578	16,905,215
Final Stockholder Equity	29,329,245	18,248,806	18,251,509	18,474,547	18,472,161	18,466,749	18,652,000	18,523,357	18,395,475	18,382,645
Capital Expenditures and Changes in Working Capital										
Capital Expenditures		417,947.00	425,814.00	424,344.00	427,902.00	431,525.00	435,202.00	319,487.00	322,486.00	325,541.00
Changes to Working Capital										
Current Assets	744,710	744,710	744,710	968,123	968,123	968,123	1,161,748	1,161,748	1,161,748	1,277,923
Current Liabilities	601,087	601,087	601,087	781,414	781,414	781,414	937,697	937,697	937,697	1,033,466
Working Capital	143,623	143,623	143,623	186,709	186,709	186,709	224,051	224,051	224,051	246,457
Changes to Working Capital				43,086			37,342			22,406
CASH FLOW										
Income from Operations	365,356	461,590	380,272	864,764	832,522	797,056	1,254,839	1,219,678	1,187,046	1,447,349
Non cash Expense (depreciation)	413,185	413,185	418,046	424,644	430,223	436,872	443,511	448,060	450,403	454,491
Capital Expenditures		417,947	425,814	424,344	427,902	431,525	435,202	319,487	322,486	325,541
Change in Working Capital				43,086			37,342			22,406
Net Cash Flows	778,541	457,428	372,504	821,987	834,843	802,403	1,224,806	1,348,250	1,314,963	1,553,893
Period	0.5	0.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5
PV Factor										
Discount Rate with growth	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%

Williamstown Township, Pennsylvania
Williamstown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 26, 2021

	Base	1 to 5	Periods 6 to 10	11 to 19	20-26	27-33	34-40	41-46	47-53	54-60	0	1	2	3	4	5	6	7	8	9
Discount Rate without growth	5.65%										5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%
Period Present Worth Factor (PW)																				
PW of Cashflow											0.964	0.964	0.896	0.848	0.775	0.77	0.669	0.622	0.578	0.538
Accumulated PW of Cashflows	19,497,222										450,514	644,561	493,644	684,725	646,226	577,726	525,195	486,740	451,406	435,994
											1,095,075	948,561	638,005	1,322,730	1,968,948	2,546,674	3,166,869	4,204,609	4,966,115	5,802,109
CASH FLOW																				
Income from Operations																				
Depreciation											424,557	(329,284)	(157,406)	980,741	352,077	922,514	783,715	774,461	743,994	1,007,595
Capital Expenditures												(775,554)	(781,618)	(791,937)	(801,513)	(831,356)	(921,467)	(900,914)	(808,687)	(817,198)
Change in Working Capital												401,467	420,814	424,334	447,902	441,345	435,702	319,482	322,486	325,541
Net Cash Flows														43,086			37,342			27,406
											424,557	226,921	104,199	705,244	775,668	702,344	1,114,998	1,293,856	1,230,855	1,476,846
Period											0.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5	
PW Factor																				
Discount Rate with growth	7.57%										7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%
Discount Rate without growth	5.65%										5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%
Period Present Worth Factor (PW)																				
PW of Cashflow											0.964	0.964	0.896	0.833	0.775	0.72	0.669	0.622	0.578	0.538
Accumulated PW of Cashflows	18,441,569										409,273	218,754	93,443	587,473	601,408	505,668	745,775	804,095	712,376	794,541
											678,027	218,754	403,896	989,968	1,591,376	2,097,464	2,843,239	3,596,334	4,308,710	5,103,251

Rate Case Forecasts
Rate Base
Plant in Service
Accumulated Book Depreciation
Working Capital
Accumulated Deferred Income Tax
Rate Base
Annualized Return on Rate Base 7.21%
O&M Expenses
Book Depreciation
Rate making Interest Expense
Revenue Requirement
O&M Expenses
Depreciation Expense
Interest
Pretax Income
State & Federal Taxes @ 28.89%
After Tax Income
Current Revenue
Revenue Requirement
Required Revenue Increase
Income from Operations
Return on Rate Base

Required Return 7.21%
Authorized Return

After Tax Net Income
Taxes
Pre tax Net Income
Interest Expense
Operating Income
Operating Expenses
Revenue Requirement

Required Return
Operating Expenses
Revenue Requirement
Required Rate Increase

Proposed Rate Increase
Rate Increase Scenario b
c

No increases (Input 2) 7
No Rate Increases (Input 2) 8

Modest Rate Increases 6% every 5 year period starting in period 3 (Input 4) 4
Modest Rate Increases (Input 4) 5

Required Rate Increases 40% period 5, 20% period 6, 10% period 9, 6% period 12, 4% period 15, and 6% every 3rd year beginning in period 18 (Input 6) 6
Required Rate Increases (Input 6) 7

4

	29,183,638.00	29,184,674.00	29,371,749.00	29,961,945.00	29,351,077.00	29,986,226.00	30,141,364.00	30,278,594.00	30,417,480.00	30,557,695.00
	(11,679,522.07)	(11,679,522.07)	(11,464,950.32)	(12,055,171.79)	(11,248,985.03)	(11,847,600.21)	(12,650,912.30)	(12,916,984.94)	(13,181,702.72)	(13,452,982.97)
	143,623.00	144,673.00	148,623.00	186,709.00	186,709.00	186,709.00	224,051.00	224,051.00	224,051.00	246,457.00
	15,259	(104,110)	(209,495)	(315,546)	(422,812)	(533,000)	(640,191)	(742,103)	(845,698)	(956,484)
7.21%	17,662,977.93	17,543,604.93	17,660,986.68	17,477,936.71	17,267,934.99	17,156,334.79	17,074,111.70	16,843,557.06	16,612,080.28	16,400,685.03
	1,273,501.00	1,264,894.00	1,257,495.00	1,252,924.00	1,245,018.00	1,236,924.00	1,231,043.00	1,214,420.00	1,197,797.00	1,187,869.00
	1,876,021.00	1,833,316.00	1,869,585.00	1,907,385.00	1,945,533.00	1,984,444.00	2,024,133.00	2,064,616.00	2,105,908.00	2,148,026.00
	413,385.07	413,385.07	418,046.25	424,643.97	430,227.72	436,872.20	443,511.09	448,059.64	450,302.78	454,491.25
	234,615.00	234,615.00	278,410.00	222,850.00	215,471.00	208,741.00	201,299.00	194,589.00	188,104.00	181,833.00
	3,749,142.07	3,746,210.07	3,823,536.25	3,807,802.97	3,836,194.72	3,866,345.20	3,899,986.09	3,921,664.64	3,942,084.78	3,966,839.25
	1,828,021.00	1,833,316.00	1,869,585.00	1,907,385.00	1,945,533.00	1,984,444.00	2,024,133.00	2,064,616.00	2,105,908.00	2,148,026.00
	413,385.07	413,385.07	418,046.25	424,643.97	430,227.72	436,872.20	443,511.09	448,059.64	450,302.78	454,491.25
	234,615.00	234,615.00	278,410.00	222,850.00	215,471.00	208,741.00	201,299.00	194,589.00	188,104.00	181,833.00
28.89%	1,273,501.00	1,264,894.00	1,257,495.00	1,252,924.00	1,245,018.00	1,236,924.00	1,231,043.00	1,214,420.00	1,197,797.00	1,187,869.00
	367,914.00	365,426.00	363,290.00	361,970.00	359,686.00	357,350.00	355,648.00	350,844.00	346,054.00	343,231.00
	905,587.00	899,468.00	894,205.00	890,954.00	885,332.00	879,574.00	875,395.00	863,576.00	851,743.00	844,638.00
	2,659,679.00	2,659,679.00	2,659,679.00	3,457,583.00	3,457,583.00	3,457,583.00	4,149,100.00	4,149,100.00	4,149,100.00	4,564,010.00
	4,117,236.07	4,111,440.07	4,187,246.25	4,169,777.97	4,196,880.72	4,223,705.20	4,255,434.09	4,272,520.64	4,288,058.78	4,408,460.25
	55%	55%	55%	21%	21%	22%	4%	3%	3%	6%
	365,356	361,590	330,272	864,763	841,522	797,050	1,258,839	1,219,878	1,187,046	1,447,349
	2.07%	2.06%	1.89%	4.98%	4.82%	4.65%	7.48%	7.24%	7.15%	8.82%
	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%
	1,273,501	1,264,894	1,257,495	1,252,924	1,245,018	1,236,924	1,231,043	1,214,420	1,197,797	1,187,869
	140,741	126,975	101,842	643,933	616,103	488,909	1,052,560	1,025,289	998,943	1,266,516
	53,117	51,586	41,626	260,791	249,405	239,217	427,617	413,546	405,864	534,144
	193,858	178,561	143,468	904,724	865,508	728,126	1,480,177	1,438,835	1,404,806	1,779,660
	(238,615)	(238,615)	(238,615)	222,850	215,471	208,741	201,299	194,589	188,104	181,833
	418,473	417,176	371,648	1,175,554	1,081,827	1,036,267	1,681,456	1,633,424	1,592,909	1,961,493
	2,241,206	2,246,503	2,298,031	2,332,029	2,375,756	2,421,116	2,467,644	2,512,676	2,556,211	2,602,517
	2,659,679	2,659,679	2,669,679	3,457,583	3,457,583	3,457,583	4,149,100	4,149,100	4,149,100	4,564,010
	1,273,501	1,264,894	1,257,495	1,252,924	1,245,018	1,236,924	1,231,043	1,214,420	1,197,797	1,187,869
	2,241,206	2,246,503	2,298,031	2,332,029	2,375,756	2,421,116	2,467,644	2,512,676	2,556,211	2,602,517
	4,514,707	4,511,397	4,545,526	4,584,954	4,620,774	4,658,040	4,698,687	4,727,096	4,754,007	4,790,386
	69.80%	69.58%	70.77%	70.60%	71.94%	72.36%	73.7%	74.9%	75.35%	76.60%
	0	1	2	3	4	5	6	7	8	9
	0%	0%	0%	40%	0%	0%	20%	0%	0%	10%
	0	1	2	3	4	5	6	7	8	9
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	0.0%	0.0%	0.0%	30.0%	0.0%	0.0%	20.0%	0.0%	0.0%	10.0%
	100.0%	100.0%	100.0%	130.0%	130.0%	130.0%	156.0%	156.0%	156.0%	171.6%
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Changes in Balance Sheet Accounts										
Assets										
Change in Current Assets (Source negative / Use positive)										
Plant & Equipment										
Additions (Source negative / Use positive)										
			417,167	420,834	424,334	427,902	431,525	435,202	319,482	322,486
					221,424			194,625		136,125

Footnotes

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021

	Base	Periods																
		1-5	6-15	16 - 19	20 Yr	27-33	38-40	41 Yr	47-53	54-60	0	1	2	3	4	5	6	7	8	9
Change in Current Liabilities (Source Positive / Use negative)														180,327			156,281			93,769
Long Term Debt												(58,621.00)	(72,890.00)							
Additional Long Term Debt Source Positive / Use Negative												260,405	272,916	266,248	257,373	248,794	240,501	232,484	224,735	217,244
Principal Paid Long term Debt (Source positive / Use negative)																				
Equity																				
Additions to Equity (Source Positive / Use Negative)																				
Dividend (Source negative / Use Positive)																				
Funds Provided from Operations																				
Sources of Funds																				
Net Income (Use Negative / Source Positive)												126,975	101,847	841,913	616,101	589,809	1,052,540	1,025,269	998,944	1,765,316
Depreciation (Source positive use negative)												413,385	418,046	424,648	430,221	436,822	443,521	448,050	450,301	658,495
Current Liabilities (Source Positive)														180,327			156,281			93,769
												540,360	519,893	1,446,888	1,046,322	1,025,631	1,652,342	1,473,319	1,449,245	2,517,580
Sources and Uses of Funds																				
Sources of Funds																				
Current Liabilities (Source Positive)																				
Uses of Funds																				
Current Assets: Increase (Use)												417,467	420,814	422,413	424,198	427,902	441,525	199,682	322,686	116,375
Fixed Assets: Assets Increase (Use)												417,347	420,814	424,648	847,747	427,902	432,525	439,682	322,686	324,541
Total Uses of Funds																				
Funds from Financing Activities																				
Changes in Debt																				
Increase in Long Term Debt												(58,621.00)	(72,890.00)							
Repayment of Long Term Debt												(260,405)	(272,916)	(266,248)	(257,373)	(248,794)	(240,501)	(232,484)	(224,735)	(217,244)
Funds fom Equity																				
Dividends Paid (Use)												0	0	0	0	0	0	0	0	0
Additional Paid in Capital (source)																				
Total Funds from Financing Activities												(318,926.00)	(345,806.00)	(266,248.00)	(257,373.00)	(248,794.00)	(240,501.00)	(232,484.00)	(224,735.00)	(217,244.00)
Total Funds Needed												716,113.00)	(746,732.00)	532,889.00	361,049.00	345,397.00	783,006.00	922,483.00	902,025.00	1,156,816.00
Financing																				
Debt	29%											64,673.00	71,552.00	(86,538.00)	(104,706.00)	(200,155.00)	(227,072.00)	(267,201.00)	(261,587.00)	(334,807.00)
Equity	71%											153,440.00	175,180.00	(236,351.00)	(256,343.00)	(245,207.00)	(555,934.00)	(614,382.00)	(640,438.00)	(821,919.00)
Funds Provided by Financing												716,113.00	746,732.00	432,889.00	(461,049.00)	(345,362.00)	(783,006.00)	(923,384.00)	(902,025.00)	(1,156,816.00)
												58,621.00	72,890.00							
												186,848.00	267,455.00							

\\Sas-dr1\Shared\Water Industry\Willistown Township\Report & Testimony\Willistown Wastewater System Valuation as of 6.22.2021

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser, Investor-Owned Utility
As of January 20, 2021

	Base	Periods 1-5	6-15	16-19	10	11	12	13	14	15	16	17
Income Statement												
Revenues												
Annual Revenue Growth rate												
Subscriber Growth Rate (Annual)		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Periodic Subscriber Growth												
Growth	0.0%	0.0%	0.0%	0.0%	0.0%					0.0%		
Period for Periodic Growth	5											
Rate Case Activities												
Periodic Rate Case (years)	Typically 4 years											
Required Rate Increase	Calculated in DCF				5.14%	4.76%	4.74%	9.23%	8.85%	11.56%	12.93%	12.44%
Proposed Rate Increase	Calculated in DCF				0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Revenue Adjustments	Calculated				0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Base and Forecast	2,659,679				4,564,010	4,564,010	4,837,851	4,837,851	4,837,851	5,128,122	5,128,122	5,128,122
Operating Expenses					7%	7%	7%	7%	7%	7%	7%	7%
Expense Level 1: Salaries, Wages & Benefits	264,869				322,874	329,331	335,918	342,636	349,489	356,479	363,609	370,881
Expense Level 1: Salaries, Wages & Benefits Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 2: Materials & Supplies	1,446,497				1,763,273	1,798,538	1,834,509	1,871,199	1,908,623	1,946,795	1,985,731	2,025,446
Expense Level 2: Materials & Supplies Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 3: Utilities	86,005				104,846	106,942	109,076	111,258	113,483	115,753	118,068	120,429
Expense Level 3: Utilities Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 4: Not Used	-											
Expense Level 4: Not Used Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 5: Not Used	-											
Expense Level 5: Not Used Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 6: Not Used	-											
Expense Level 6: Not Used Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Property Taxes	28,997,091											
Begin Plant					17,104,712	16,972,877	16,842,552	16,711,207	16,579,726	16,450,442	16,319,436	16,186,277
PT Rate % of beginning net plant	0.000%				0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Book Depreciation (based on Beginning Year Property Plant & Equipment)					466,424	467,084	464,346	471,756	470,917	476,066	481,741	482,698
Total Operating Expenses					2,651,411	2,696,890	2,743,843	2,790,849	2,842,512	2,895,093	2,949,149	2,999,454
Cost of Operation as % of Revenues (Calculation)					58.1%	59.1%	56.7%	57.8%	58.8%	56.5%	57.5%	58.5%
Operating Expenses less Depreciation					2,190,987	2,234,806	2,279,504	2,325,093	2,371,595	2,419,027	2,467,408	2,516,756
Operating Income					1,912,599	1,867,120	2,094,008	2,047,002	1,995,339	2,233,029	2,178,973	2,128,668
Nonoperating Revenues (Expenses)												
Interest Income												
Interest Expense					175,772	169,913	164,249	158,774	153,482	148,366	143,420	138,639
Interest Exp as % of Debt	2.79%				2.79%	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%
Total nonoperating revenues (expenses)					175,772.00	169,913.00	164,249.00	158,774.00	153,482.00	148,366.00	143,420.00	138,639.00
Income (loss) before State and Federal Taxes					1,736,827	1,697,207	1,929,759	1,882,228	1,841,857	2,084,663	2,035,553	1,990,029
State and Federal Taxes					501,769	490,323	557,507	543,776	532,113	602,259	588,071	574,919
State and Federal Tax Rate	28.89%				28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%
Income After Taxes					1,235,058	1,206,884	1,372,252	1,338,452	1,309,744	1,482,404	1,447,482	1,415,110
Income After Taxes plus Interest					1,410,830	1,376,797	1,536,501	1,497,226	1,463,226	1,630,770	1,590,902	1,553,749
Earnings before Interest, Taxes, Depreciation & Amortization					**1,369,485**	**1,348,558**	**1,443,334**	**1,425,206**	**1,402,030**	**1,504,577**	**1,484,572**	**1,461,528**
Income (loss) before State and Federal Taxes					1,736,827	1,697,207	1,929,759	1,882,228	1,841,857	2,084,664	2,035,553	1,990,029
Book Depreciation					(466,424)	(467,084)	(464,346)	(471,756)	(470,917)	(476,066)	(481,741)	(482,698)
Tax Depreciation					(825,760)	(834,578)	(843,663)	(853,018)	(862,653)	(872,580)	(771,844)	(778,275)
Difference Tax over Book Depreciation					(365,336)	(372,494)	(379,324)	(381,262)	(391,737)	(396,514)	(290,104)	(295,577)
Income Adjusted for Tax Depreciation					1,371,491	1,324,713	1,550,436	1,500,966	1,450,121	1,688,149	1,745,450	1,694,452
Income Tax Rate					28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%
Income Taxes					396,224	382,710	447,921	433,629	418,940	487,700	504,260	489,527
Income After Tax					975,267	942,003	1,102,515	1,067,337	1,031,181	1,200,449	1,241,190	1,204,925
Deferred Income Taxes					(105,545)	(107,633)	(109,586)	(110,347)	(113,173)	(114,554)	(84,811)	(85,392)
Accumulated Deferred Income Taxes					(1,056,029)	(1,163,642)	(1,273,228)	(1,383,575)	(1,496,548)	(1,611,101)	(1,694,912)	(1,780,304)
Income After Taxes (Book Depreciation)					1,235,058	1,206,884	1,372,252	1,338,452	1,309,744	1,482,404	1,447,482	1,415,110
Plus Deferred Taxes					(105,545)	(107,633)	(109,586)	(110,347)	(113,174)	(114,553)	(84,811)	(85,392)
Plus Interest					175,772	169,913	164,249	158,774	153,482	148,366	143,420	138,639
After Tax Income Debt Free					1,516,171	1,484,430	1,646,087	1,607,374	1,576,499	1,745,324	1,674,713	1,639,141
Balance Statement												
Assets												
Current Assets												
Current Asset Balance	744,710				1,277,923	1,277,923	1,354,598	1,354,598	1,354,598	1,435,874	1,435,874	1,435,874
CA as % of Revenues	28.00%	28.00%	28.00%	28.00%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%
Balance Statement												
Property Plant & Equipment												
Total PP&E												
Begin Balance					30,557,695.00	30,699,421.00	30,842,636.00	30,987,369.00	31,133,649.00	31,281,507.00	31,430,978.00	31,582,087.00
Additions					328,654.00	311,824.00	335,055.00	338,145.00	341,698.00	345,119.00	348,603.00	352,158.00
Retirements					(186,928.00)	(168,609.00)	(190,322.00)	(192,065.00)	(193,840.00)	(195,648.00)	(197,494.00)	(199,371.00)
End Balance	28,997,091.00				30,699,421.00	30,842,636.00	30,987,369.00	31,133,649.00	31,281,507.00	31,430,978.00	31,582,087.00	31,734,874.00
End Balance Check					30,699,421.00	30,842,636.00	30,987,369.00	31,133,649.00	31,281,507.00	31,430,978.00	31,582,087.00	31,734,874.00
Book Depreciation of Property, Plant, & Equipment												
Total Book Depreciation												

	18	19	20	21	22	23	24	25
Income Statement								
Revenues								
Annual Revenue Growth rate								
Subscriber Growth Rate (Annual)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Periodic Subscriber Growth								
Growth			0.0%					0.0%
Period for Periodic Growth								
Rate Case Activities								
Periodic Rate Case (years)								
Required Rate Increase	16.86%	16.22%	15.70%	19.82%	19.28%	18.68%	22.69%	22.66%
Proposed Rate Increase	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Revenue Adjustments	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Base and Forecast	5,435,809	5,435,809	5,435,809	5,761,958	5,761,958	5,761,958	6,107,675	6,107,675
Operating Expenses	7%	7%	7%	7%	7%	7%	7%	7%
Expense Level 1: Salaries, Wages & Benefits	378,299	385,865	393,582	401,454	409,483	417,673	426,026	434,547
Expense Level 1: Salaries, Wages & Benefits Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 2: Materials & Supplies	2,065,955	2,107,274	2,149,419	2,192,407	2,236,255	2,280,980	2,326,600	2,373,132
Expense Level 2: Materials & Supplies Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 3: Utilities	122,838	125,295	127,801	130,357	132,964	135,623	138,335	141,102
Expense Level 3: Utilities Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 4: Not Used								
Expense Level 4: Not Used Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 5: Not Used								
Expense Level 5: Not Used Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 6: Not Used								
Expense Level 6: Not Used Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Property Taxes								
Begin Plant	16,055,621	15,924,534	15,790,268	15,656,079	15,529,495	15,398,755	15,268,680	15,140,1[illegible]
PT Rate % of beginning net plant	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Book Depreciation (based on Beginning Year Property Plant & Equipment)	487,865	492,686	493,186	497,637	501,732	505,088	507,292	512,412
Total Operating Expenses	3,054,897	3,111,123	3,164,188	3,221,855	3,265,434	3,339,464	3,398,251	3,461,193
Cost of Operation as % of Revenues (Calculation)	56.2%	57.2%	56.2%	55.9%	56.9%	58.0%	55.6%	56.7%
Operating Expenses less Depreciation	2,567,092	2,618,434	2,670,802	2,724,218	2,778,702	2,834,276	2,890,962	2,948,781
Operating Income	2,380,912	2,324,689	2,271,621	2,540,104	2,481,524	2,422,494	2,709,422	2,646,482
Nonoperating Revenues (Expenses)								
Interest Income								
Interest Expense	134,018	129,551	125,232	121,058	117,023	113,122	109,351	105,706
Interest Exp as % of Debt	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%
Total nonoperating revenues (expenses)	134,018.00	129,551.00	125,232.00	121,058.00	117,023.00	113,122.00	109,351.00	105,706.00
Income (loss) before State and Federal Taxes	2,246,894	2,195,138	2,146,389	2,419,045	2,364,501	2,309,472	2,600,071	2,540,776
State and Federal Taxes	649,128	634,175	620,092	698,862	683,104	667,206	751,160	734,030
State and Federal Tax Rate	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%
Income After Taxes	1,597,766	1,560,963	1,526,297	1,720,183	1,681,397	1,642,266	1,848,911	1,806,746
Income After Taxes plus Interest	1,731,784	1,690,514	1,651,529	1,841,241	1,798,420	1,755,388	1,958,262	1,912,452
Earnings before Interest, Taxes, Depreciation & Amortization	**1,570,461**	**1,549,025**	**1,524,823**	**1,640,016**	**1,617,048**	**1,593,270**	**1,714,394**	**1,690,834**
Income (loss) before State and Federal Taxes	2,246,894	2,195,138	2,146,389	2,419,045	2,364,501	2,309,472	2,600,071	2,540,776
Book Depreciation	(487,865)	(492,686)	(493,186)	(497,637)	(501,732)	(505,088)	(507,292)	(512,412)
Tax Depreciation	(784,894)	(791,709)	(798,726)	(805,956)	(813,408)	(821,088)	(829,008)	(837,177)
Difference Tax over Book Depreciation	(297,088)	(299,023)	(305,540)	(308,319)	(311,676)	(316,000)	(321,716)	(324,765)
Income Adjusted for Tax Depreciation	1,949,806	1,896,115	1,841,049	2,110,726	2,052,825	1,993,472	2,278,355	2,216,011
Income Tax Rate	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%
Income Taxes	563,299	547,768	531,879	609,780	593,061	575,914	658,217	640,205
Income After Tax	1,386,507	1,348,327	1,309,170	1,500,937	1,459,764	1,417,558	1,620,138	1,575,806
Deferred Income Taxes	(85,829)	(86,387)	(88,211)	(89,073)	(90,043)	(91,292)	(92,943)	(93,825)
Accumulated Deferred Income Taxes	(1,866,133)	(1,952,520)	(2,040,731)	(2,129,806)	(2,219,849)	(2,311,141)	(2,404,084)	(2,497,909)
Income After Taxes (Book Depreciation)	1,597,766	1,560,963	1,526,297	1,720,183	1,681,397	1,642,266	1,848,911	1,806,746
Plus Deferred Taxes	(85,829)	(86,387)	(88,211)	(89,073)	(90,043)	(91,292)	(92,943)	(93,825)
Plus Interest	134,018	129,551	125,232	121,058	117,023	113,122	109,351	105,706
After Tax Income Debt Free	1,857,613	1,776,901	1,749,742	1,930,314	1,888,463	1,846,680	2,051,205	2,006,277
Balance Statement								
Assets								
Current Assets								
Current Asset Balance	1,522,027	1,522,027	1,522,027	1,613,348	1,613,348	1,613,348	1,710,149	1,710,149
CA as % of Revenues	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%
Balance Statement								
Property Plant & Equipment								
Total PP&E								
Begin Balance	31,734,874.00	31,889,374.00	32,045,629.00	32,203,669.00	32,363,535.00	32,525,270.00	32,688,911.00	32,854,504.00
Additions	355,784.00	359,487.00	363,263.00	367,119.00	371,058.00	375,079.00	379,188.00	383,386.00
Retirements	(201,284.00)	(203,232.00)	(205,223.00)	(207,253.00)	(209,323.00)	(211,438.00)	(213,595.00)	(215,797.00)
End Balance	31,889,374.00	32,045,629.00	32,203,669.00	32,363,535.00	32,525,270.00	32,688,911.00	32,854,504.00	33,022,093.00
End Balance Check	31,889,374.00	32,045,629.00	32,203,669.00	32,363,535.00	32,525,270.00	32,688,911.00	32,854,504.00	33,022,093.00
Book Depreciation of Property, Plant, & Equipment								
Total Book Depreciation								

DCF Investor Owned

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021

	Base	1-5	Periods 6-15	16-19	10	11	12	13	14
Begin Balance					(13,452,982.97)	(13,726,544.71)	(14,000,083.71)	(14,274,166.95)	(14,553,922.93)
Depreciation					(460,423.74)	(462,084.00)	(464,440.24)	(471,755.98)	(470,916.72)
Retirements					186,863.00	188,544.00	190,357.00	192,000.00	193,775.00
End Balance					(13,726,544.71)	(14,000,083.71)	(14,274,166.95)	(14,553,922.93)	(14,831,064.65)
End Balance Check					(13,726,543.71)	(14,000,083.71)	(14,274,166.95)	(14,553,922.94)	(14,831,064.65)
Net Plant									
Begin Balance					17,104,717.04	16,977,877.29	16,842,552.29	16,713,202.05	16,579,726.07
End Balance					16,977,877.29	16,842,552.29	16,713,202.05	16,579,726.07	16,450,447.35
Total Assets					18,250,800.74	18,120,475.29	18,067,800.05	17,934,324.07	17,805,040.4
Tax Depreciation of Property, Plant, & Equipment									
Total MACRS Depreciation									
Begin Balance									
Depreciation					(825,759.76)	(834,578.23)	(843,662.76)	(854,018.15)	(862,654.47)
Retirements					186,926.00	188,609.00	190,422.00	192,065.00	194,840.00
End Balance					(638,833.76)	(645,969.23)	(653,340.76)	(660,953.15)	(668,814.47)
End Balance Check					(638,833.76)	(645,969.23)	(653,340.76)	(660,953.15)	(668,814.47)
Net Plant									
Begin Balance					40,557,695.00	40,699,421.00	40,847,636.00	40,987,369.00	31,133,649.00
End Balance					40,060,369.24	40,196,666.77	40,334,078.74	40,472,695.85	30,612,499.53
Tax					(825,759.76)	(834,578.23)	(843,662.76)	(854,018.15)	(862,654.47)
Book					(460,423.74)	(462,084.00)	(464,340.24)	(471,755.98)	(470,916.72)
					(365,336.02)	(372,494.23)	(379,322.52)	(381,262.17)	(391,746.75)
Balance Statement									
Liabilities									
Current Liabilities									
Current Liabilities	601,087				1,031,466	1,031,466	1,093,354	1,093,354	1,093,354
Liab as % of Revenues	22.60%	22.60%	22.60%	22.60%	22.6%	22.6%	22.6%	22.6%	22.6%
Noncurrent Liabilities									
Long Term Debt, Notes payable, net of current portion Beg	6,471,156.00				6,300,067.00	6,090,065.00	5,887,064.00	5,690,828.00	5,501,144.00
Additional Debt									
Debt Repayment					(210,002)	(203,002)	(196,235)	(189,694)	(183,371)
Debt Repayment years	30.00				30.00	30.00	30.00	30.00	30.00
End Long Term Debt, Notes payable, net of current portion End					6,090,065.00	5,887,064.00	5,690,828.00	5,501,134.00	5,317,764.00
Total noncurrent liabilities									
Deferred Tax Liabilities									
Begin Balance					950,484	1,056,029	1,163,642	1,273,228	1,383,375
Additions to Deferred Asset					105,545	107,613	109,586	110,147	113,173
Total Deferred Tax Liability					1,056,029	1,163,642	1,273,228	1,383,375	1,496,548
Total Liabilities					8,177,560.00	8,082,171.00	8,057,410.00	7,977,863.00	7,907,665.00
Equity									
Proportion of Capital	75%								
Beginning Equity Capital	70,587,993				27,005,865	28,240,921	29,447,805	30,870,057	32,158,509
Additions to Equity (Retained Earnings)					1,235,056	1,206,884	1,422,252	1,338,452	1,309,744
Deductions from Equity Dividends	-				0	0	0	-	0
Additional Paid In Capital					0	0	0	0	0
Ending Equity Capital					28,240,921	29,447,805	30,870,057	32,158,509	33,468,253
Operating Income					1,912,599	1,867,120	2,094,006	2,041,062	1,996,339
Return On Equity					6.77%	6.34%	6.79%	6.35%	5.96%
Total Liabilities & Stockholders Equity					36,418,481	37,529,976	38,877,467	40,136,372	41,375,918
Assets					18,250,800	18,120,475	18,067,800	17,934,324	17,805,040
Liabilities & Stockholders Equity less Assets					18,167,681	19,409,501	20,809,667	22,202,048	23,570,878
Dividend					18,167,681	19,409,501	20,809,667	22,202,048	23,570,878
Total Stockholder Equity					18,250,800	18,120,475	18,067,800	17,934,324	17,805,040
Capital Expenditures and Changes in Working Capital									
Capital Expenditures					428,654.00	431,824.00	435,055.00	338,345.00	441,698.00
Changes in Working Capital									
Current Assets	744,710				1,277,921	1,277,923	1,354,598	1,354,598	1,354,598
Current Liabilities	601,087				1,031,466	1,031,466	1,093,354	1,093,354	1,093,354
Working Capital	143,623				246,457	246,457	261,244	261,244	261,244
Changes to Working Capital							14,787		
CASH FLOW									
Income from Operations					1,416,840	1,376,797	1,536,501	1,497,226	1,463,226
Non-cash Expense (depreciation)					460,424	462,084	464,340	471,756	470,917
Capital Expenditures					328,654	431,824	435,055	338,345	441,698
Change in Working Capital							14,787		
Net Cash Flows					1,542,600	1,507,057	1,550,999	1,630,637	1,492,445
Period					9.5	10.5	11.5	12.5	13.5
PV Factor									
Discount Rate with growth	7.57%				7.57%	7.57%	7.57%	7.57%	7.57%

	15	16	17	18	19	20	21	22	23	24	25
Begin Balance	(14,831,064.65)	(15,111,547.57)	(15,395,860.41)	(15,679,253.39)	(15,965,840.24)	(16,255,360.69)	(16,543,589.98)	(16,834,039.91)	(17,126,515.03)	(17,420,231.06)	(17,713,994.13)
Depreciation	(476,065.92)	(481,740.84)	(482,697.98)	(487,804.85)	(492,686.45)	(493,386.29)	(497,636.93)	(501,732.12)	(505,088.03)	(507,292.07)	(512,412.11)
Retirements	195,583.00	197,428.00	199,305.00	201,218.00	203,166.00	205,157.00	207,187.00	209,257.00	211,372.00	213,529.00	215,731.00
End Balance	(15,111,547.57)	(15,395,860.41)	(15,679,253.39)	(15,965,840.24)	(16,255,360.69)	(16,543,589.98)	(16,834,039.91)	(17,126,515.03)	(17,420,231.06)	(17,713,994.13)	(18,010,675.24)
End Balance Check	(15,111,547.57)	(15,395,860.41)	(15,679,253.39)	(15,965,840.24)	(16,255,360.69)	(16,543,589.98)	(16,834,039.91)	(17,126,515.03)	(17,420,231.06)	(17,713,994.13)	(18,010,675.24)
Net Plant											
Begin Balance	16,450,447.35	16,319,430.43	16,186,226.59	16,055,620.61	15,923,533.76	15,790,268.31	15,660,079.02	15,529,495.09	15,398,754.97	15,266,679.94	15,140,509.87
End Balance	16,319,430.43	16,186,226.59	16,055,620.61	15,923,533.76	15,790,268.31	15,660,079.02	15,529,495.09	15,398,754.97	15,266,679.94	15,140,509.87	15,011,417.76
Total Assets	17,755,304.43	17,622,100.59	17,491,494.61	17,445,560.76	17,312,295.31	17,182,106.02	17,142,843.09	17,012,102.97	16,882,027.94	16,850,658.87	16,772,566.76
Tax Depreciation of Property, Plant, & Equipment											
Total MACRS Depreciation											
Begin Balance											
Depreciation	(872,580.36)	(771,844.36)	(778,274.72)	(784,892.68)	(791,709.08)	(798,726.40)	(805,956.32)	(813,408.28)	(821,088.20)	(829,008.40)	(837,177.16)
Retirements	195,648.00	197,494.00	199,371.00	201,284.00	203,232.00	205,224.00	207,253.00	209,324.00	211,438.00	213,595.00	215,797.00
End Balance	(676,932.36)	(574,350.36)	(578,903.72)	(583,608.68)	(588,477.08)	(593,503.40)	(598,703.32)	(604,084.28)	(609,650.20)	(615,413.40)	(621,380.16)
End Balance Check	(676,932.36)	(574,350.36)	(578,903.72)	(583,608.68)	(588,477.08)	(593,503.40)	(598,703.32)	(604,084.28)	(609,650.20)	(615,413.40)	(621,380.16)
Net Plant											
Begin Balance	31,281,507.00	31,430,978.00	31,582,047.00	31,734,674.00	31,889,374.00	32,045,629.00	32,203,609.00	32,364,535.00	32,525,270.00	32,688,911.00	32,854,564.00
End Balance	30,754,045.64	31,007,736.64	31,153,970.28	31,305,765.32	31,457,157.00	31,610,165.60	31,764,841.68	31,921,164.72	32,079,260.80	32,239,096.60	32,406,712.64
Tax	(872,580.36)	(771,844.36)	(778,274.72)	(784,892.68)	(791,709.08)	(798,726.40)	(805,956.32)	(813,408.28)	(821,088.20)	(829,008.40)	(837,177.16)
Book	(476,065.92)	(481,740.84)	(482,697.98)	(487,804.85)	(492,686.45)	(493,386.29)	(497,636.93)	(501,732.12)	(505,088.03)	(507,292.67)	(512,412.11)
	(396,514.44)	(290,103.52)	(295,576.74)	(297,087.83)	(299,022.55)	(305,340.11)	(308,319.39)	(311,676.16)	(316,000.17)	(321,716.33)	(324,765.05)
Balance Statement											
Liabilities											
Current Liabilities											
Current Liabilities	1,158,956	1,158,956	1,158,956	1,228,493	1,228,493	1,228,493	1,302,203	1,302,203	1,302,203	1,380,335	1,380,335
Liab as % of Revenues	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%
Noncurrent Liabilities											
Long Term Debt, Notes payable, net of current portion Beg	5,317,764.00	5,140,504.00	4,969,154.00	4,803,516.00	4,643,399.00	4,488,619.00	4,338,998.00	4,194,365.00	4,054,553.00	3,919,401.00	3,788,754.00
Additional Debt											
Debt Repayment	(177,259)	(171,350)	(165,638)	(160,117)	(154,780)	(149,621)	(144,633)	(139,812)	(135,152)	(130,647)	(126,292)
Debt Repayment years	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
End Long Term Debt, Notes payable, net of current portion End	5,140,504.00	4,969,154.00	4,803,516.00	4,643,399.00	4,488,619.00	4,338,998.00	4,194,365.00	4,054,553.00	3,919,401.00	3,788,754.00	3,662,462.00
Total noncurrent liabilities											
Deferred Tax Liabilities											
Begin Balance	1,496,548	1,611,101	1,694,912	1,780,304	1,866,133	1,952,520	2,040,734	2,129,806	2,219,849	2,311,141	2,404,084
Additions to Deferred Asset	114,553	83,811	85,392	85,829	86,387	88,214	89,073	90,043	91,292	92,943	93,825
Total Deferred Tax Liability	1,611,101	1,694,912	1,780,404	1,866,133	1,952,520	2,040,734	2,129,806	2,219,849	2,311,141	2,404,084	2,497,909
Total Liabilities	7,910,561.00	7,823,222.00	7,742,776.00	7,738,025.00	7,669,632.00	7,608,224.00	7,626,374.00	7,576,605.00	7,532,745.00	7,571,574.00	7,540,706.00
Equity											
Proportion of Capital											
Beginning Equity Capital	33,468,253	34,950,657	36,498,140	37,613,250	39,411,016	40,971,978	42,498,275	44,218,456	45,899,855	47,542,121	49,391,032
Additions to Equity (Retained Earnings)	1,482,404	1,447,482	1,415,110	1,597,766	1,560,963	1,526,297	1,720,181	1,681,397	1,642,266	1,848,911	1,806,746
Deductions from Equity Dividends	0	0	0	0	0	0	0	0	0	0	0
Additional Paid In Capital	0	0	0	0	0	0	0	0	0	0	0
Ending Equity Capital	34,950,657	36,498,140	37,813,250	39,411,016	40,971,978	42,498,275	44,218,456	45,899,853	47,542,121	49,391,032	51,197,778
Operating Income	2,233,029	2,178,973	2,128,666	2,380,912	2,324,689	2,271,621	2,540,104	2,485,524	2,422,594	2,709,427	2,646,487
Return On Equity	6.39%	5.99%	5.63%	6.04%	5.67%	5.35%	5.74%	5.41%	5.10%	5.49%	5.17%
Total Liabilities & Stockholders Equity	42,861,218	44,321,362	45,556,026	47,149,041	48,641,610	50,106,499	51,844,830	53,476,458	55,074,866	56,962,605	58,738,484
Assets	17,755,304	17,622,101	17,491,495	17,445,561	17,312,295	17,182,106	17,142,843	17,012,103	16,882,028	16,850,659	16,772,567
Liabilities & Stockholders Equity less Assets	25,105,914	26,699,061	28,064,531	29,703,480	31,329,315	32,924,393	34,701,989	36,464,357	38,192,838	40,111,946	41,965,917
Dividend	25,105,914	26,699,061	28,064,531	29,703,480	31,329,315	32,924,393	34,701,989	36,464,357	38,192,838	40,111,946	41,965,917
Total Stockholder Equity	17,755,304	17,622,101	17,491,495	17,445,561	17,312,295	17,182,106	17,142,843	17,012,103	16,882,028	16,850,659	16,772,567
Capital Expenditures and Changes in Working Capital											
Capital Expenditures	345,119.00	448,604.00	352,158.00	455,784.00	359,487.00	464,263.00	367,119.00	471,058.00	375,079.00	479,188.00	383,386.00
Changes in Working Capital											
Current Assets	1,435,874	1,435,874	1,435,874	1,522,027	1,522,027	1,522,027	1,613,348	1,613,348	1,613,348	1,710,149	1,710,149
Current Liabilities	1,158,956	1,158,956	1,158,956	1,228,493	1,228,493	1,228,493	1,302,203	1,302,203	1,302,203	1,380,335	1,380,335
Working Capital	276,918	276,918	276,918	293,534	293,534	293,534	311,145	311,145	311,145	329,814	329,814
Changes to Working Capital	15,674			16,616			17,611			18,669	
CASH FLOW											
Income from Operations	1,636,770	1,590,962	1,553,749	1,735,784	1,690,514	1,651,570	1,841,241	1,798,470	1,755,388	1,958,262	1,912,452
Non-cash Expense (depreciation)	476,066	481,741	482,698	487,805	492,686	493,386	497,637	501,732	505,088	507,292	512,412
Capital Expenditures	345,119	448,603	352,158	455,764	359,487	465,264	367,119	371,058	375,079	479,188	383,386
Change in Working Capital	15,674			16,616			17,611			18,669	
Net Cash Flows	1,746,043	1,624,040	1,684,289	1,747,189	1,823,713	1,781,692	1,954,148	1,929,094	1,885,397	2,067,697	2,041,478
Period	14.5	15.5	16.5	17.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5
PV Factor											
Discount Rate with growth	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser, Investor-Owned Utility
As of January 20, 2021

	Base	1-5	Periods 6-15	16-19	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Discount Rate without growth	5.65%				5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%
															17.699	17.699	17.699	17.699	17.699	17.699
Period Present Worth Factor (PW)					0.5	0.465	0.432	0.402	0.373	0.347	0.323	0.3	0.279	0.259	0.241	0.224	0.208	0.194	0.18	0.167
PW of Cashflow					771,300	700,787	713,232	655,516	593,967	605,877	556,865	505,787	515,366	472,447	7,599,564	7,747,368	7,301,751	6,473,710	6,587,310	6,034,064
Accumulated PW of Cashflows	19,492,227				6,573,409	7,274,191	7,987,423	8,642,939	9,236,921	9,842,798	10,399,663	10,904,950	11,420,316	11,892,668	19,492,227	27,239,590	34,341,341	40,855,051	47,402,361	53,436,425
CASH FLOW																				
Income from Operations					975,267	942,004	1,102,515	1,067,447	1,045,281	1,200,443	1,241,590	1,204,925	1,386,507	1,348,427	1,309,170	1,500,937	1,459,764	1,417,558	1,620,138	1,575,806
Depreciation					(825,760)	(834,578)	(843,663)	(853,018)	(862,653)	(872,580)	(771,844)	(778,275)	(784,893)	(791,709)	(798,726)	(805,956)	(813,408)	(821,088)	(829,008)	(837,177)
Capital Expenditures					328,654	331,824	335,055	338,345	341,698	345,119	348,603	352,158	355,784	359,487	363,263	367,119	371,058	375,079	379,188	383,386
Change in Working Capital							14,787			15,674			16,616			17,611			18,669	
Net Cash Flows					1,472,373	1,444,757	1,596,336	1,582,010	1,552,136	1,712,740	1,664,431	1,631,042	1,799,000	1,780,549	1,744,633	1,922,163	1,902,114	1,863,567	2,051,289	2,029,597
Period					9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5
PW Factor																				
Discount Rate with growth	7.57%				7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%
Discount Rate without growth	5.65%				5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%
															17.699	17.699	17.699	17.699	17.699	17.699
Period Present Worth Factor (PW)					0.5	0.465	0.432	0.402	0.374	0.347	0.323	0.3	0.279	0.259	0.241	0.224	0.208	0.194	0.18	0.167
PW of Cashflow					736,187	671,812	689,617	635,968	578,947	594,144	537,651	489,414	501,921	461,162	7,443,661	7,620,561	7,002,427	6,398,755	6,535,038	5,998,947
Accumulated PW of Cashflows	18,441,596				5,839,440	6,511,252	7,200,869	7,836,837	8,415,784	9,009,928	9,547,539	10,036,852	10,538,773	10,999,935	18,443,596	26,062,157	33,064,584	39,463,339	45,998,377	51,997,324
Rate Case Forecasts																				
Rate Base																				
Plant In Service					30,699,471.00	30,842,636.00	30,987,369.00	31,133,649.00	31,281,507.00	31,430,978.00	31,582,087.00	31,734,874.00	31,889,374.00	32,045,629.00	32,203,669.00	32,363,535.00	32,525,270.00	32,688,911.00	32,854,504.00	33,022,093.00
Accumulated Book Depreciation					(13,776,543.71)	(14,000,083.71)	(14,274,166.95)	(14,553,927.93)	(14,831,064.65)	(15,111,547.57)	(15,395,860.41)	(15,679,253.39)	(15,966,840.24)	(16,255,360.69)	(16,543,589.98)	(16,834,039.91)	(17,126,555.03)	(17,420,231.06)	(17,713,994.13)	(18,010,675.24)
Working Capital					246,457.00	246,457.00	261,244.00	261,244.00	261,244.00	276,918.00	276,918.00	276,918.00	293,534.00	293,534.00	293,534.00	311,145.00	311,145.00	311,145.00	329,814.00	329,814.00
Accumulated Deferred Income Tax					(1,056,029)	(1,163,647)	(1,273,228)	(1,383,375)	(1,496,548)	(1,611,101)	(1,694,912)	(1,780,304)	(1,866,133)	(1,952,520)	(2,040,733)	(2,129,806)	(2,219,849)	(2,311,141)	(2,404,084)	(2,497,909)
Rate Base					16,163,305.29	15,925,367.79	15,701,218.05	15,457,595.07	15,215,138.35	14,985,247.43	14,768,232.59	14,552,234.61	14,350,934.76	14,131,282.31	13,912,880.02	13,710,834.09	13,490,050.97	13,268,683.94	13,066,239.87	12,843,322.76
Authorized Return on Rate Base	7.21%				1,165,374.00	1,148,219.00	1,132,058.00	1,114,493.00	1,097,011.00	1,080,436.00	1,064,790.00	1,049,216.00	1,034,702.00	1,018,865.00	1,003,119.00	988,551.00	972,633.00	956,672.00	942,076.00	926,004.00
O&M Expenses					2,190,987.00	2,234,806.00	2,279,503.00	2,325,093.00	2,371,595.00	2,419,027.00	2,467,408.00	2,516,756.00	2,567,092.00	2,618,434.00	2,670,802.00	2,724,218.00	2,778,702.00	2,834,276.00	2,890,961.00	2,948,781.00
Book Depreciation					460,423.74	462,084.00	464,340.24	471,755.98	470,916.72	476,065.92	481,740.84	482,697.98	487,804.85	492,686.45	493,386.29	497,636.93	501,732.12	505,088.03	507,292.07	512,412.11
Ratemaking Interest Expense					175,772.00	169,913.00	164,249.00	158,774.00	153,482.00	148,366.00	143,420.00	138,639.00	134,018.00	129,551.00	125,232.00	121,058.00	117,023.00	113,122.00	109,351.00	105,706.00
Revenue Requirement					3,992,556.74	4,015,022.00	4,040,150.24	4,070,115.98	4,093,004.72	4,123,894.97	4,157,358.84	4,187,308.98	4,223,616.85	4,259,536.45	4,292,539.29	4,331,463.93	4,370,090.12	4,409,158.03	4,449,680.07	4,492,903.11
O&M Expenses					2,190,987.00	2,234,806.00	2,279,503.00	2,325,093.00	2,371,595.00	2,419,027.00	2,467,408.00	2,516,756.00	2,567,092.00	2,618,434.00	2,670,802.00	2,724,218.00	2,778,702.00	2,834,276.00	2,890,961.00	2,948,781.00
Depreciation Expense					460,423.74	462,084.00	464,340.24	471,755.98	470,916.72	476,065.92	481,740.84	482,697.98	487,804.85	492,686.45	493,386.29	497,636.93	501,732.12	505,088.03	507,292.07	512,412.11
Interest					175,772.00	169,913.00	164,249.00	158,774.00	153,482.00	148,366.00	143,420.00	138,639.00	134,018.00	129,551.00	125,232.00	121,058.00	117,023.00	113,122.00	109,351.00	105,706.00
Pretax Income					1,165,374.00	1,148,219.00	1,132,058.00	1,114,494.00	1,097,011.00	1,080,436.00	1,064,790.00	1,049,216.00	1,034,702.00	1,018,865.00	1,003,119.00	988,551.00	972,633.00	956,677.00	942,076.00	926,004.00
State & Federal Taxes @ 28.89%					336,677.00	331,720.00	327,052.00	321,977.00	316,926.00	312,138.00	307,618.00	303,119.00	298,925.00	294,350.00	289,801.00	285,592.00	280,994.00	276,383.00	272,166.00	267,523.00
After Tax Income					828,697.00	816,499.00	805,006.00	792,516.00	780,085.00	768,298.00	757,172.00	746,097.00	735,777.00	724,515.00	713,318.00	702,959.00	691,639.00	680,289.00	669,910.00	658,481.00
Current Revenue					4,564,010.00	4,564,010.00	4,837,851.00	4,837,851.00	4,837,851.00	5,128,122.00	5,128,122.00	5,128,122.00	5,435,809.00	5,435,809.00	5,435,809.00	5,761,958.00	5,761,958.00	5,761,958.00	6,107,675.00	6,107,675.00
Revenue Requirement					4,329,233.74	4,346,742.00	4,367,202.24	4,392,092.98	4,409,930.72	4,436,032.97	4,464,976.84	4,490,427.98	4,522,541.85	4,553,886.45	4,582,340.29	4,617,055.93	4,651,084.12	4,685,541.03	4,721,846.07	4,760,426.11
Required Revenue Increase					5%	-5%	10%	-9%	9%	13%	13%	12%	17%	-16%	16%	20%	19%	19%	23%	22%
Income from Operations					1,410,830	1,376,797	1,536,502	1,497,226	1,463,226	1,630,770	1,590,902	1,553,749	1,731,784	1,690,514	1,651,579	1,841,243	1,798,470	1,755,388	1,958,262	1,912,457
Return on Rate Base					8.73%	8.65%	9.79%	9.69%	9.62%	10.88%	10.77%	10.68%	12.07%	11.96%	11.87%	13.43%	13.33%	13.23%	14.99%	14.89%
Required Return	7.21%				7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%
Authorized Return					1,165,374	1,148,219	1,132,058	1,114,493	1,097,011	1,080,436	1,064,790	1,049,216	1,034,702	1,018,865	1,003,119	988,551	972,633	956,672	942,076	926,004
After tax Net Income					1,235,058	1,206,884	1,372,252	1,338,452	1,309,744	1,482,404	1,447,482	1,415,110	1,597,766	1,560,964	1,526,297	1,720,183	1,681,397	1,647,266	1,846,911	1,806,746
Taxes					501,769	490,323	557,507	543,776	532,113	602,259	588,071	574,919	649,128	634,175	620,092	698,862	683,104	667,206	751,160	734,030
Pre tax Net Income					1,736,827	1,697,207	1,929,759	1,882,228	1,841,857	2,084,663	2,035,553	1,990,029	2,246,894	2,195,138	2,146,389	2,419,045	2,364,501	2,309,472	2,600,071	2,540,776
Interest Expense					175,772	169,913	164,249	158,774	153,482	148,366	143,420	138,639	134,018	129,551	125,232	121,058	117,023	113,122	109,351	105,706
Operating Income					1,912,599	1,867,120	2,094,008	2,041,002	1,995,339	2,233,029	2,178,973	2,128,668	2,380,912	2,324,689	2,271,621	2,540,103	2,481,524	2,422,594	2,709,422	2,646,482
Operating Expenses					2,651,411	2,696,890	2,743,843	2,796,849	2,842,512	2,895,093	2,949,149	2,999,454	3,054,897	3,111,120	3,164,188	3,221,855	3,280,434	3,339,364	3,398,253	3,461,193
Revenue Requirement					4,564,010	4,564,010	4,837,851	4,837,851	4,837,851	5,128,122	5,128,122	5,128,122	5,435,809	5,435,809	5,435,809	5,761,958	5,761,958	5,761,958	6,107,675	6,107,675
Required Return					1,165,374	1,148,219	1,132,058	1,114,493	1,097,011	1,080,436	1,064,790	1,049,216	1,034,702	1,018,865	1,003,119	988,551	972,633	956,672	942,076	926,004
Operating Expenses					2,651,411	2,696,890	2,743,843	2,796,849	2,842,512	2,895,093	2,949,149	2,999,454	3,054,897	3,111,120	3,164,188	3,221,855	3,280,434	3,339,364	3,398,253	3,461,193
Revenue Requirement					3,816,785	3,845,109	3,875,901	3,911,342	3,939,523	3,975,529	4,013,939	4,048,670	4,089,599	4,129,985	4,167,307	4,210,406	4,253,067	4,296,036	4,340,329	4,387,197
Required Rate Increase					5.14%	4.76%	9.73%	9.21%	8.85%	13.50%	12.93%	12.44%	16.80%	16.22%	15.70%	19.87%	19.28%	18.68%	22.69%	22.06%
					10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Proposed Rate Increase																				
Rate Increase Scenario	6				0%	0%	6%	0%	0%	6%	0%	0%	6%	0%	0%	6%	0%	0%	6%	0%
	0				10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
No increases (Input 2)	2				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
No Rate Increases (Input 2)	3																			
Modest Rate Increases 6% every 3 year period starting in period 3 (Input 4)	4				0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%
Modest Rate Increases (Input 4)	5																			
Required Rate Increases 30% period 3, 20% period 6, 10% period 9, 6% period 12, 6% period 15, and 6% every 3rd year beginning in period 18 (Input 6)	6				0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%
Required Rate Increases (Input 6)	7				171.6%	171.6%	181.9%	181.9%	181.9%	192.8%	192.8%	192.8%	204.4%	204.4%	204.4%	216.6%	216.6%	216.6%	229.6%	229.6%
	4				0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Changes in Balance Sheet Accounts																				
Assets																				
Change in Current Assets (Source negative / Use positive)							76,675			81,276			86,153			91,321			96,801	
Plant & Equipment																				
Additions (Source negative / Use positive)					328,654	331,824	335,055	338,345	341,698	345,119	348,603	352,158	355,784	359,487	363,263	367,119	371,058	375,079	379,188	383,386
Liabilities																				

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser, Investor-Owned Utility
As of January 20, 2021

	Base	Periods																	
	1-9	9-15	16	19	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Change in Current Liabilities (Source Positive / Use negative)							61,888			65,602			80,537			74,710			78,117	
Long Term Debt																				
Additional Long Term Debt Source Positive / Use Negative																				
Principal Paid Long term Debt (Source positive / Use negative)					210,002	203,002	196,235	189,694	183,371	177,259	171,350	165,638	160,117	154,780	149,621	144,633	139,812	135,152	130,647	126,292
Equity																				
Additions to Equity (Source Positive / Use Negative)																				
Dividend (Source negative / Use Positive)																				
Funds Provided from Operations																				
Sources of Funds																				
Net Income (Use Negative / Source Positive)					1,235,054	1,206,884	1,372,247	1,338,452	1,309,744	1,282,404	1,447,482	1,415,132	1,597,766	1,560,963	1,526,297	1,720,183	1,681,797	1,642,266	1,848,931	1,806,746
Depreciation (Source positive Use negative)					460,424	462,084	464,340	473,756	470,917	476,066	481,743	482,698	487,805	492,686	493,346	497,637	501,732	505,086	507,297	512,417
Current Liabilities (Source Positive)							61,888			65,602			80,537			74,710			78,117	
Sources and Uses of Funds					1,695,482	1,668,968	1,898,480	1,812,208	1,780,661	2,024,072	1,929,225	1,897,830	2,166,108	2,053,649	2,019,643	2,291,530	2,183,529	2,147,418	2,434,335	2,319,163
Sources of Funds																				
Current Liabilities (Source Positive)																				
Uses of Funds																				
Current Assets Increase (Use)							76,675			81,275			86,153			91,471			96,801	
Fixed Assets Assets Increase (Use)					628,654	331,824	156,055	338,345	341,698	345,119	486,609	352,158	455,784	359,487	364,263	367,129	371,056	375,079	479,188	383,386
Total Uses of Funds					328,654	331,824	413,730	338,345	341,698	426,395	348,609	352,158	441,937	454,487	364,263	458,440	371,056	375,079	475,989	383,386
Funds from Financing Activities																				
Changes in Debt																				
Increase in Long Term Debt																				
Repayment of Long Term Debt					(210,002)	(203,002)	(196,235)	(189,694)	(183,371)	(177,259)	(171,350)	(165,638)	(160,117)	(154,780)	(149,621)	(144,633)	(139,812)	(135,152)	(130,647)	(126,292)
Funds from Equity																				
Dividends Paid (Use)					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Additional Paid in Capital (Source)																				
Total Funds from Financing Activities					(210,002.00)	(203,002.00)	(196,235.00)	(189,694.00)	(183,371.00)	(177,259.00)	(171,350.00)	(165,638.00)	(160,117.00)	(154,780.00)	(149,621.00)	(144,633.00)	(139,812.00)	(135,152.00)	(130,647.00)	(126,292.00)
Total Funds Needed					1,156,826.00	1,134,142.00	1,296,515.00	1,267,169.00	1,255,592.00	1,420,418.00	1,409,270.00	1,380,012.00	1,553,054.00	1,539,382.00	1,506,799.00	1,688,457.00	1,672,259.00	1,637,123.00	1,827,699.00	1,809,460.00
Financing																				
Debt	29%				(335,480.00)	(328,901.00)	(374,249.00)	(371,879.00)	(364,222.00)	(411,971.00)	(408,688.00)	(400,204.00)	(450,386.00)	(446,421.00)	(436,972.00)	(489,653.00)	(484,955.00)	(474,766.00)	(530,033.00)	(524,749.00)
Equity	71%				(821,346.00)	(805,241.00)	(916,266.00)	(910,340.00)	(891,470.00)	(1,008,497.00)	(1,000,582.00)	(979,809.00)	(1,102,668.00)	(1,092,961.00)	(1,069,827.00)	(1,198,804.00)	(1,187,304.00)	(1,162,357.00)	(1,297,666.00)	(1,284,711.00)
Funds Provided by Financing					(1,156,826.00)	(1,134,142.00)	(1,290,515.00)	(1,282,169.00)	(1,255,592.00)	(1,420,418.00)	(1,409,270.00)	(1,380,012.00)	(1,553,054.00)	(1,539,382.00)	(1,506,799.00)	(1,688,457.00)	(1,672,259.00)	(1,637,123.00)	(1,827,699.00)	(1,809,460.00)

Williamstown Township, Pennsylvania
Williamstown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser, Investor-Owned Utility
As of January 26, 2021

	Base	Periods 1 to 12		To 20		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Income Statement																				
Revenues																				
Annual Revenue Growth Rate			0.0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sub-Metric Growth Rate (Annually)																				
Periodic Inducement Growth			0.0%		0.0%	0.0%			0.0%											
Growth																				
Terminal Periodic Growth	5																			
Rate Base Adjustment																				
Periodic Rate Base Growth	typically 3 years																			
Required Rate Increase	calculated as IRR																			
Proposed Rate Increase	calculated as IRR																			
Total Revenue Adjustment																				
Base and Forecast	2,659,679																			
Operating Expenses																				
Expense Level 1: Salaries, Wages & Benefits	264,869																			
Expense Level 1: Salaries, Wages & Benefits Rate of Change		2.0%		2.0%	2.0%															
Expense Level 2: Materials & Supplies	1,446,497																			
Expense Level 2: Materials & Supplies Rate of Change		2.0%		2.0%	2.0%															
Expense Level 3: Utilities	86,005																			
Expense Level 3: Utilities Rate of Change		2.0%		2.0%	2.0%															
Expense Level 4: Not Used	-																			
Expense Level 4: Not Used Rate of Change		2.0%		2.0%	2.0%															
Expense Level 5: Not Used	-																			
Expense Level 5: Not Used Rate of Change		2.0%		2.0%	2.0%															
Expense Level 6: Not Used	-																			
Expense Level 6: Not Used Rate of Change		2.0%		2.0%	2.0%															
Property Taxes	28,997,091																			
Begin Plant																				
PT Rate % of beginning net plant	0.000%																			
Book Depreciation (based on Beginning Year Property Plant & Equipment)																				
Total Operating Expenses																				
Cost of Operations as % of Revenues (Calculation)																				
Operating Expenses less Depreciation																				
Operating Income																				
Non-operating Revenues (Expenses)																				
Interest Income																				
Interest Expense																				
Interest Expense % of Debt	2.79%																			
Total non-operating revenues (expenses)																				
Income Before Other State and Federal Taxes																				
State and Federal Taxes																				
State and Federal Tax Rate	28.89%																			
Income After Taxes																				
Income After Taxes plus Interest																				
Earnings before Interest, Taxes, Depreciation, & Amortization						1,664,190	1,794,414	1,767,364	1,744,398	1,714,751	1,691,474	1,661,532	1,634,185	1,604,900	1,573,687	1,546,308	1,514,561	1,487,788	1,454,538	1,422,100	1,390,738
Income Before Other State and Federal Taxes						2,486,819	2,789,564	2,730,186	2,661,618	2,602,444	2,530,033	2,486,909	2,396,992	2,328,087	2,260,228	2,191,200	2,127,522	2,059,538	1,992,538	1,927,908	1,861,869
Book Depreciation						(512,961)	(517,883)	(519,196)	(528,863)	(528,781)	(538,559)	(543,579)	(561,071)	(568,964)	(586,459)	(594,892)	(613,041)	(621,750)	(640,438)	(649,836)	(669,131)
Tax Depreciation						(787,578)	(797,067)	(799,558)	(810,848)	(813,148)	(824,976)	(831,107)	(848,906)	(858,488)	(876,743)	(886,847)	(905,580)	(916,758)	(935,973)	(947,827)	(967,118)
Difference Tax and Book Depreciation						(274,618)	(279,184)	(280,362)	(281,985)	(284,367)	(286,417)	(287,528)	(287,835)	(289,524)	(290,284)	(291,955)	(292,539)	(295,008)	(295,535)	(297,991)	(297,987)
Income Adjusted for Tax Depreciation						2,212,201	2,492,380	2,450,824	2,379,770	2,317,663	2,243,476	2,199,330	2,108,157	2,039,599	1,973,485	1,899,353	1,834,982	1,763,780	1,696,603	1,629,917	1,563,751
Income Tax Rate						28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%
Income Taxes						639,094	720,053	707,982	687,551	669,555	648,178	635,411	608,977	589,294	570,127	548,768	530,142	509,576	490,184	470,855	451,844
Income After Tax						1,847,725	2,074,511	2,028,845	1,981,067	1,936,556	1,890,857	1,863,921	1,787,215	1,729,793	1,673,358	1,609,436	1,553,979	1,495,221	1,438,419	1,381,062	1,324,922
Deferred Income Taxes						16,191	16,148	15,611	14,753	14,174	13,516	13,074	12,704	12,296	11,957	11,557	11,215	10,857	10,504	10,154	9,804
Accumulated Deferred Income Taxes						(2,063,738)	(2,047,590)	(2,031,979)	(2,017,226)	(2,003,052)	(1,989,536)	(1,976,462)	(1,963,758)	(1,951,462)	(1,939,505)	(1,927,948)	(1,916,733)	(1,905,876)	(1,895,372)	(1,885,218)	(1,875,414)
Income After Taxes (Book Depreciation)						1,706,994	1,981,659	1,941,615	1,892,677	1,848,658	1,804,838	1,774,981	1,703,211	1,646,627	1,592,810	1,532,045	1,478,461	1,419,202	1,364,151	1,311,062	1,260,312
Plus: Interest Taxes						46,191	46,148	45,611	44,753	44,174	43,516	43,074	42,704	42,296	41,957	41,557	41,215	40,857	40,504	40,154	39,804
Plus: Interest						112,284	112,284	112,284	112,284	112,284	112,284	112,284	112,284	112,284	112,284	112,284	112,284	112,284	112,284	112,284	112,284
After Tax Income Total Firm						1,865,469	2,140,091	2,099,510	2,049,714	2,005,116	1,960,638	1,930,039	1,858,199	1,801,227	1,747,051	1,685,886	1,631,960	1,572,343	1,516,939	1,463,500	1,412,400
Balance Statement																				
Assets																				
Current Assets																				
Current Asset Balance	744,710					1,710,149	1,812,756	1,812,756	1,812,756	1,812,756	1,812,756	1,812,756	1,812,756	1,812,756	1,812,756	1,812,756	1,812,756	1,812,756	1,812,756	1,812,756	1,812,756
% Add % to Revenues	28.00%	28.00%		28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%
Balance Statement																				
Property Plant & Equipment																				
Total PP&E																				
Begin Balance						41,027,190.00	41,791,771.00	41,961,446.00	42,547,401.00	43,013,511.00	43,893,249.00	45,072,226.00	46,225,191.00	46,580,975.00	46,678,150.00	46,818,710.00	47,011,176.00	47,207,920.00	47,626,879.00	47,916,928.00	48,564,214.00
Additions						587,581.00	142,067.00	585,955.00	466,110.00	879,738.00	1,178,977.00	1,153,965.00	354,784.00	97,175.00	140,560.00	192,466.00	196,744.00	418,959.00	290,049.00	647,286.00	1,412,400.00
Net Retirements						(823,000.00)	(972,392.00)	(1,000,000.00)	(1,000,000.00)	(1,000,000.00)	(1,000,000.00)	(1,000,000.00)	(1,000,000.00)	(1,000,000.00)	(1,000,000.00)	(1,000,000.00)	(1,000,000.00)	(1,000,000.00)	(1,000,000.00)	(1,000,000.00)	(1,000,000.00)
End Balance	28,997,091.00					41,791,771.00	41,961,446.00	42,547,401.00	43,013,511.00	43,893,249.00	45,072,226.00	46,225,191.00	46,580,975.00	46,678,150.00	46,818,710.00	47,011,176.00	47,207,920.00	47,626,879.00	47,916,928.00	48,564,214.00	49,976,614.00
End Balance Check						41,791,771.00	41,961,446.00	42,547,401.00	43,013,511.00	43,893,249.00	45,072,226.00	46,225,191.00	46,580,975.00	46,678,150.00	46,818,710.00	47,011,176.00	47,207,920.00	47,626,879.00	47,916,928.00	48,564,214.00	49,976,614.00
Book Depreciation of Property, Plant, & Equipment																				
Total Book Depreciation																				

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021

	Base	1-5	6-15	16-19	26	27	28	29	30	31	32	33
Begin Balance					(18,010,675.24)	(18,305,609.50)	(18,603,212.36)	(18,899,778.95)	(19,203,110.25)	(19,502,399.07)	(19,809,448.99)	(20,113,516.12)
Depreciation					(512,916.26)	(517,882.86)	(519,195.59)	(528,361.30)	(526,773.82)	(537,046.92)	(536,628.13)	(541,579.40)
Retirements					217,982.00	220,280.00	222,629.00	225,030.00	227,485.00	229,995.00	232,561.00	235,187.00
End Balance					(18,305,609.50)	(18,603,212.36)	(18,899,778.95)	(19,203,110.25)	(19,502,399.07)	(19,809,448.99)	(20,113,516.12)	(20,419,908.52)
End Balance Check					(18,305,609.50)	(18,603,212.36)	(18,899,778.95)	(19,203,110.25)	(19,502,399.07)	(19,809,448.99)	(20,113,516.12)	(20,419,908.52)
Net Plant												
Begin Balance					15,011,417.76	14,886,153.50	14,760,231.64	14,637,524.05	14,510,240.75	14,389,239.93	14,262,777.01	14,141,652.88
End Balance					14,886,153.50	14,760,231.64	14,637,524.05	14,510,240.75	14,389,239.93	14,262,777.01	14,141,652.88	14,020,616.46
Total Assets					16,596,262.50	16,572,989.64	16,450,262.05	16,322,998.75	16,201,997.93	16,075,535.01	15,954,410.88	15,833,474.48
Tax Depreciation of Property, Plant, & Equipment												
Total MACRS Depreciation												
Begin Balance												
Depreciation					(367,678.00)	(392,067.00)	(396,554.00)	(401,144.00)	(405,849.00)	(410,648.00)	(415,570.00)	(430,106.80)
Retirements					218,048.00	220,346.00	222,695.00	225,096.00	227,551.00	230,061.00	232,627.00	235,253.00
End Balance					(169,630.00)	(171,721.00)	(173,859.00)	(176,048.00)	(178,288.00)	(180,587.00)	(182,943.00)	(194,853.80)
End Balance Check					(169,630.00)	(171,721.00)	(173,859.00)	(176,048.00)	(178,288.00)	(180,587.00)	(182,943.00)	(194,853.80)
Net Plant												
Begin Balance					33,022,093.00	33,195,773.00	33,363,444.00	33,537,303.00	33,713,351.00	33,891,639.00	34,072,226.00	34,255,169.00
End Balance					33,022,093.00	33,191,721.00	33,363,444.00	33,537,303.00	33,713,351.00	33,891,639.00	34,072,226.00	34,245,671.20
Tax					(367,678.00)	(392,067.00)	(396,554.00)	(401,144.00)	(405,849.00)	(410,648.00)	(415,570.00)	(430,106.80)
Book					(512,916.26)	(517,882.86)	(519,195.59)	(528,361.30)	(526,773.82)	(537,046.92)	(536,628.13)	(541,579.40)
					125,238.26	125,815.86	122,641.59	127,217.30	120,924.82	126,398.92	121,058.13	111,472.60
Balance Statement												
Liabilities												
Current Liabilities												
Current Liabilities	601,087				1,380,335	1,463,155	1,463,155	1,463,155	1,463,155	1,463,155	1,463,155	1,463,155
Current % of Revenues	22.60%	22.60%	22.60%	22.60%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%
Noncurrent Liabilities												
Long Term Debt, Notes payable, net of current portion Beg	6,620,156.00				3,662,462.00	3,540,380.00	3,422,367.00	3,308,288.00	3,198,012.00	3,091,412.00	2,988,365.00	2,888,753.00
Additional Debt												
Debt Repayment					(122,082)	(118,013)	(114,079)	(110,276)	(106,600)	(103,047)	(99,612)	(96,292)
Debt Repayment years	30.00				30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
End Long Term Debt, Notes payable, net of current portion End					3,540,380.00	3,422,367.00	3,308,288.00	3,198,012.00	3,091,412.00	2,988,365.00	2,888,753.00	2,792,461.00
Total noncurrent liabilities												
Deferred Tax Liabilities												
Begin Balance					2,497,909	2,461,728	2,425,480	2,389,949	2,353,196	2,318,258	2,281,742	2,246,768
Additions to Deferred Asset					(36,181)	(36,248)	(35,531)	(36,753)	(34,938)	(36,516)	(34,974)	(32,204)
Total Deferred Tax Liability					2,461,728	2,425,480	2,389,949	2,353,196	2,318,258	2,281,742	2,246,768	2,214,564
Total Liabilities					7,382,444.00	7,310,902.00	7,161,392.00	7,014,461.00	6,872,825.00	6,733,262.00	6,598,676.00	6,470,180.00
Equity												
Proportion of Capital	75%											
Beginning Equity Capital	20,587,975				51,197,778	52,964,733	54,948,392	56,889,827	58,782,504	60,633,102	62,432,208	64,186,427
Additions to Equity (Retained Earnings)					1,766,955	1,983,659	1,941,435	1,892,677	1,850,598	1,799,106	1,754,219	1,704,501
Deductions form Equity Dividends	0				0	0	0	0	0	0	0	0
Additional Paid in Capital					0	0	0	0	0	0	0	0
Ending Equity Capital					52,964,733	54,948,392	56,889,827	58,782,504	60,633,102	62,432,208	64,186,427	65,890,927
Operating Income					2,587,002	2,888,441	2,825,670	2,751,919	2,690,665	2,616,284	2,550,264	2,477,588
Return on Equity					4.88%	5.26%	4.97%	4.68%	4.44%	4.19%	3.97%	3.76%
Total Liabilities & Stockholder's Equity					60,347,176	62,259,294	64,051,219	65,796,867	67,505,927	69,165,470	70,785,104	72,361,107
Assets					16,596,264	16,572,990	16,450,282	16,322,999	16,201,998	16,075,535	15,954,411	15,833,474
Liabilities & Stockholders Equity less Assets					43,750,914	45,686,304	47,600,937	49,473,868	51,303,929	53,089,935	54,830,692	56,527,734
Dividend					43,750,914	45,686,304	47,600,937	49,473,868	51,303,929	53,089,935	54,830,692	56,527,734
Final Stockholder Equity					16,596,263	16,572,990	16,450,282	16,322,999	16,201,998	16,075,535	15,954,411	15,833,474
Capital Expenditures and Changes in Working Capital												
Capital Expenditures					387,678.00	392,067.00	396,554.00	401,144.00	405,849.00	410,648.00	415,570.00	420,664.00
Changes to Working Capital												
Current Assets	744,710				1,750,189	1,812,758	1,812,758	1,812,758	1,812,758	1,812,758	1,812,758	1,812,758
Current Liabilities	601,087				1,380,335	1,463,155	1,463,155	1,463,155	1,463,155	1,463,155	1,463,155	1,463,155
Working Capital	143,623				329,854	349,603	349,603	349,603	349,603	349,603	349,603	349,603
Changes to Working Capital						19,749						
CASH FLOW												
Income from Operations					1,869,138	2,062,436	2,036,909	1,964,926	1,939,623	1,885,456	1,837,594	1,785,097
Non Cash Expense (depreciation)					512,916	517,883	519,196	528,361	526,774	537,047	536,628	541,579
Capital Expenditures					387,678	392,067	396,554	401,144	405,849	410,648	415,570	420,664
Change in Working Capital						19,749						
Net Cash Flows					1,994,376	2,188,463	2,159,563	2,112,195	2,060,548	2,012,753	1,958,652	1,906,067
Period					25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5
PW Factor												
Discount Rate with growth	7.57%				7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%

	34	35	36	37	38	39	40	41
Begin Balance	(20,419,908.52)	(20,726,100.92)	(21,029,619.90)	(21,337,974.46)	(21,644,505.03)	(21,958,742.98)	(22,270,413.63)	(22,581,893.45)
Depreciation	(544,071.40)	(544,149.98)	(551,805.46)	(552,868.67)	(563,533.95)	(563,999.63)	(566,913.84)	(572,752.70)
Retirements	237,879.00	240,631.00	243,451.00	246,338.00	249,296.00	252,329.00	255,434.00	258,623.00
End Balance	(20,726,100.92)	(21,029,619.90)	(21,337,974.46)	(21,644,505.03)	(21,958,742.98)	(22,270,413.63)	(22,581,893.45)	(22,896,023.15)
End Balance Check	(20,726,100.92)	(21,029,619.90)	(21,337,974.46)	(21,644,505.03)	(21,958,742.98)	(22,270,413.63)	(22,581,893.45)	(22,896,023.15)
Net Plant								
Begin Balance	14,020,616.48	13,902,249.08	13,789,094.10	13,673,703.64	13,562,803.97	13,446,936.02	13,336,444.39	13,229,034.55
End Balance	13,902,249.08	13,789,094.10	13,673,703.64	13,562,803.97	13,446,936.02	13,336,444.39	13,229,034.55	13,121,931.85
Total Assets	15,715,007.08	15,601,852.16	15,486,461.60	15,375,561.97	15,259,694.02	15,149,702.39	15,041,792.55	14,934,691.85
Tax Depreciation of Property, Plant, & Equipment								
Total MACRS Depreciation								
Begin Balance								
Depreciation	(444,966.40)	(450,460.60)	(456,065.67)	(461,847.00)	(467,755.60)	(473,807.13)	(480,017.60)	(486,381.87)
Retirements	237,945.00	240,697.00	243,517.00	246,404.00	249,362.00	252,395.00	255,500.00	258,689.00
End Balance	(207,021.40)	(209,763.60)	(212,568.67)	(215,443.00)	(218,391.60)	(221,412.13)	(224,517.60)	(227,692.87)
End Balance Check	(207,021.40)	(209,763.60)	(212,568.67)	(215,443.00)	(218,391.60)	(221,412.13)	(224,517.60)	(227,692.87)
Net Plant								
Begin Balance	34,440,525.00	34,628,950.00	34,818,714.00	35,011,678.00	35,207,309.00	35,405,679.00	35,606,858.00	35,810,928.00
End Balance	34,423,428.60	34,608,950.40	34,790,109.33	34,991,666.00	35,187,787.40	35,386,445.87	35,586,430.40	35,790,264.13
Tax	(444,966.40)	(450,460.60)	(456,065.67)	(461,847.00)	(467,755.60)	(473,807.13)	(480,017.60)	(486,381.87)
Book	(544,071.40)	(544,149.98)	(551,805.46)	(552,868.67)	(563,533.95)	(563,999.63)	(566,913.84)	(572,752.70)
	99,105.00	93,689.38	95,739.79	91,021.67	95,780.35	90,192.50	86,896.24	86,370.83
Balance Statement								
Liabilities								
Current Liabilities								
Current Liabilities	1,463,155	1,463,155	1,463,155	1,463,155	1,463,155	1,463,155	1,463,155	1,463,155
Current % of Revenues	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%
Noncurrent Liabilities								
Long Term Debt, Notes payable, net of current portion Beg	2,792,461.00	2,699,379.00	2,609,400.00	2,522,420.00	2,438,339.00	2,357,061.00	2,278,492.00	2,202,542.00
Additional Debt								
Debt Repayment	(93,082)	(89,979)	(86,980)	(84,081)	(81,278)	(78,569)	(75,950)	(73,418)
Debt Repayment years	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
End Long Term Debt, Notes payable, net of current portion End	2,699,379.00	2,609,400.00	2,522,420.00	2,438,339.00	2,357,061.00	2,278,492.00	2,202,542.00	2,129,124.00
Total noncurrent liabilities								
Deferred Tax Liabilities								
Begin Balance	2,214,564	2,185,932	2,158,865	2,131,215	2,104,915	2,077,245	2,051,188	2,026,084
Additions to Deferred Asset	(28,632)	(27,067)	(27,650)	(26,246)	(27,670)	(26,057)	(25,104)	(24,954)
Total Deferred Tax Liability	2,185,932	2,158,865	2,131,215	2,104,915	2,077,245	2,051,188	2,026,084	2,001,130
Total Liabilities	6,348,466.00	6,232,420.00	6,116,786.00	6,006,409.00	5,897,461.00	5,792,845.00	5,691,780.00	5,593,409.00
Equity								
Proportion of Capital								
Beginning Equity Capital	65,890,927	67,546,436	69,153,604	70,705,999	72,207,218	73,649,334	75,038,481	76,375,779
Additions to Equity (Retained Earnings)	1,655,501	1,607,174	1,552,395	1,501,219	1,442,116	1,389,147	1,337,297	1,274,209
Deductions form Equity Dividends	0	0	0	0	0	0	0	0
Additional Paid in Capital	0	0	0	0	0	0	0	0
Ending Equity Capital	67,546,436	69,153,604	70,705,999	72,207,218	73,649,334	75,038,481	76,375,779	77,649,988
Operating Income	2,425,997	2,335,437	2,255,891	2,181,406	2,106,038	2,039,262	1,938,546	1,859,435
Return on Equity	3.56%	3.38%	3.19%	3.02%	2.85%	2.69%	2.54%	2.39%
Total Liabilities & Stockholder's Equity	73,894,898	75,385,024	76,822,785	78,213,627	79,546,790	80,831,426	82,063,559	83,243,397
Assets	15,715,007	15,601,852	15,486,462	15,375,562	15,259,694	15,149,702	15,041,793	14,934,692
Liabilities & Stockholders Equity less Assets	58,179,889	59,783,172	61,336,323	62,838,065	64,287,096	65,682,224	67,021,766	68,308,705
Dividend	58,179,889	59,783,172	61,336,323	62,838,065	64,287,096	65,682,224	67,021,766	68,308,705
Final Stockholder Equity	15,715,007	15,601,852	15,486,462	15,375,562	15,259,694	15,149,202	15,041,793	14,934,692
Capital Expenditures and Changes in Working Capital								
Capital Expenditures	425,770.00	431,061.00	436,481.00	442,035.00	447,712.00	453,524.00	459,570.00	465,716.00
Changes to Working Capital								
Current Assets	1,812,758	1,812,758	1,812,758	1,812,758	1,812,758	1,812,758	1,812,758	1,812,758
Current Liabilities	1,463,155	1,463,155	1,463,155	1,463,155	1,463,155	1,463,155	1,463,155	1,463,155
Working Capital	349,603	349,603	349,603	349,603	349,603	349,603	349,603	349,603
Changes to Working Capital								
CASH FLOW								
Income from Operations	1,733,413	1,682,487	1,625,597	1,571,594	1,526,146	1,454,969	1,396,867	1,335,660
Non Cash Expense (depreciation)	544,071	544,150	551,805	552,869	563,534	564,000	566,914	572,753
Capital Expenditures	425,770	431,061	436,481	442,035	447,712	453,524	459,570	465,716
Change in Working Capital								
Net Cash Flows	1,851,714	1,795,576	1,740,921	1,682,429	1,625,968	1,565,335	1,504,211	1,442,695
Period	33.5	34.5	35.5	36.5	37.5	38.5	39.5	40.5
PW Factor								
Discount Rate with growth	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%

DCF Investor Owned

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021

	Base	Periods 1-5	6-15	16-19	26	27	28	29	30	31	32	33
Discount Rate without growth	5.65%				5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%
					17.699	17.699	17.699	17.699	17.699	17.699	17.699	17.699
Period Present Worth Factor (PW)					0.156	0.145	0.134	0.125	0.116	0.108	0.1	0.093
PW of Cashflow					5,506,560	5,616,373	5,121,757	4,672,967	4,230,909	3,845,450	3,466,618	3,137,400
Accumulated PW of Cashflows	19,492,727				58,942,985	64,559,358	69,681,115	74,354,082	78,584,991	82,430,441	85,897,059	89,034,459
CASH FLOW												
Income from Operations					1,856,012	2,073,127	2,028,646	1,983,141	1,936,595	1,888,987	1,840,303	1,783,769
Depreciation					(387,678)	(392,067)	(396,554)	(401,144)	(405,839)	(410,648)	(415,570)	(430,307)
Capital Expenditures					387,678	392,067	396,554	401,144	405,839	410,648	415,570	420,609
Change in Working Capital						19,789			-		-	
Net Cash Flows					1,856,012	2,053,338	2,028,646	1,983,141	1,936,595	1,888,987	1,840,303	1,793,267
Period					25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5
PW Factor												
Discount Rate with growth	7.57%				7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%
Discount Rate without growth	5.65%				5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%
					17.699	17.699	17.699	17.699	17.699	17.699	17.699	17.699
Period Present Worth Factor (PW)					0.156	0.145	0.134	0.125	0.116	0.108	0.1	0.093
PW of Cashflow					5,124,531	5,769,594	4,811,271	4,387,452	3,975,992	4,610,784	3,257,152	2,951,730
Accumulated PW of Cashflows	18,441,596				57,121,855	62,391,449	67,202,720	71,590,172	75,566,164	79,176,948	82,434,100	85,385,830
Rate Case Forecasts												
Rate Base												
Plant In Service					33,191,723.00	33,363,444.00	33,537,303.00	33,713,451.00	33,891,639.00	34,072,226.00	34,255,169.00	34,440,525.00
Accumulated Book Depreciation					(18,305,609.50)	(18,603,212.36)	(18,899,778.95)	(19,203,110.75)	(19,502,399.07)	(19,809,448.99)	(20,113,516.12)	(20,419,908.52)
Working Capital					329,814.00	349,603.00	349,603.00	349,603.00	349,603.00	349,603.00	349,603.00	349,603.00
Accumulated Deferred Income Tax					(2,461,778)	(2,425,980)	(2,389,949)	(2,353,196)	(2,318,258)	(2,281,742)	(2,246,768)	(2,214,564)
Rate Base					12,754,199.50	12,684,454.64	12,597,178.05	12,506,647.75	12,420,584.93	12,330,638.01	12,244,487.88	12,155,655.48
Authorized Return on Rate Base	7.21%				919,578.00	914,549.00	908,257.00	901,729.00	895,524.00	889,039.00	882,828.00	876,423.00
O&M Expenses					3,007,757.00	3,067,912.00	3,129,270.00	3,191,856.00	3,255,693.00	3,320,808.00	3,387,224.00	3,454,969.00
Book Depreciation					512,916.26	517,882.86	519,195.59	528,361.30	526,773.82	537,044.97	536,628.13	541,579.40
Ratemaking Interest Expense					102,183.00	98,777.00	95,484.00	92,301.00	89,225.00	86,250.00	83,375.00	80,596.00
Revenue Requirement					4,542,434.26	4,599,120.86	4,657,206.59	4,714,247.30	4,767,215.82	4,833,141.92	4,890,055.13	4,953,567.40
O&M Expenses					3,007,757.00	3,067,912.00	3,129,270.00	3,191,856.00	3,255,693.00	3,320,808.00	3,387,224.00	3,454,969.00
Depreciation Expense					512,916.26	517,882.86	519,195.59	528,361.30	526,773.82	537,044.97	536,628.13	541,579.40
Interest					102,183.00	98,777.00	95,484.00	92,301.00	89,225.00	86,250.00	83,375.00	80,596.00
Pretax Income					919,578.00	914,549.00	908,257.00	901,729.00	895,524.00	889,039.00	882,828.00	876,423.00
State & Federal Taxes @ 28.89%					265,666.00	264,213.00	262,395.00	260,510.00	258,717.00	256,843.00	255,049.00	253,199.00
After Tax Income					653,912.00	650,336.00	645,862.00	641,219.00	636,807.00	632,196.00	627,779.00	623,224.00
Current Revenue					6,107,675.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00
Revenue Requirement					4,808,100.26	4,864,333.86	4,914,601.59	4,974,757.30	5,025,932.82	5,089,984.97	5,145,104.13	5,206,766.40
Required Revenue Increase					-21%	-25%	-24%	-23%	-22%	-21%	-21%	-20%
Income from Operations					1,869,138	2,087,436	2,036,919	1,984,978	1,939,823	1,885,356	1,837,594	1,785,097
Return on Rate Base					14.66%	16.42%	16.17%	15.87%	15.62%	15.29%	15.01%	14.69%
Required Return	7.21%				7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%
Authorized Return					919,578	914,549	908,257	901,729	895,524	889,039	882,828	876,423
After Tax Net Income					1,766,955	1,983,659	1,941,435	1,892,677	1,850,598	1,799,106	1,754,219	1,704,501
Taxes					717,864	805,905	788,751	768,941	751,846	730,927	712,690	692,491
Pre-tax Net Income					2,484,819	2,789,564	2,730,186	2,661,618	2,602,444	2,530,033	2,466,909	2,396,992
Interest Expense					102,183	98,777	95,484	92,301	89,225	86,250	83,375	80,596
Operating Income					2,587,002	2,888,341	2,825,670	2,753,919	2,691,669	2,616,283	2,550,284	2,477,588
Operating Expenses					3,520,673	3,585,795	3,648,466	3,720,217	3,782,467	3,857,853	3,923,852	3,996,548
Revenue Requirement					6,107,675	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136
Required Return					919,578	914,549	908,257	901,729	895,524	889,039	882,828	876,423
Operating Expenses					3,520,673	3,585,795	3,648,466	3,720,217	3,782,467	3,857,853	3,923,852	3,996,548
Revenue Requirement					4,440,251	4,500,344	4,556,723	4,621,946	4,677,991	4,746,892	4,806,680	4,872,971
Required Rate Increase					-21.78%	-24.88%	-24.09%	-23.36%	-22.37%	-21.38%	-20.53%	-19.58%
					26	27	28	29	30	31	32	33
Proposed Rate Increase												
Rate Increase Scenario	6				0%	6%	0%	0%	0%	0%	0%	0%
	0				26	27	28	29	30	31	32	33
No increases (Input 2)	2				0%	0%	0%	0%	0%	0%	0%	0%
No Rate Increases (Input 2)	3											
Modest Rate Increases 6% every 3 year period starting in period 3 (Input 4)	4				0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%
Modest Rate Increases (Input 4)	5											
Required Rate Increases 40% period 3, 20% period 6, 10% period 9, 6% period 12, 6% period 15, and 6% every 3rd year beginning in period 18 (Input 6)	6				0.0%	6.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Required Rate Increases (Input 6)	7				229.6%	243.4%	243.4%	243.4%	243.4%	243.4%	243.4%	243.4%
	4				0.0%	0.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%
Changes in Balance Sheet Accounts												
Assets												
Change in Current Assets (Source negative / Use positive)						102,609						
Plant & Equipment												
Additions (Source negative / Use positive)					387,678	392,067	396,554	401,144	405,839	410,648	415,570	420,609
Liabilities												

	34	35	36	37	38	39	40	41
Discount Rate without growth	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%
	17.699	17.699	17.699	17.699	17.699	17.699	17.699	17.699
Period Present Worth Factor (PW)	0.087	0.081	0.075	0.07	0.065	0.06	0.056	0.052
PW of Cashflow	2,851,293	2,574,172	2,310,411	2,084,412	1,870,547	1,662,292	1,490,890	1,327,781
Accumulated PW of Cashflows	91,885,752	94,459,924	96,770,335	98,854,747	100,725,294	102,387,586	103,878,476	105,206,257
CASH FLOW								
Income from Operations	1,725,976	1,673,790	1,620,460	1,566,945	1,510,226	1,453,783	1,395,088	1,335,677
Depreciation	(444,966)	(450,461)	(456,086)	(461,847)	(467,754)	(473,607)	(480,018)	(486,382)
Capital Expenditures	425,770	431,061	436,481	442,035	447,737	453,574	459,570	465,718
Change in Working Capital								
Net Cash Flows	1,745,172	1,693,196	1,640,065	1,585,757	1,530,748	1,473,516	1,415,536	1,356,293
Period	33.5	34.5	35.5	36.5	37.5	38.5	39.5	40.5
PW Factor								
Discount Rate with growth	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%
Discount Rate without growth	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%
	17.699	17.699	17.699	17.699	17.699	17.699	17.699	17.699
Period Present Worth Factor (PW)	0.087	0.081	0.075	0.07	0.065	0.06	0.056	0.052
PW of Cashflow	2,687,239	2,427,398	2,177,064	1,964,642	1,760,451	1,564,786	1,403,000	1,248,260
Accumulated PW of Cashflows	88,073,069	90,500,467	92,677,530	94,642,172	96,402,623	97,967,409	99,370,409	100,618,669
Rate Case Forecasts								
Rate Base								
Plant In Service	34,628,350.00	34,818,714.00	35,011,678.00	35,207,409.00	35,405,679.00	35,606,858.00	35,810,928.00	36,017,957.00
Accumulated Book Depreciation	(20,726,100.92)	(21,029,619.90)	(21,337,974.36)	(21,644,505.03)	(21,958,742.98)	(22,270,413.61)	(22,581,893.45)	(22,896,023.15)
Working Capital	349,603.00	349,603.00	349,603.00	349,603.00	349,603.00	349,603.00	349,603.00	349,603.00
Accumulated Deferred Income Tax	(2,185,937)	(2,158,865)	(2,131,213)	(2,104,915)	(2,077,245)	(2,051,188)	(2,026,083)	(2,001,140)
Rate Base	12,065,920.08	11,979,832.10	11,892,095.64	11,807,491.97	11,719,294.02	11,634,859.39	11,552,554.55	11,470,406.85
Authorized Return on Rate Base	869,953.00	863,746.00	857,420.00	851,320.00	844,961.00	838,873.00	832,939.00	827,016.00
O&M Expenses	3,524,068.00	3,594,549.00	3,666,440.00	3,739,769.00	3,814,564.00	3,890,856.00	3,968,674.00	4,048,048.00
Book Depreciation	544,071.40	544,149.98	551,805.46	552,868.67	563,533.95	563,999.63	566,913.84	572,752.70
Ratemaking Interest Expense	77,910.00	75,313.00	72,802.00	70,376.00	68,030.00	65,762.00	63,570.00	61,451.00
Revenue Requirement	5,016,007.40	5,077,757.98	5,148,467.46	5,214,333.67	5,291,088.95	5,359,400.63	5,432,096.84	5,509,267.70
O&M Expenses	3,524,068.00	3,594,549.00	3,666,440.00	3,739,769.00	3,814,564.00	3,890,856.00	3,968,674.00	4,048,048.00
Depreciation Expense	544,071.40	544,149.98	551,805.46	552,868.67	563,533.95	563,999.63	566,913.84	572,752.70
Interest	77,910.00	75,313.00	72,802.00	70,376.00	68,030.00	65,762.00	63,570.00	61,451.00
Pretax Income	869,953.00	863,746.00	857,420.00	851,320.00	844,961.00	838,873.00	832,939.00	827,016.00
State & Federal Taxes @ 28.89%	251,329.00	249,536.00	247,709.00	245,946.00	244,109.00	242,350.00	240,636.00	238,925.00
After Tax Income	618,624.00	614,210.00	609,711.00	605,374.00	600,852.00	596,523.00	592,303.00	588,091.00
Current Revenue	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00
Revenue Requirement	5,267,331.40	5,327,293.98	5,396,176.46	5,460,279.67	5,535,197.95	5,601,840.63	5,672,732.84	5,748,192.70
Required Revenue Increase	-19%	-18%	-17%	-16%	-15%	-13%	-12%	-11%
Income from Operations	1,733,413	1,682,487	1,625,197	1,571,595	1,510,146	1,454,909	1,396,867	1,335,660
Return on Rate Base	14.37%	14.04%	13.67%	13.31%	12.89%	12.50%	12.09%	11.64%
Required Return	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%
Authorized Return	869,953	863,746	857,420	851,320	844,961	838,873	832,939	827,016
After Tax Net Income	1,655,503	1,607,174	1,552,395	1,501,219	1,442,116	1,389,147	1,333,297	1,274,209
Taxes	672,584	652,950	630,694	609,903	585,897	564,371	541,661	517,675
Pre-tax Net Income	2,328,087	2,260,124	2,183,089	2,111,122	2,028,008	1,953,518	1,874,978	1,791,884
Interest Expense	77,910	75,313	72,802	70,376	68,040	65,762	63,570	61,451
Operating Income	2,405,997	2,335,437	2,255,891	2,181,498	2,096,038	2,019,280	1,938,548	1,853,335
Operating Expenses	4,068,139	4,138,699	4,218,245	4,292,638	4,378,098	4,454,856	4,535,588	4,620,801
Revenue Requirement	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136
Required Return	869,953	863,746	857,420	851,320	844,961	838,873	832,939	827,016
Operating Expenses	4,068,139	4,138,699	4,218,245	4,297,638	4,378,098	4,454,856	4,535,588	4,620,801
Revenue Requirement	4,938,092	5,002,445	5,075,665	5,143,958	5,223,059	5,293,729	5,368,527	5,447,817
Required Rate Increase	-18.64%	-17.75%	-16.65%	-15.66%	-14.50%	-13.47%	-12.38%	-11.21%
	34	35	36	37	38	39	40	41
Proposed Rate Increase								
Rate Increase Scenario	0%	0%	0%	0%	0%	0%	0%	0%
	34	35	36	37	38	39	40	41
No increases (Input 2)	0%	0%	0%	0%	0%	0%	0%	0%
No Rate Increases (Input 2)								
Modest Rate Increases 6% every 3 year period starting in period 3 (Input 4)	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%
Modest Rate Increases (Input 4)								
Required Rate Increases 40% period 3, 20% period 6, 10% period 9, 6% period 12, 6% period 15, and 6% every 3rd year beginning in period 18 (Input 6)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Required Rate Increases (Input 6)	243.4%	243.4%	243.4%	243.4%	243.4%	243.4%	243.4%	243.4%
	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%
Changes in Balance Sheet Accounts								
Assets								
Change in Current Assets (Source negative / Use positive)								
Plant & Equipment								
Additions (Source negative / Use positive)	425,770	431,061	436,481	442,035	447,737	453,574	459,570	465,718
Liabilities								

EKP Investor Owned

Williamstown Township, Pennsylvania
Williamstown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 26, 2021

	Base	Periods																
		1 5	6 to 15	16 19	26	27	28	29	30	31	32	44	34	35	36	42	38	39	40	41
Change in Current Liabilities (Source Positive / Use negative)						82,870														
Long Term Debt																				
Additional Long Term Debt Source Positive / Use Negative																				
Principal Paid Long term Debt (Source positive / Use negative)					122,087	118,013	114,079	110,276	106,600	103,047	99,612	96,292	93,084	89,979	86,980	84,081	81,278	78,569	75,950	73,418
Equity																				
Additions to Equity (Source Positive / Use Negative)																				
Dividend (Source negative / Use Positive)																				
Funds Provided from Operations																				
Sources of Funds																				
Net Income (Use Negative / Source Positive)					1,766,955	1,984,669	1,981,441	1,892,977	1,850,598	1,799,106	1,754,219	1,704,501	1,655,403	1,607,174	1,562,195	1,601,719	1,442,116	1,389,147	1,335,297	1,279,209
Depreciation (Source positive/use negative)					512,916	517,883	519,196	520,861	521,774	537,045	546,826	541,479	548,681	548,150	553,805	552,869	563,544	568,000	566,914	571,253
Current Liabilities (Source Positive)						82,870														
					2,279,871	2,586,367	2,460,631	2,421,038	2,372,372	2,436,151	2,290,887	2,246,080	2,199,574	2,155,324	2,104,000	2,054,088	2,005,660	1,957,147	1,902,211	1,846,462
Sources and Uses of Funds																				
Sources of Funds																				
Current Liabilities (Source Positive)																				
Uses of Funds																				
Current Assets: Increase (Use)						102,609														
Fixed Assets: Assets: Increase (Use)					484,678	392,067	398,556	401,144	405,839	411,648	415,470	420,609	425,770	431,061	436,481	442,035	447,732	453,574	459,570	465,731
Total Uses of Funds					167,678	494,676	398,556	401,144	405,839	411,648	415,470	420,609	425,770	431,061	436,481	442,035	447,732	453,574	459,570	465,731
Funds from Financing Activities																				
Changes in Debt																				
Increase in Long Term Debt																				
Repayment of Long Term Debt					(122,087)	(118,013)	(114,079)	(110,276)	(106,600)	(103,047)	(99,612)	(96,292)	(93,084)	(89,979)	(86,980)	(84,081)	(81,278)	(78,569)	(75,950)	(73,418)
Funds from Equity																				
Dividends Paid (Use)					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Additional Paid in Capital (Source)																				
Total Funds from Financing Activities					(122,087.00)	(118,013.00)	(114,079.00)	(110,276.00)	(106,600.00)	(103,047.00)	(99,612.00)	(96,292.00)	(93,084.00)	(89,979.00)	(86,980.00)	(84,081.00)	(81,278.00)	(78,569.00)	(75,950.00)	(73,418.00)
Total Funds Needed					1,770,111.00	1,971,673.00	1,949,998.00	1,909,838.00	1,864,933.00	1,827,456.00	1,775,865.00	1,729,179.00	1,680,722.00	1,630,284.00	1,580,739.00	1,527,972.00	1,476,840.00	1,423,884.00	1,368,691.00	1,310,826.00
Financing																				
Debt	29%				(513,332.00)	(571,785.00)	(565,499.00)	(553,853.00)	(540,931.00)	(528,512.00)	(514,943.00)	(501,492.00)	(487,409.00)	(472,782.00)	(458,414.00)	(443,112.00)	(428,283.00)	(412,991.00)	(396,960.00)	(379,870.00)
Equity	71%				(1,256,779.00)	(1,399,888.00)	(1,384,499.00)	(1,355,829.00)	(1,324,002.00)	(1,299,944.00)	(1,260,722.00)	(1,227,687.00)	(1,193,313.00)	(1,157,502.00)	(1,122,325.00)	(1,084,860.00)	(1,048,414.00)	(1,010,913.00)	(968,931.00)	(930,956.00)
Funds Provided by Financing					(1,770,111.00)	(1,971,673.00)	(1,949,998.00)	(1,909,838.00)	(1,864,933.00)	(1,827,456.00)	(1,775,665.00)	(1,729,179.00)	(1,680,722.00)	(1,630,284.00)	(1,580,739.00)	(1,527,972.00)	(1,476,840.00)	(1,423,884.00)	(1,368,691.00)	(1,310,826.00)

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 28, 2021

		Base	Periods 1-5	6-15	16-19	42	43	44	45	46	47	48	49
Income Statement													
Revenues													
Annual Revenue Growth rate													
Subscriber Growth Rate (Annually)			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Periodic Subscriber Growth													
Growth		0.0%	0.0%	0.0%	0.0%				0.0%				
Period for Periodic Growth		5											
Rate Case Activities													
Periodic Rate Case (years)	Typically 5 years												
Required Rate Increase	Calculated in DCF					10.10%	8.86%	7.62%	6.39%	5.07%	3.73%	2.19%	0.96%
Proposed Rate Increase	Calculated in DCF					0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Revenue Adjustments	Calculated					0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Base and Forecast		2,659,679				6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136
Operating Expenses						9%	10%	10%	10%	10%	10%	11%	11%
Expense Level 1: Salaries, Wages & Benefits		264,869				606,471	620,646	633,051	645,714	658,626	671,801	685,237	698,942
Expense Level 1: Salaries, Wages & Benefits Rate of Change			2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 2: Materials & Supplies		1,446,497				4,422,960	4,489,419	4,457,707	4,576,451	4,596,878	4,668,816	4,742,192	4,817,036
Expense Level 2: Materials & Supplies Rate of Change			2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 3: Utilities		86,005				197,578	201,530	205,561	209,672	213,866	218,142	222,505	226,955
Expense Level 3: Utilities Rate of Change			2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 4: Not Used		-											
Expense Level 4: Not Used Rate of Change			2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 5: Not Used		-											
Expense Level 5: Not Used Rate of Change			2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 6: Not Used		-											
Expense Level 6: Not Used Rate of Change			2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Property Taxes		28,997,091											
Begin Plant						13,121,944	13,020,691	12,919,254	12,820,106	12,725,764	12,632,716	12,541,826	12,455,740
PT Rate % of beginning net plant		0.000%				0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Book Depreciation (based on Beginning Year Property Plant & Equipment)						573,206	579,883	584,257	586,276	592,013	597,061	599,683	606,971
Total Operating Expenses						4,702,217	4,791,472	4,880,073	4,968,611	5,061,384	5,155,820	5,249,617	5,349,906
Cost of Operation as % of Revenues (calculation)						72.6%	74.0%	75.4%	76.7%	78.2%	79.6%	81.1%	82.6%
Operating Expenses less Depreciation						4,129,009	4,211,589	4,295,821	4,381,737	4,469,171	4,558,759	4,649,934	4,742,933
Operating Income						1,771,919	1,682,664	1,594,063	1,506,123	1,412,752	1,318,316	1,224,519	1,124,230
Nonoperating Revenues (Expenses)													
Interest Income													
Interest Expense						59,403	57,422	55,508	53,658	51,870	50,141	48,469	46,854
Interest Exp as % of Debt		2.79%				2.79%	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%
Total nonoperating revenues (expenses)						59,403.00	57,422.00	55,508.00	53,658.00	51,870.00	50,141.00	48,469.00	46,854.00
Income (loss) before State and Federal Taxes						1,712,516	1,625,242	1,538,555	1,452,465	1,360,882	1,268,175	1,176,050	1,077,376
State and Federal Taxes						494,746	469,542	444,488	419,617	393,159	366,376	339,761	311,254
State and Federal Tax Rate		28.89%				28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%
Income After Taxes						1,217,770	1,155,710	1,094,067	1,032,848	967,723	901,799	836,289	766,122
Income After Taxes plus Interest						1,277,173	1,213,132	1,149,575	1,086,506	1,019,593	951,940	884,758	812,976
Earnings before Interest, Taxes, Depreciation & Amortization						**1,355,635**	**1,323,483**	**1,289,339**	**1,253,165**	**1,218,447**	**1,182,625**	**1,144,680**	**1,108,695**
Income (loss) before State and Federal Taxes						1,712,516	1,625,242	1,538,555	1,452,465	1,360,882	1,268,175	1,176,050	1,077,376
Book Depreciation						(573,206)	(579,883)	(584,257)	(586,276)	(592,013)	(597,061)	(599,683)	(606,971)
Tax Depreciation						(492,914)	(489,064)	(485,165)	(492,005)	(499,026)	(506,245)	(513,664)	(521,294)
Difference: Tax over Book Depreciation						80,292	90,819	99,092	94,271	92,987	90,816	86,019	85,679
Income Adjusted for Tax Depreciation						1,792,808	1,716,061	1,637,647	1,546,736	1,453,869	1,358,991	1,262,069	1,163,055
Income Tax Rate						28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%
Income Taxes						517,945	495,770	473,115	446,852	420,024	392,612	364,612	336,007
Income After Tax						1,274,863	1,220,291	1,164,532	1,099,884	1,033,845	966,379	897,457	827,048
Deferred Income Taxes						23,197	26,238	28,627	27,235	26,864	26,236	24,851	24,753
Accumulated Deferred Income Taxes						(1,977,934)	(1,951,695)	(1,923,068)	(1,895,833)	(1,868,969)	(1,842,733)	(1,817,882)	(1,793,129)
Income After Taxes (Book Depreciation)						1,217,770	1,155,710	1,094,067	1,032,848	967,723	901,799	836,289	766,122
Plus Deferred Taxes						23,197	26,238	28,627	27,235	26,864	26,236	24,851	24,753
Plus Interest						59,403	57,422	55,508	53,658	51,870	50,141	48,469	46,854
After Tax Income Debt Free						1,299,970	1,186,994	1,120,946	1,059,271	992,729	925,704	859,907	788,224
Balance Statement													
Assets													
Current Assets													
Current Asset Balance		744,710				1,812,758	1,812,758	1,812,758	1,812,758	1,812,758	1,812,758	1,812,758	1,812,758
CA as % of Revenues		28.00%	28.00%	28.00%	28.00%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%
Balance Statement													
Property Plant & Equipment													
Total PP&E													
Begin Balance						46,017,957.00	46,228,031.00	46,441,232.00	46,657,644.00	46,877,365.00	47,100,479.00	47,327,088.00	47,557,289.00
Additions						472,031.00	478,512.00	485,165.00	492,005.00	499,026.00	506,245.00	513,664.00	521,294.00
Retirements						(261,957.00)	(265,311.00)	(268,753.00)	(272,284.00)	(275,912.00)	(279,636.00)	(283,461.00)	(287,393.00)
End Balance		28,997,091.00				46,228,031.00	46,441,232.00	46,657,644.00	46,877,365.00	47,100,479.00	47,327,088.00	47,557,289.00	47,791,190.00
End Balance Check						46,228,031.00	46,441,232.00	46,657,644.00	46,877,365.00	47,100,479.00	47,327,088.00	47,557,289.00	47,791,190.00
Book Depreciation of Property, Plant, & Equipment													
Total Book Depreciation													

	50	51	52	53	54	55	56	57
Subscriber Growth Rate (Annually)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Growth	0.0%					0.0%		
Required Rate Increase	0.46%	1.89%	3.44%	4.95%	6.56%	8.26%	9.85%	11.55%
Proposed Rate Increase	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Revenue Adjustments	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Base and Forecast	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136
Operating Expenses	11%	11%	11%	12%	12%	12%	12%	13%
Expense Level 1: Salaries, Wages & Benefits	712,921	727,179	741,721	756,557	771,688	787,122	802,864	818,921
Expense Level 1: Salaries, Wages & Benefits Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 2: Materials & Supplies	4,894,477	4,971,245	5,050,670	5,131,643	5,214,317	5,298,603	5,384,575	5,472,267
Expense Level 2: Materials & Supplies Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 3: Utilities	231,494	236,124	240,846	245,663	250,576	255,588	260,700	265,914
Expense Level 3: Utilities Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 4: Not Used Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 5: Not Used Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 6: Not Used Rate of Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Begin Plant	12,369,995	12,287,924	12,211,625	12,136,255	12,067,445	11,998,481	11,925,732	11,861,659
PT Rate % of beginning net plant	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Book Depreciation (based on Beginning Year Property Plant & Equipment)	611,146	614,445	620,675	622,810	631,767	644,616	645,272	648,387
Total Operating Expenses	5,448,918	5,547,093	5,654,064	5,756,753	5,868,448	5,985,929	6,093,411	6,205,484
Cost of Operation as % of Revenues (calculation)	84.2%	85.7%	87.3%	88.9%	90.6%	92.5%	94.1%	95.9%
Operating Expenses less Depreciation	4,837,792	4,934,548	5,033,239	5,133,904	5,236,581	5,341,314	5,448,139	5,557,102
Operating Income	1,025,198	926,143	820,072	717,424	605,788	488,207	380,725	268,647
Interest Expense	45,292	43,782	42,324	40,912	39,548	38,230	36,956	35,724
Interest Exp as % of Debt	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%
Total nonoperating revenues (expenses)	45,292.00	43,782.00	42,324.00	40,912.00	39,548.00	38,230.00	36,956.00	35,724.00
Income (loss) before State and Federal Taxes	979,906	882,361	777,749	676,511	566,240	449,977	343,769	232,923
State and Federal Taxes	283,095	254,914	224,692	195,444	163,587	129,998	99,315	67,291
State and Federal Tax Rate	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%
Income After Taxes	696,811	627,447	553,057	481,067	402,653	319,979	244,454	165,632
Income After Taxes plus Interest	742,103	671,229	595,380	521,979	442,201	358,209	281,410	201,356
Earnings before Interest, Taxes, Depreciation & Amortization	**1,070,154**	**1,029,760**	**991,513**	**949,345**	**910,381**	**872,827**	**827,367**	**782,452**
Income (loss) before State and Federal Taxes	979,906	882,361	777,749	676,511	566,240	449,977	343,769	232,923
Book Depreciation	(611,146)	(614,445)	(620,675)	(622,810)	(631,767)	(644,616)	(645,272)	(648,387)
Tax Depreciation	(529,142)	(537,213)	(545,571)	(554,067)	(562,871)	(571,934)	(581,266)	(590,884)
Difference: Tax over Book Depreciation	82,004	77,232	75,104	68,743	68,896	72,682	64,006	57,503
Income Adjusted for Tax Depreciation	1,061,910	959,593	852,853	745,254	635,136	522,659	407,775	290,426
Income Tax Rate	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%	28.89%
Income Taxes	306,780	276,938	246,447	215,304	183,491	150,996	117,806	83,904
Income After Tax	755,124	681,655	606,606	529,950	451,645	371,663	289,969	206,522
Deferred Income Taxes	23,691	22,024	21,755	19,860	19,904	20,998	18,491	16,613
Accumulated Deferred Income Taxes	(1,769,438)	(1,747,414)	(1,725,659)	(1,705,799)	(1,685,895)	(1,664,897)	(1,646,406)	(1,629,793)
Income After Taxes (Book Depreciation)	696,811	627,447	553,057	481,067	402,653	319,979	244,454	165,632
Plus Deferred Taxes	23,691	22,024	21,755	19,860	19,904	20,998	18,491	16,613
Plus Interest	45,292	43,782	42,324	40,912	39,548	38,230	36,956	35,724
After Tax Income Debt Free	718,452	649,207	575,625	502,119	422,292	347,211	262,910	184,763
Current Asset Balance	1,812,758	1,812,758	1,812,758	1,812,758	1,812,758	1,812,758	1,812,758	1,812,758
CA as % of Revenues	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%
Begin Balance	47,791,190.00	48,028,899.00	48,270,525.00	48,516,188.00	48,766,002.00	49,020,099.00	49,278,609.00	49,541,664.00
Additions	529,142.00	537,214.00	545,521.00	554,067.00	562,871.00	571,934.00	581,266.00	590,884.00
Retirements	(291,431.00)	(295,587.00)	(299,856.00)	(304,253.00)	(308,774.00)	(313,424.00)	(318,211.00)	(323,139.00)
End Balance	48,028,899.00	48,270,525.00	48,516,188.00	48,766,002.00	49,020,099.00	49,278,609.00	49,541,664.00	49,809,409.00
End Balance Check	48,028,899.00	48,270,525.00	48,516,188.00	48,766,002.00	49,020,099.00	49,278,609.00	49,541,664.00	49,809,409.00

DCF Investor Owned

Income Approach

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021

	Base	Periods 1-5	6-15	16-19	42	43	44	45	46	47	48	49
Discount Rate without growth	5.65%				5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%
					17.699	17.699	17.699	17.699	17.699	17.699	17.699	17.699
Period Present Worth Factor (PW)					0.048	0.045	0.042	0.039	0.036	0.034	0.031	0.029
PW of Cashflow					1,170,980	1,046,942	928,703	815,044	708,896	627,495	532,635	461,254
Accumulated PW of Cashflows	19,492,222				106,377,237	107,424,179	108,352,882	109,167,426	109,876,322	110,503,817	111,036,452	111,497,706
CASH FLOW												
Income from Operations					1,274,867	1,220,291	1,164,527	1,099,884	1,033,846	966,379	897,457	827,048
Depreciation					(492,914)	(489,064)	(485,165)	(492,005)	(499,026)	(506,245)	(513,664)	(521,294)
Capital Expenditures					472,031	478,512	485,165	492,005	499,026	506,245	513,664	521,294
Change in Working Capital												
Net Cash Flows					1,295,750	1,230,843	1,164,527	1,099,884	1,033,846	966,379	897,457	827,048
Period					41.5	42.5	43.5	44.5	45.5	46.5	47.5	48.5
PW Factor												
Discount Rate with growth	7.57%				7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%
Discount Rate without growth	5.65%				5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%
					17.699	17.699	17.699	17.699	17.699	17.699	17.699	17.699
Period Present Worth Factor (PW)					0.048	0.045	0.042	0.039	0.036	0.034	0.031	0.029
PW of Cashflow					1,100,807	980,311	865,660	759,207	658,729	581,534	492,407	424,500
Accumulated PW of Cashflows	18,641,596				101,719,476	102,699,787	103,565,447	104,324,654	104,983,384	105,564,917	106,057,324	106,481,824
Rate Case Forecasts												
Rate Base												
Plant In Service					36,228,041.00	36,441,232.00	36,657,664.00	36,877,365.00	37,100,479.00	37,327,088.00	37,557,289.00	37,791,190.00
Accumulated Book Depreciation					(23,207,339.97)	(23,521,978.10)	(23,837,543.54)	(24,151,601.81)	(24,467,769.48)	(24,785,261.84)	(25,101,548.66)	(25,421,195.47)
Working Capital					349,603.00	349,603.00	349,603.00	349,603.00	349,603.00	349,603.00	349,603.00	349,603.00
Accumulated Deferred Income Tax					(1,977,933)	(1,951,695)	(1,923,068)	(1,895,833)	(1,868,969)	(1,842,734)	(1,817,882)	(1,793,129)
Rate Base					11,392,361.03	11,317,161.90	11,246,635.46	11,179,533.19	11,113,343.52	11,048,696.16	10,987,461.34	10,926,468.64
Authorized Return on Rate Base	7.21%				821,389.00	815,967.00	810,882.00	806,044.00	801,272.00	796,611.00	792,196.00	787,798.00
O&M Expenses					4,129,009.00	4,211,589.00	4,295,821.00	4,381,737.00	4,469,371.00	4,558,759.00	4,649,934.00	4,742,933.00
Book Depreciation					573,207.82	579,883.13	584,252.44	586,276.27	592,012.67	597,061.36	599,682.82	606,972.71
Ratemaking Interest Expense					59,403.00	57,422.00	55,508.00	53,658.00	51,870.00	50,141.00	48,469.00	46,854.00
Revenue Requirement					5,583,008.82	5,664,861.13	5,746,463.44	5,827,715.27	5,914,575.67	6,002,572.36	6,090,281.82	6,184,557.71
O&M Expenses					4,129,009.00	4,211,589.00	4,295,821.00	4,381,737.00	4,469,371.00	4,558,759.00	4,649,934.00	4,742,933.00
Depreciation Expense					573,207.82	579,883.13	584,252.44	586,276.27	592,012.67	597,061.36	599,682.82	606,972.71
Interest					59,403.00	57,422.00	55,508.00	53,658.00	51,870.00	50,141.00	48,469.00	46,854.00
Pretax Income					821,389.00	815,967.00	810,882.00	806,044.00	801,272.00	796,611.00	792,196.00	787,798.00
State & Federal Taxes @ 28.89%					237,299.00	235,733.00	234,264.00	232,866.00	231,487.00	230,141.00	228,865.00	227,595.00
After Tax Income					584,090.00	580,234.00	576,618.00	573,178.00	569,785.00	566,470.00	563,331.00	560,203.00
Current Revenue					6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00
Revenue Requirement					5,820,307.82	5,900,594.13	5,980,727.44	6,060,581.27	6,146,012.67	6,232,713.36	6,319,146.82	6,412,152.75
Required Revenue Increase					-10%	-9%	-8%	-6%	-5%	-4%	-2%	-1%
Income from Operations					1,277,174	1,213,132	1,149,575	1,086,506	1,019,593	951,940	884,758	812,976
Return on Rate Base					11.21%	10.72%	10.22%	9.72%	9.17%	8.62%	8.05%	7.44%
Required Return	7.21%				7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%
Authorized Return					821,389	815,967	810,882	806,044	801,272	796,613	792,196	787,798
After-tax Net Income					1,217,770	1,155,710	1,094,067	1,032,848	967,723	901,799	836,289	766,122
Taxes					494,746	469,532	444,488	419,617	393,159	366,476	339,761	311,254
Pre-tax Net Income					1,712,516	1,625,242	1,538,555	1,452,465	1,360,882	1,268,275	1,176,050	1,077,376
Interest Expense					59,403	57,422	55,508	53,658	51,870	50,141	48,469	46,854
Operating Income					1,771,919	1,682,664	1,594,063	1,506,123	1,412,752	1,318,416	1,224,519	1,124,230
Operating Expenses					4,702,217	4,791,472	4,880,073	4,968,013	5,061,384	5,155,820	5,249,617	5,349,906
Revenue Requirement					6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136
Required Return					821,389	815,967	810,882	806,044	801,272	796,613	792,196	787,798
Operating Expenses					4,702,217	4,791,472	4,880,073	4,968,013	5,061,384	5,155,820	5,249,617	5,349,906
Revenue Requirement					5,523,606	5,607,439	5,690,955	5,774,057	5,862,656	5,952,433	6,041,813	6,137,704
Required Rate Increase					-10.30%	-8.86%	-7.62%	-6.39%	-5.07%	-3.73%	-2.39%	-0.96%
					42	43	44	45	46	47	48	49
Proposed Rate Increase												
Rate Increase Scenario	6				0%	0%	0%	0%	0%	0%	0%	0%
	0				42	43	44	45	46	47	48	49
No increases (Input 2)	2				0%	0%	0%	0%	0%	0%	0%	0%
No Rate Increases (Input 2)	1											
Modest Rate Increases 6% every 3 year period starting in period 3 (Input 4)	4				6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%
Modest Rate Increases (Input 4)	5											
Required Rate Increases 30% period 3, 20% period 6, 10% period 9, 6% period 12, 6% period 15, and 6% every 3rd year beginning in period 18 (Input 6)	6				0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Required Rate Increases (Input 6)	7				243.4%	243.4%	243.4%	243.4%	243.4%	243.4%	243.4%	243.4%
	4				6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%
Changes in Balance Sheet Accounts												
Assets												
Change in Current Assets (Source negative / Use positive)												
Plant & Equipment												
Additions (Source negative / Use positive)					477,031	478,512	485,165	492,005	499,026	506,245	513,664	521,294
Liabilities												

	50	51	52	53	54	55	56	57
Discount Rate without growth	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%
	17.699	17.699	17.699	17.699	17.699	17.699	17.699	17.699
Period Present Worth Factor (PW)	0.027	0.025	0.023	0.022	0.02	0.019	0.017	0.016
PW of Cashflow	393,818	330,733	273,020	230,014	180,918	144,900	103,930	73,305
Accumulated PW of Cashflows	111,891,524	112,222,257	112,495,277	112,725,291	112,906,209	113,051,109	113,155,039	113,228,344
CASH FLOW								
Income from Operations	755,124	681,655	606,606	529,950	451,645	371,663	289,969	206,522
Depreciation	(529,142)	(537,213)	(545,521)	(554,067)	(562,871)	(571,934)	(581,266)	(590,884)
Capital Expenditures	529,142	537,213	545,521	554,067	562,871	571,934	581,266	590,884
Change in Working Capital								
Net Cash Flows	755,124	681,655	606,606	529,950	451,645	371,663	289,969	206,522
Period	49.5	50.5	51.5	52.5	53.5	54.5	55.5	56.5
PW Factor								
Discount Rate with growth	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%	7.57%
Discount Rate without growth	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%
	17.699	17.699	17.699	17.699	17.699	17.699	17.699	17.699
Period Present Worth Factor (PW)	0.027	0.025	0.023	0.022	0.02	0.019	0.017	0.016
PW of Cashflow	360,853	301,615	246,935	206,351	159,873	124,983	87,247	58,484
Accumulated PW of Cashflows	106,842,677	107,144,292	107,391,227	107,597,578	107,757,451	107,882,434	107,969,681	108,028,165
Rate Case Forecasts								
Rate Base								
Plant In Service	38,028,899.00	38,270,525.00	38,516,188.00	38,766,007.00	39,020,099.00	39,278,609.00	39,541,664.00	39,809,409.00
Accumulated Book Depreciation	(25,740,974.90)	(26,058,899.77)	(26,379,933.50)	(26,698,557.48)	(27,021,617.77)	(27,352,876.52)	(27,680,004.70)	(28,005,320.11)
Working Capital	349,603.00	349,603.00	349,603.00	349,603.00	349,603.00	349,603.00	349,603.00	349,603.00
Accumulated Deferred Income Tax	(1,769,438)	(1,747,414)	(1,725,659)	(1,705,799)	(1,685,895)	(1,664,897)	(1,646,406)	(1,629,793)
Rate Base	10,868,089.10	10,813,814.23	10,760,198.50	10,711,248.52	10,662,189.21	10,610,438.48	10,564,856.30	10,523,898.87
Authorized Return on Rate Base	783,589.00	779,676.00	775,810.00	772,281.00	768,744.00	765,013.00	761,726.00	758,774.00
O&M Expenses	4,837,792.00	4,934,548.00	5,033,239.00	5,133,903.00	5,236,581.00	5,341,313.00	5,448,139.00	5,557,102.00
Book Depreciation	611,145.53	613,444.87	620,824.73	622,809.98	631,767.29	644,615.75	645,272.18	648,387.43
Ratemaking Interest Expense	45,292.00	43,782.00	42,323.00	40,912.00	39,548.00	38,230.00	36,956.00	35,724.00
Revenue Requirement	6,277,818.53	6,371,450.87	6,477,196.73	6,569,905.98	6,676,640.29	6,789,171.75	6,892,093.18	6,999,986.43
O&M Expenses	4,837,792.00	4,934,548.00	5,033,239.00	5,133,903.00	5,236,581.00	5,341,313.00	5,448,139.00	5,557,102.00
Depreciation Expense	611,145.53	613,444.87	620,824.73	622,809.98	631,767.29	644,615.75	645,272.18	648,387.43
Interest	45,292.00	43,782.00	42,323.00	40,912.00	39,548.00	38,230.00	36,956.00	35,724.00
Pretax Income	783,589.00	779,676.00	775,810.00	772,281.00	768,744.00	765,013.00	761,726.00	758,774.00
State & Federal Taxes @ 28.89%	226,379.00	225,248.00	224,132.00	223,112.00	222,090.00	221,012.00	220,063.00	219,210.00
After Tax Income	557,210.00	554,428.00	551,678.00	549,169.00	546,654.00	544,001.00	541,663.00	539,563.00
Current Revenue	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00	6,474,136.00
Revenue Requirement	6,504,197.53	6,596,698.87	6,696,328.73	6,793,017.98	6,898,730.29	7,010,183.75	7,112,156.18	7,219,196.43
Required Revenue Increase	0%	2%	3%	5%	7%	8%	10%	12%
Income from Operations	742,103	671,229	595,380	521,979	442,201	358,209	281,410	201,356
Return on Rate Base	6.83%	6.21%	5.53%	4.87%	4.15%	3.38%	2.66%	1.91%
Required Return	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%	7.21%
Authorized Return	783,589	779,676	775,810	772,281	768,744	765,013	761,726	758,774
After-tax Net Income	696,811	627,447	554,057	481,067	402,653	319,979	244,454	165,642
Taxes	283,095	254,914	224,692	195,444	163,587	129,998	99,315	67,291
Pre-tax Net Income	979,906	882,361	777,749	676,511	566,240	449,977	343,769	232,923
Interest Expense	45,292	43,782	42,324	40,912	39,548	38,230	36,956	35,724
Operating Income	1,025,198	926,143	820,072	717,423	605,788	488,207	380,725	268,647
Operating Expenses	5,448,938	5,547,993	5,654,064	5,756,713	5,868,348	5,985,929	6,093,411	6,205,489
Revenue Requirement	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136	6,474,136
Required Return	783,589	779,676	775,810	772,281	768,744	765,013	761,726	758,774
Operating Expenses	5,448,938	5,547,993	5,654,064	5,756,713	5,868,348	5,985,929	6,093,411	6,205,489
Revenue Requirement	6,232,527	6,327,669	6,429,874	6,528,994	6,637,092	6,750,942	6,855,137	6,964,263
Required Rate Increase	0.46%	1.89%	3.43%	4.94%	6.56%	8.28%	9.85%	11.51%
	50	51	52	53	54	55	56	57
Proposed Rate Increase								
Rate Increase Scenario	0%	0%	0%	0%	0%	0%	0%	0%
	50	51	52	53	54	55	56	57
No increases (Input 2)	0%	0%	0%	0%	0%	0%	0%	0%
No Rate Increases (Input 2)								
Modest Rate Increases 6% every 3 year period starting in period 3 (Input 4)	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%
Modest Rate Increases (Input 4)								
Required Rate Increases 30% period 3, 20% period 6, 10% period 9, 6% period 12, 6% period 15, and 6% every 3rd year beginning in period 18 (Input 6)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Required Rate Increases (Input 6)	243.4%	243.4%	243.4%	243.4%	243.4%	243.4%	243.4%	243.4%
	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%
Changes in Balance Sheet Accounts								
Assets								
Change in Current Assets (Source negative / Use positive)								
Plant & Equipment								
Additions (Source negative / Use positive)	529,142	537,213	545,521	554,067	562,871	571,934	581,266	590,884
Liabilities								

Williamstown Township, Pennsylvania
Williamstown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021

	Base		Periods															
	Yr	Yr 15	Yr 16	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
Change in Current Liabilities (Source Positive / Use negative)																			
Long Term Debt																			
Additional Long Term Debt Source Positive / Use Negative																			
Principal Paid Long term Debt (Source positive / Use negative)				70,971	68,669	66,318	64,108	61,971	59,905	57,908	55,978	54,112	52,308	50,565	48,879	47,250	45,675	44,152	42,681
Equity																			
Additions to Equity (Source Positive / Use Negative)																			
Dividend (Source negative / Use Positive)																			
Funds Provided from Operations																			
Sources of Funds																			
Net Income (Use Negative / Source Positive)				1,317,170	1,355,710	1,094,067	1,047,848	967,724	901,799	836,099	786,122	646,811	627,447	553,057	483,067	402,654	419,979	364,454	165,342
Depreciation (Source positive (use negative)				573,208	579,883	584,442	586,276	547,015	597,051	599,681	606,473	621,146	613,445	620,825	622,811	621,767	644,616	645,272	648,347
Current Liabilities (Source Positive)																			
				1,890,978	1,935,594	1,678,339	1,633,924	1,559,736	1,498,860	1,436,972	1,373,055	1,307,557	1,240,892	1,173,882	1,105,877	1,034,421	964,595	889,726	814,019
Sources and Uses of Funds																			
Sources of Funds																			
Current Liabilities (Source Positive)																			
Uses of Funds																			
Current Assets, Increase (Use)																			
Fixed Assets, Assets Increase (Use)				472,031	478,517	485,165	492,005	499,026	506,245	513,664	521,294	529,147	537,233	545,571	554,167	562,871	571,994	581,266	590,884
Total Uses of Funds				472,031	478,517	485,165	492,005	499,026	506,245	513,664	521,294	529,147	537,233	545,571	554,167	562,871	571,994	581,266	590,884
Funds from Financing Activities																			
Changes in Debt																			
Increase in Long Term Debt																			
Repayment of Long Term Debt				(70,971)	(68,669)	(66,318)	(64,108)	(61,971)	(59,905)	(57,908)	(55,978)	(54,112)	(52,308)	(50,565)	(48,879)	(47,250)	(45,675)	(44,152)	(42,681)
Funds from Equity																			
Dividends Paid (Use)				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Additional Paid in Capital (source)																			
Total Funds from Financing Activities				(70,971.00)	(68,669.00)	(66,318.00)	(64,108.00)	(61,971.00)	(59,905.00)	(57,908.00)	(55,978.00)	(54,112.00)	(52,308.00)	(50,565.00)	(48,879.00)	(47,250.00)	(45,675.00)	(44,152.00)	(42,681.00)
Total Funds Needed				1,247,976.00	1,268,476.00	1,126,836.00	1,081,911.00	998,739.00	932,710.00	864,400.00	795,823.00	724,703.00	651,371.00	577,796.00	500,931.00	424,299.00	346,986.00	268,908.00	180,454.00
Financing																			
Debt	29%			(361,913.00)	(444,668.00)	(326,782.00)	(408,273.00)	(289,644.00)	(270,486.00)	(250,676.00)	(230,789.00)	(210,164.00)	(188,898.00)	(167,561.00)	(145,270.00)	(123,047.00)	(100,675.00)	(76,649.00)	(52,332.00)
Equity	71%			(886,063.00)	(824,808.00)	(800,054.00)	(754,958.00)	(709,305.00)	(662,224.00)	(613,724.00)	(565,034.00)	(514,539.00)	(462,473.00)	(410,235.00)	(355,661.00)	(301,252.00)	(246,311.00)	(191,859.00)	(128,122.00)
Funds Provided by Financing				(1,247,976.00)	(1,268,476.00)	(1,126,836.00)	(1,081,911.00)	(998,739.00)	(932,710.00)	(864,400.00)	(795,823.00)	(724,703.00)	(651,371.00)	(577,796.00)	(500,931.00)	(424,299.00)	(346,986.00)	(268,508.00)	(180,454.00)

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021

	Base	1 - 5	Periods 6-15	16 - 19	Y6	Y7	Y8
Income Statement							
Revenues							
Annual Revenue Growth rate							
Customer Growth rate (Annual)		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Periodic Sales per Growth							
Years	0.0%	0.0%	0.0%	0.0%			0.0%
Period for Periodic Growth	5						
Rate Case Activities							
Periodic Rate Case (years)	Typical 3 years						
Historic Rate Increase	Calculated in DCF				0.0%	0.0%	0.0%
Proposed Rate Increase	Calculated in DCF				0.0%	0.0%	0.0%
Total Revenue Adjustments					0.0%	0.0%	0.0%
Base and Forecast	2,659,679				[illegible]	[illegible]	[illegible]
Operating Expenses							
Expense Level 1: Salaries, Wages & Benefits	264,869				2.0%	2.0%	2.0%
Expense Level 1: Salaries, Wages & Benefits Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 2: Materials & Supplies	1,446,497				[illegible]	[illegible]	[illegible]
Expense Level 2: Materials & Supplies Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 3: Utilities	86,005				[illegible]	[illegible]	[illegible]
Expense Level 3: Utilities Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 4: Not Used	-						
Expense Level 4: Not Used Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 5: Not Used	-						
Expense Level 5: Not Used Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 6: Not Used	-						
Expense Level 6: Not Used Rate of Change		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Property Taxes	28,997,091						
Begin Plant					[illegible]	[illegible]	[illegible]
PT Rate % of beginning net plant	0.000%				0.000%	0.000%	0.000%
Book Depreciation (based on Beginning Year Property Plant & Equipment)					[illegible]	[illegible]	[illegible]
Total Operating Expenses					[illegible]	[illegible]	[illegible]
Total Operations as % of Revenues (Calculation)					[illegible]	[illegible]	[illegible]
Operating Expenses ex Depreciation					[illegible]	[illegible]	[illegible]
Operating Income					[illegible]	[illegible]	[illegible]
Non-operating Revenues (Expenses)							
Interest Income					[illegible]	[illegible]	[illegible]
Interest Expense					[illegible]	[illegible]	[illegible]
Interest Expense % of Debt	2.79%				2.79%	2.79%	2.79%
Total Non-operating revenues (expenses)					[illegible]	[illegible]	[illegible]
Income (Loss) before State and Federal Taxes					[illegible]	[illegible]	[illegible]
State and Federal Taxes							
State and Federal Tax Rate	28.89%				28.89%	28.89%	28.89%
Income After Taxes					[illegible]	[illegible]	[illegible]
Income After Taxes less Interest					[illegible]	[illegible]	[illegible]
Earnings before Interest, Taxes, Depreciation & Amortization					740,531	695,122	648,066
Income (Loss) before State and Federal Taxes					[illegible]	[illegible]	[illegible]
Book Depreciation					[illegible]	[illegible]	[illegible]
Tax Depreciation					[illegible]	[illegible]	[illegible]
Difference Tax over Book Depreciation					[illegible]	[illegible]	[illegible]
Income Adjusted for Tax Depreciation					[illegible]	[illegible]	[illegible]
Income Tax Rate					28.89%	28.89%	28.89%
Income Taxes					[illegible]	[illegible]	[illegible]
Income After Tax					[illegible]	[illegible]	[illegible]
Deferred Income Taxes					[illegible]	[illegible]	[illegible]
Accumulated Deferred Income Taxes					[illegible]	[illegible]	[illegible]
Income After Taxes (Book Depreciation)					[illegible]	[illegible]	[illegible]
Plus Deferred Taxes					[illegible]	[illegible]	[illegible]
Principal					[illegible]	[illegible]	[illegible]
After Tax Income Net Debt					[illegible]	[illegible]	[illegible]
Balance Statement							
Assets							
Current Assets							
Current Asset Balance	744,710				[illegible]	[illegible]	[illegible]
CA as % of Revenues	28.00%	28.00%	28.00%	28.00%	28.0%	28.0%	28.0%
Balance Statement							
Property Plant & Equipment							
Total PP&E							
Begin Balance					[illegible]	[illegible]	[illegible]
Additions					[illegible]	[illegible]	[illegible]
Retirements					[illegible]	[illegible]	[illegible]
End Balance	[illegible]				[illegible]	[illegible]	[illegible]
End Balance Check					[illegible]	[illegible]	[illegible]
Book Depreciation of Property, Plant, & Equipment							
Total Book Depreciation							

Willistown Township, Pennsylvania
Wellistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 29, 2021

	Base	Periods					
		1	2	3	4	5	6
	Begin Balance				$28,005,120	$26,405,929	$26,685,962
	Depreciation				($598,240)	($661,967)	($661,799)
	Retirements				$28,120	$41,000	$36,000
	End Balance				$26,405,929	$26,685,962	$26,998,761
End Balance Basis					$28,435,405	$26,965,962	$26,998,761
Net Plant							
	Begin Balance				$13,804,080	$13,205,840	$12,543,873
	End Balance				$13,205,840	$12,543,873	$11,881,962
Total Asset							
Tax Depreciation of Property, Plant, & Equipment							
Total Wastewater Depreciation							
	Begin Balance						
	Retirements				($28,120)	($41,000)	($36,000)
	Depreciation				($598,240)	($661,967)	($661,799)
	End Balance				($626,360)	($702,967)	($698,799)
End Balance Basis					($626,360)	($702,967)	($698,799)
Net Plant							
	Begin Balance				$13,804,080	$13,205,840	$12,543,873
	End Balance				$13,205,840	$12,543,873	$11,881,962
	Tax				($28,120)	($41,000)	($36,000)
	Book				($598,240)	($661,967)	($661,799)
					($570,120)	($620,967)	($625,799)

Balance Statement

Liabilities							
Current Liabilities							
Current Liabilities	601,087						
Current % of Receivables	22.60%	22.60%	22.60%	22.60%	22.60%	22.60%	22.60%
Non-current Liabilities							
Long Term Debt, Notes payable net of current portion	$1,757,388				$1,717,788	$1,596,888	$1,256,987
Additional Debt							
Debt Repayment					($41,250)	($80,900)	($40,900)
Debt Repayment years	30.00				30.00	30.00	30.00
Ending Term Debt, Notes payable, net of current portion					$1,596,888.00	$1,256,987.00	$1,216,086.00
Total Non-current liabilities							
Deferred Tax Liabilities							
Begin Balance					$1,429,700	$1,443,196	$1,597,996
Additions to Deferred Asset					$13,496	$154,800	$153,824
Total Deferred Tax Liability					$1,443,196	$1,597,996	$1,686,824
Total Liabilities					$4,277,841.36	$4,217,762.00	$4,160,462.00
Equity							
Proportion of Capital	75%						
Beginning Equity Capital	$11,587,575				$11,587,575	$11,587,575	$11,587,575
Additions to Equity (Retained Earnings)					$40,447	$14,394	$87,588
Reductions from Equity Withdrawals					$0	$0	$0
Additional Paid In Capital					$0	$0	$0
Ending Equity Capital					$11,587,575	$11,587,575	$11,587,575
Operating Income					$47,691	$16,972	$49,564
After Tax Equity					0.79%	0.11%	0.11%
Total Liabilities & Shareholders Equity					$11,635,267	$11,604,547	$11,637,139
Assets					$13,505,108	$13,815,309	$13,846,298
Liabilities & Shareholders Equity less Assets					$129,841	$210,762	$208,462
Dividend					$129,841	$210,762	$208,462
Final Shareholder Equity					$11,717,416	$11,805,309	$11,846,298
Capital Expenditures and Changes in Working Capital							
Capital Expenditures					($28,120)	($41,000)	($36,000)
Changes to Working Capital							
Current Assets	268,719				$268,719	$268,719	$268,719
Current Liabilities	601,087				$601,087	$601,087	$601,087
Working Capital	268,719				$268,719	$268,719	$268,719
Changes to Working Capital							
Cash Flows							
Income from Operations					$129,841	$210,762	$208,462
Non-Cash Expense (Depreciation)					$598,240	$661,967	$661,799
Capital Expenditures					($28,120)	($41,000)	($36,000)
Changes in Working Capital							
Net Cash Flows					$699,961	$831,729	$834,261
Terminal					2.5%	2.5%	2.5%
Risk Factor							
Discount Rate with growth	7.50%				7.50%	7.50%	7.50%

DCI Investors Owned

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021

	Base	Periods				
		1.5	6.5	16 - 19	58	59	60
Discount Rate without growth	5.65%				5.65%	5.65%	5.65%
					17.699	17.699	17.699
Period Present Worth Factor (PW)					0.015	0.014	0.013
PW of Cashflow					49,776	20,529	(2,081)
Accumulated PW of Cashflows	29,493,777				113,274,120	113,294,649	113,292,569
CASH FLOW							
Income from Operations					121,293	34,734	(54,667)
Depreciation					(600,789)	(611,003)	(621,532)
Capital Expenditures					600,789	611,003	621,532
Change in Working Capital							
Net Cash Flows					121,293	34,734	(54,667)
Period					57.5	58.5	59.5
PW Factor							
Discount Rate with growth	7.57%				7.57%	7.57%	7.57%
Discount Rate without growth	5.65%				5.65%	5.65%	5.65%
					17.699	17.699	17.699
Period Present Worth Factor (PW)					0.015	0.014	0.013
PW of Cashflow					32,201	8,484	(12,468)
Accumulated PW of Cashflows	19,441,596				108,060,496	108,068,849	108,056,766

Rate Case Forecast							
Rate Base							
Plant in Service					42,081,980.00	40,304,517.00	41,647,230.00
Accumulated Rate Depreciation					(28,145,405.92)	(28,865,865.55)	(28,994,599.78)
Working Capital					349,603.00	349,603.00	349,603.00
Accumulated Deferred Income Tax					(1,914,196)	(1,597,990)	(1,484,623)
Rate Base					32,480,981.08	30,445,487.45	30,412,539.22
Authorized Return on Rate Base	7.23%				755,824.00	754,120.00	750,743.00
O&M Expenses					5,668,243.00	5,783,608.00	5,897,240.00
Book Depreciation					698,286.79	662,635.63	667,799.73
Refinancing Interest Expense					14,511.00	11,962.00	12,260.00
Revenue Requirement					7,116,865.79	7,211,765.63	7,344,043.73
O&M Expenses					5,668,243.00	5,783,608.00	5,897,240.00
Depreciation Expense					698,286.79	662,635.63	667,799.73
Interest					14,511.00	11,962.00	12,260.00
Pretax Income					755,824.00	754,120.00	750,743.00
State & Federal Taxes @ 28.8%					218,354.00	217,576.00	216,890.00
After Tax Income					537,469.00	536,544.00	533,854.00
Current Revenue					6,474,136.00	6,474,136.00	6,474,136.00
Revenue Requirement					7,116,192.79	7,049,321.63	7,568,941.73
Required Revenue Increase					1.5%	1.5%	1.7%
Income from Operations					114,973	91,189	(55,119)
Return on Rate Base					1.10%	0.29%	0.53%
Required Return	7.23%				7.23%	7.23%	7.23%
Authorized Return					755,823	753,120	750,743
After Tax Net Income					60,440	(3,193)	(67,588)
Taxes					12,881	(1,297)	(35,585)
Pre Tax Net Income					113,321	(4,490)	(123,173)
Interest Expense					14,511	11,962	12,269
Operating Income					147,666	78,892	(90,904)
Operating Expenses					6,326,480	6,445,244	6,565,040
Revenue Requirement					6,474,136	6,474,136	6,474,136
Required Return					755,824	754,120	750,743
Operating Expenses					6,326,480	6,445,244	6,565,040
Revenue Requirement					7,082,303	7,198,364	7,315,784
Required Rate Increase					13.92%	11.06%	16.85%
					58	59	60
Proposed Rate Increase							
Rate Increase Scenario	6				0%	0%	0%
	58				58	59	60
No increases (Input 2)	2				0%	0%	0%
No Rate Increases (Input 2)	4						
Modest Rate Increases 6% every 3 year period starting in year 3 (Input 4)	4				0.0%	0.0%	0.0%
Modest Rate Increases (Input 5)	5						
Required Rate Increases 30% period 1, 20% period 2, 10% period 3, 6% period 12, 6% period 15, and 6% every 3rd year beginning in period 18 (Input 6)	6				0.0%	0.0%	0.0%
Required Rate Increases (Input 6)	7				243.4%	243.4%	243.4%
	4				0.0%	0.0%	0.0%
Changes in Balance Sheet Accounts							
Assets							
Change in Current Assets (Source negative / Use positive)							
Plant & Equipment							
Additions (Source negative / Use positive)					600,789	611,003	621,532

Williamstown Township, Pennsylvania
Williamstown Wastewater Collection System
Wastewater Collection System and Treatment
Potential Purchaser: Investor-Owned Utility
As of January 20, 2021

	Note	Periods 1-5	6-15	16 - 19	58	59	60
Change in Current Liabilities (Source Positive / Use negative)							
Long Term Debt							
Additional Long Term Debt Source Positive / Use Negative							
Principal Paid Long term Debt (Source positive / Use negative)					41,258	39,883	38,553
Equity							
Additions to Equity (Source Positive / Use Negative)							
Dividend (Source negative / Use Positive)							
Funds Provided from Operations							
Sources of Funds							
Net Income (Use Negative / Source Positive)					80,447	(3,795)	(87,588)
Depreciation (Source positive use negative)					658,717	663,636	667,800
Current Liabilities (Source Positive)					738,679	660,441	580,212
Sources and Uses of Funds							
Sources of Funds							
Current Liabilities (Source Positive)							
Uses of Funds							
Current Assets: Increase (Use)							
Fixed Assets: Assets Increase (Use)					600,789	611,003	621,539
Total Uses of Funds					600,789	611,003	621,539
Funds from Financing Activities							
Changes in Debt							
Increase in Long Term Debt							
Repayment of Long Term Debt					(41,258)	(39,883)	(38,553)
Funds from Equity							
Dividends Paid (+/-)					0	0	0
Additional Paid in Capital (source)							
Total Funds from Financing Activities					(41,258.00)	(39,883.00)	(38,553.00)
Total Funds Needed					96,147.00	9,552.00	(59,873.00)
Financing							
Debt	29%				(28,014.00)	(2,772.00)	21,368.00
Equity	71%				(68,609.00)	(6,780.00)	38,730.00
Funds Provided by Financing					(96,614.00)	(9,552.00)	59,873.00

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Income Approach
DCF Forecast Parameters
Private Rate Regulated Wastewater System
Period 1 through 19 and 20 to perpetuity

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J. Weinert's E-Mail: weinertj@auswest.net

\\sas-dc1\Shared\water industry\Williztown Township\Report & Testimony\Williztown Wastewater System Valuation as of 1-27-2021

Williztown Township, Pennsylvania
Williztown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

DCF Calculated
19,492,222

DCF Forecast Parameters

	Forecast Base	Use		Forecast Parameters for Periods 1-5	6-15	16-19	20-26	27-33	34-40	40-46	47-53	54-60
Revenue Base												
Revenue Base		2,659,679	2,659,679									
Year over Year Growth												
Total Revenues		2,659,679	2,659,679									
									18,235,751			
2020 Revenues		2,659,679	2,659,679									
Increase in period 1												
Use		0%	AUS Input									
Revenue Forecast				1-5	6-15	16-19	20-26	27-33	34-40	40-46	47-53	54-60
Annual Subscriber Growth	Annual Subscriber Growth: All Periods 0.0%			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Periodic Subscriber Growth	Periodic Customer Growth: All period 0.0%			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Growth		0%										
Period every 7 years		5										
			Periodic Customer Growth: All Periods 0.0%									
Rate Adjustment												

Rate Adjustment Periods	Typically 3 years			1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Rate Adjustment based on Rate Case		Based on Authorized Return on Rate Base		0.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.0%
Rate Increase Scenario				3																					
	2 No Rate Increases	No increases (input 2)		4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Indicated Rate Increase			54.58%	55.55%	20.60%	21.35%	22.16%	2.57%	2.97%	3.35%	-5.60%	-5.14%	-4.76%	-9.73%	-9.21%	-8.85%	-13.50%	-12.93%	-12.44%	-16.80%	-16.22%	-15.70%	
		Indicated Rate Increase (saved)			19.85%	19.89%	20.55%	21.32%	21.94%	23.12%	24.23%	25.57%	27.28%	29.18%	31.47%	33.67%	36.59%	39.55%	43.11%	48.02%	53.52%	59.31%	65.71%	72.68%	
	4 Modest Rate Increases	Modest Rate Increases: 6% every 3 year period starting in period 3 (input 4)		5	0%	0%	6%	0%	0%	6%	0%	0%	6%	0%	0%	6%	0%	0%	6%	0%	0%	6%	0%	0%	6%
		Indicated Rate Increase			54.58%	55.55%	20.60%	21.35%	22.16%	2.57%	2.97%	3.35%	-5.60%	-5.14%	-4.76%	-9.73%	-9.21%	-8.85%	-13.50%	-12.93%	-12.44%	-16.80%	-16.22%	-15.70%	
		Indicated Rate Increase (saved)			13.13%	13.17%	13.79%	14.52%	8.65%	9.70%	10.69%	11.88%	7.05%	8.65%	10.58%	12.42%	8.44%	10.79%	13.62%	17.51%	14.99%	19.32%	24.11%	29.84%	
	6 Required Rate Increases	Required Rate Increases: 30% period 3, 20% period 6, 10% period 9, 6% period 12, 6% period 15, and 6% every 3rd year beginning in period 18 (input 6)		6	0%	0%	30%	0%	0%	20%	0%	0%	10%	0%	0%	6%	0%	0%	6%	0%	0%	6%	0%	0%	6%
		Indicated Rate Increase			54.58%	55.55%	20.60%	21.35%	22.16%	2.57%	2.97%	3.35%	-5.60%	-5.14%	-4.76%	-9.73%	-9.21%	-8.85%	-13.50%	-12.93%	-12.44%	-16.80%	-16.22%	-15.70%	
		Indicated Rate Increase (saved)																							
Rate Increase Scenario Input	Rate Increase Scenario Input		6 Input																						

18,235,751 64,577,011

Operating Expenses

Investor Owned Deferred Tax

		Use	Expenses as % of Revenues	Forecast Parameters for Periods 1-5	6-15	16-19	20-26	27-33	34-40	40-46	47-53	54-60
Expense Level 1: Salaries, Wages & Benefits	264,869.00	264,869	9.96%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Wage Expense Growth Rate: Periods 1-5 -2.0% all remaining Periods 2.0%												
Expense Level 2: Materials & Supplies	1,446,497.00	1,446,497	54.39%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Material & Supplies Expense Growth Rate: Periods 1-5 2.0%, all remaining Periods 2.0%												
Expense Level 7: Depreciation	491,484.00	491,484		Based on Plant and Depreciation Parameters								
Book Depreciation Expense Based on CORLD, Plant Depreciation Parameters, and CORLD Aging; Tax Depreciation based on CORLD and MACRS												
Expense Level 3: Utilities	86,005.00	86,005	3.23%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Utility Expense Growth Rate: All Periods 2.0%												
Expense Level 4: Not Used	-	-	0.00%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 4 Not Used Expense Growth Rate: All Periods 2.0%												
Expense Level 5: Not Used	-	-	0.00%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 5 Not Used Expense Growth Rate: Periods 1-5 2.0%, all remaining Periods 2.0%												
Expense Level 6: Not Used	-	-	0.00%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 6 Not used Expense Growth Rate: Periods 1-5 2.0% all remaining Periods 2.0%												
Total Operating Expenses	2,288,855	2,288,855	86.06%									
Total Operating Expenses Check	2,288,855											
Difference	-											
OpEX less, Depreciation	1,797,371	1,797,371										
OpEX as % of Revenues	67.58%											
Total Operating Expenses												
Total Operating Expenses Check												
Operating Expenses less Depreciation												

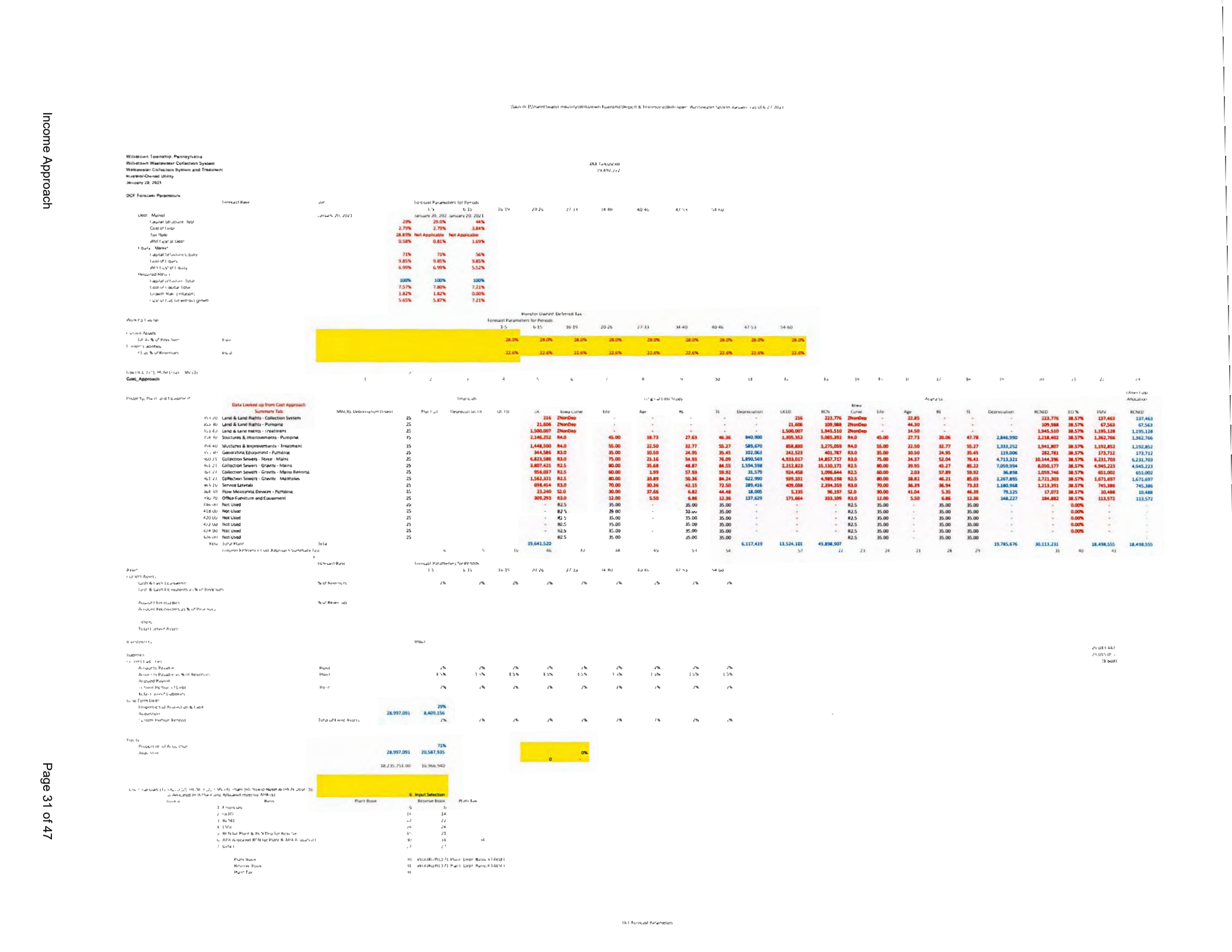
Net Operating Income before Non-operating Revenue and Expenses	370,824	370,824				
Non-Operating Income (Expenses)						
Interest Income			2%	2%	2%	
Interest Rate on Investments						
Gain on the Sale of Assets						
Long-term Debt Interest			-2.79%	-2.79%		
Interest Rate on Long-term Debt			Calculated			
Total Non-Operating Income						

Depreciation		Calculated based on Plant		
Property Taxes	0.000%	of Assessed (Beginning Net Book Value) Value of Taxable Property		0.00%
Taxes			Reference to Spreadsheet Location	
Federal	21.00%	of Pretax Income	='ValueLine Data'!AW30	21.00%
State	9.99%	of Pretax Income	='ValueLine Data'!AW32	9.99%
State & Federal Tax Rate	28.89%	of Pretax Income	='ValueLine Data'!AW33	28.89%

Cost of Capital Required Return

Valuation Cost of Capital	Cost of Capital (Debt-free)	Cost of Capital	Return on Rate Base Cost of Capital

DCF Forecast Parameters



Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 29, 2021

DCF Forecast Parameters

	Forecast Base	As of	Forecast Parameters for Periods 1-5	6-15	16-19	20-26	27-33	34-40	40-46	47-53	54-60
Debt - Market		January 20, 2021	January 20, 2021	January 20, 2021							
Capital Structure - Debt			29%	29.0%	44%						
Cost of Debt			2.79%	2.79%	3.84%						
Tax Rate			28.89%	Not Applicable	Not Applicable						
WACC of Debt			0.58%	0.81%	1.69%						
Equity - Market											
Capital Structure - Equity			71%	71%	56%						
Cost of Equity			9.85%	9.85%	9.85%						
WACC of Equity			6.99%	6.99%	5.52%						
Required Return											
Capital Structure - Total			100%	100%	100%						
Cost of Capital - Total			7.57%	7.80%	7.21%						
Growth Rate / Inflation			1.82%	1.82%	0.00%						
Cash Flow Discount Rate			5.65%	5.87%	7.21%						

Investor Owned Deferred Tax

Working Capital	Forecast Base	Forecast Parameters for Periods 1-5	6-15	16-19	20-26	27-33	34-40	40-46	47-53	54-60
Deferred Assets										
Deferred % of Rev Sum	Rev	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%
Deferred Liabilities										
Deferred % of Revenues	Rev	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%

Cost Approach

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Property, Plant and Equipment							Historical					Original Cost Study										Appraisal				Other Cost Allocation
	Data Looked up from Cost Approach Summary Tab	MACRS Depreciation Investment		Plant Cost	Depreciation Reserve	OCLD	OCLD	Iowa Curve	Life	Age	RL	TL	Depreciation	OCLD	RCN	Iowa Curve	Life	Age	RL	TL	Depreciation	RCNLD	EO %	FMV	RCNLD
351.00	Land & Land Rights - Collection System		25				216	ZNonDep	-	-	-	-	-	216	223,776	ZNonDep	-	22.85	-	-	-	223,776	38.57%	137,463	137,463
353.00	Land & Land Rights - Pumping		25				21,606	ZNonDep	-	-	-	-	-	21,606	109,988	ZNonDep	-	44.30	-	-	-	109,988	38.57%	67,563	67,563
353.10	Land & Land Rights - Treatment		25				1,500,007	ZNonDep	-	-	-	-	-	1,500,007	1,945,510	ZNonDep	-	14.50	-	-	-	1,945,510	38.57%	1,195,128	1,195,128
354.00	Structures & Improvements - Pumping		45				2,146,252	R4.0	45.00	18.73	27.63	46.36	840,900	1,305,352	5,065,392	R4.0	45.00	27.73	20.06	47.78	2,846,990	2,218,402	38.57%	1,362,766	1,362,766
354.40	Structures & Improvements - Treatment		15				1,448,500	R4.0	55.00	22.50	32.77	55.27	589,670	858,830	3,275,059	R4.0	55.00	22.50	32.77	55.27	1,333,252	1,941,807	38.57%	1,192,852	1,192,852
355.10	Generating Equipment - Pumping		25				344,586	R3.0	35.00	10.50	24.95	35.45	102,063	242,523	401,787	R3.0	35.00	10.50	24.95	35.45	119,006	282,781	38.57%	173,712	173,712
360.21	Collection Sewers - Force - Mains		25				6,823,586	R3.0	75.00	21.16	54.93	76.09	1,890,569	4,933,017	14,857,717	R3.0	75.00	24.37	52.04	76.41	4,713,321	10,144,396	38.57%	6,231,703	6,231,703
361.21	Collection Sewers - Gravity - Mains		25				3,807,421	R2.5	80.00	35.68	48.87	84.55	1,594,598	2,212,823	15,110,171	R2.5	80.00	39.95	45.27	85.22	7,059,994	8,050,177	38.57%	4,945,223	4,945,223
361.22	Collection Sewers - Gravity - Mains Relining		25				956,087	R2.5	60.00	1.99	57.93	59.92	33,579	924,458	1,096,644	R2.5	60.00	2.03	57.89	59.92	36,858	1,059,786	38.57%	651,002	651,002
361.23	Collection Sewers - Gravity - Manholes		25				1,563,321	R2.5	80.00	33.89	50.36	84.24	622,990	939,331	4,989,198	R2.5	80.00	38.82	46.21	85.03	2,267,895	2,721,303	38.57%	1,671,697	1,671,697
363.10	Service Laterals		25				698,464	R3.0	70.00	30.36	42.15	72.50	289,416	409,038	2,394,359	R3.0	70.00	36.39	36.94	73.33	1,180,968	1,213,391	38.57%	745,386	745,386
364.10	Flow Measuring Devices - Pumping		15				23,240	S2.0	30.00	37.66	6.82	44.48	18,005	5,235	96,197	S2.0	30.00	41.04	5.35	46.39	79,125	17,072	38.57%	10,488	10,488
390.70	Office Furniture and Equipment		25				309,293	R3.0	12.00	5.50	6.86	12.36	137,629	171,664	333,109	R3.0	12.00	5.50	6.86	12.36	148,227	184,882	38.57%	113,572	113,572
416.00	Not Used		25				-	R2.5	35.00	-	35.00	35.00	-	-	-	R2.5	35.00	-	35.00	35.00	-	-	0.00%	-	-
418.00	Not Used		25				-	R2.5	28.00	-	28.00	35.00	-	-	-	R2.5	35.00	-	35.00	35.00	-	-	0.00%	-	-
420.00	Not Used		25				-	R2.5	35.00	-	35.00	35.00	-	-	-	R2.5	35.00	-	35.00	35.00	-	-	0.00%	-	-
422.00	Not Used		25				-	R2.5	35.00	-	35.00	35.00	-	-	-	R2.5	35.00	-	35.00	35.00	-	-	0.00%	-	-
424.00	Not Used		25				-	R2.5	35.00	-	35.00	35.00	-	-	-	R2.5	35.00	-	35.00	35.00	-	-	0.00%	-	-
426.00	Not Used		25				-	R2.5	35.00	-	35.00	35.00	-	-	-	R2.5	35.00	-	35.00	35.00	-	-	0.00%	-	-
Total	Total Plant	Total					19,641,520						6,117,419	13,524,101	49,898,907						19,785,676	30,113,231		18,498,555	18,498,555
	Telecom Reference Cost Approach Summary Tab			4	5	10	46	47	48	49	51	54		57	22	23	24	21	28	29		31	40	41	

Revenue	Forecast Base	Forecast Parameters for Periods 1-5	6-15	16-19	20-26	27-33	34-40	40-46	47-53	54-60
Current Assets										
Cash & Cash Equivalents	% of Revenues	2%	2%	2%	2%	2%	2%	2%	2%	2%
Total Cash Equivalents as % of Revenues										
Accounts Receivable	% of Revenues									
Accounts Receivables as % of Revenues										
Other										
Total Current Asset										

Investments	Input									
Current Liabilities										
Accounts Payable	Plant	2%	2%	2%	2%	2%	2%	2%	2%	2%
Accounts Payable as % of Revenues	Plant	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Accrued Payroll										
Current Portion of Debt	Rev	2%	2%	2%	2%	2%	2%	2%	2%	2%
Total Current Liabilities										
Long Term Debt										
Proportional Amount of Debt			29%							
Acquisition		28,997,091	8,409,156							
Long-term Portion Retired	Total of Plant Assets	2%	2%	2%	2%	2%	2%	2%	2%	2%

Equity										
Proportion of Equity			71%							
Equity		28,997,091	20,587,935			0%				
		18,235,751.00	16,966,940			0	-			

Cost Approach Historical Plant Data Allocated Historical APA Data

Basis	Plant Book	Reserve Book	Plant Tax
1 Revenues	6	6	
2 Labor	14	14	
3 Net Plant	22	22	
4 Plant	24	24	
5 Net Plant & Net Depr for Reserve	27	27	
6 APA Allocated Net Plant & APA Accumulated Depr	30	31	34
7 Default	37	37	

6. Input Selection

Plant Basis 39 =Basis!B37 Plant Depr Basis 41 =Basis!B37
Reserve Basis 41 =Basis!B37 Plant Depr Basis 43 =Basis!B37
Plant Tax 46

Williamstown Township, Pennsylvania
Williamstown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

DCF Calculated
19,492,222

DCF Forecast Parameters

	Forecast Base	Use	Forecast Parameters for Periods 1-5	6-15	16-19	20-26	27-33	34-40	40-46	47-53	54-60
Addition Rate	Input Positive or Zero		2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	
Retirements											
Retirement Rate	Input Negative or Zero		1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	
End Balance - Calculated			-								
420 - Not Used			-420.00	Input Account for lookup on Cost Approach							
Beain Balance											
Additions			35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	
Addition Rate	Input Positive or Zero		2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	
Retirements											
Retirement Rate	Input Negative or Zero		1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	
End Balance - Calculated			-								
422 - Not Used			-422.00	Input Account for lookup on Cost Approach							
Beain Balance											
Additions			35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	
Addition Rate	Input Positive or Zero		2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	
Retirements											
Retirement Rate	Input Negative or Zero		1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	
End Balance - Calculated			-								
424 - Not Used			424.00	Input Account for lookup on Cost Approach							
Beain Balance											
Additions			35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	
Addition Rate	Input Positive or Zero		2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	
Retirements											
Retirement Rate	Input Negative or Zero		1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	
End Balance - Calculated			-								
Total - Total Plant		Total									
Beain Balance											
Additions											
Addition Rate	Calculated										
Retirements											
Retirement Rate	Calculated										
End Balance - lookup			28,997,091								
End Balance - Calculated			28,997,091								
End Balance Check			-								

	1 to 5	7 to 15	16 to 20	21-26	27-33	34-40	41-46	47-53	54-60
	27		1	2	6				
			17	20	19				
Use Depreciation Life Projection (1), Total (2) or Remaining (3)	3								
Use Depreciation Life Projection (1), Total (2) or Remaining (3)	3	3							
	19								

Depreciation - Book

353.2 - Land & Land Rights - Collection System	Book Depreciation Life 0 yrs		353.2	Referenced to Plant C157		
Beain Balance		0				
Depreciation - Book						
Survivor/Retirement Curve			ZNonDep			
Projection Life			0			
Average Age			22.85			
Remaining Life			0			
Depreciation Rate	Input Positive or Zero		0.00%	0.00%	0.00%	
Depreciation - Tax			25			
Retirements Calculated in Plant			-			
End Balance - Calculated			-			
353.3 - Land & Land Rights - Pumping	Book Depreciation Life 0 yrs		353.3	Referenced to Plant C164		
Beain Balance		0				
Depreciation - Book						
Survivor/Retirement Curve			ZNonDep			
Projection Life			0			
Average Age			44.3			
Remaining Life			0			
Depreciation Rate	Input Positive or Zero		0.00%	0.00%	0.00%	
Retirements Calculated in Plant			-			
End Balance - Calculated			-			
353.4 - Land & Land Rights - Treatment	Book Depreciation Life 0 yrs		353.4	Referenced to Plant C171		
Beain Balance		0				
Depreciation - Book						
Survivor/Retirement Curve			ZNonDep			
Projection Life			0			
Average Age			14.5			
Remaining Life			0			
Depreciation Rate	Input Positive or Zero		0.00%	0.00%	0.00%	
Retirements Calculated in Plant			-			
End Balance - Calculated			-			
354.3 - Structures & Improvements - Pumping	Book Depreciation Life 20.06 yrs		354.3	Referenced to Plant C178		
Beain Balance		0.0499				
Depreciation - Book						
Survivor/Retirement Curve			R4.0			
Projection Life			45			
Average Age			27.73			
Remaining Life			20.06			
Depreciation Rate	Input Positive or Zero		4.99%	4.99%	4.99%	
Retirements Calculated in Plant			-			
End Balance - Calculated			(1,654,182)			
354.4 - Structures & Improvements - Treatmen	Book Depreciation Life 32.77 yrs		354.4	Referenced to Plant C185		
Beain Balance		0.0305				
Depreciation - Book						
Survivor/Retirement Curve			R4.0			
Projection Life			55			
Average Age			22.5			
Remaining Life			32.77			
Depreciation Rate	Input Positive or Zero		3.05%	3.05%	3.05%	
Retirements Calculated in Plant			-			
End Balance - Calculated			(774,830)			
355.3 - Generating Equipment - Pumping	Book Depreciation Life 24.95 yrs		355.3	Referenced to Plant C192		
Beain Balance		0.0401				
Depreciation - Book						
Survivor/Retirement Curve			R3.0			
Projection Life			35			
Average Age			10.5			
Remaining Life			24.95			

Williamstown Township, Pennsylvania
Williamstown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

DCF Calculated
35,492,222

DCF Forecast Parameters

	Forecast Base	Use	Forecast Parameters for Periods 1-5	6-15	16-19	20-26	27-33	34-40	40-46	47-53	54-60
Depreciation Rate	Input Positive or Zero		4.01%	4.01%	4.01%						
Retirements Calculated in Plant											
End Balance - Calculated			(69,162)								
360.21 - Collection Sewers - Force - Mains	Book Depreciation Life 52.04 yrs		360.21	Referenced to Plant C159							
Begin Balance		0.0192									
Depreciation - Book											
Survivor/Retirement Curve			R3.0								
Projection Life			75								
Average Age			24.37								
Remaining Life			52.04								
Depreciation Rate	Input Positive or Zero		1.92%	1.92%	1.92%						
Retirements Calculated in Plant											
End Balance - Calculated			(2,730,713)								
361.21 - Collection Sewers - Gravity - Mains	Book Depreciation Life 45.27 yrs		361.21	Referenced to Plant C206							
Begin Balance		0.0223									
Depreciation - Book											
Survivor/Retirement Curve			R2.5								
Projection Life			80								
Average Age			39.95								
Remaining Life			45.27								
Depreciation Rate	Input Positive or Zero		2.21%	2.21%	2.21%						
Retirements Calculated in Plant											
End Balance - Calculated			(4,102,275)								
361.22 - Collection Sewers - Gravity - Mains Re	Book Depreciation Life 57.89 yrs		361.22	Referenced to Plant C171							
Begin Balance		0.0173									
Depreciation - Book											
Survivor/Retirement Curve			R2.5								
Projection Life			60								
Average Age			2.03								
Remaining Life			57.89								
Depreciation Rate	Input Positive or Zero		1.73%	1.73%	1.73%						
Retirements Calculated in Plant											
End Balance - Calculated			(23,432)								
361.23 - Collection Sewers - Gravity - Manhole	Book Depreciation Life 46.21 yrs		361.23	Referenced to Plant C220							
Begin Balance		0.0216									
Depreciation - Book											
Survivor/Retirement Curve			R2.5								
Projection Life			80								
Average Age			34.42								
Remaining Life			46.21								
Depreciation Rate	Input Positive or Zero		2.16%	2.16%	2.16%						
Retirements Calculated in Plant											
End Balance - Calculated			(1,338,172)								
363.2 - Service Laterals	Book Depreciation Life 36.94 yrs		363.2	Referenced to Plant C227							
Begin Balance		0.0271									
Depreciation - Book											
Survivor/Retirement Curve			R3.0								
Projection Life			70								
Average Age			36.39								
Remaining Life			36.94								
Depreciation Rate	Input Positive or Zero		2.71%	2.71%	2.71%						
Retirements Calculated in Plant											
End Balance - Calculated			(686,227)								
364.3 - Flow Measuring Devices - Pumping	Book Depreciation Life 5.35 yrs		364.3	Referenced to Plant C234							
Begin Balance		0.1869									
Depreciation - Book											
Survivor/Retirement Curve			S2.0								
Projection Life			30								
Average Age			41.04								
Remaining Life			5.35								
Depreciation Rate	Input Positive or Zero		18.69%	18.69%	18.69%						
Retirements Calculated in Plant											
End Balance - Calculated			(45,972)								
390.7 - Office Furniture and Equipment	Book Depreciation Life 6.86 yrs		390.7	Referenced to Plant C241							
Begin Balance		0.1458									
Depreciation - Book											
Survivor/Retirement Curve			R3.0								
Projection Life			12								
Average Age			5.5								
Remaining Life			6.86								
Depreciation Rate	Input Positive or Zero		14.58%	14.58%	14.58%						
Retirements Calculated in Plant											
End Balance - Calculated			(86,147)								
416 - Not Used	Book Depreciation Life 35 yrs		416	Referenced to Plant C248							
Begin Balance		0.0286									
Depreciation - Book											
Survivor/Retirement Curve			R2.5								
Projection Life			35								
Average Age			0								
Remaining Life			35								
Depreciation Rate	Input Positive or Zero		2.86%	2.86%	2.86%						
Retirements Calculated in Plant			-								
End Balance - Calculated											
418 - Not Used	Book Depreciation Life 35 yrs		418	Referenced to Plant C255							
Begin Balance		0.0286									
Depreciation - Book											
Survivor/Retirement Curve			R2.5								
Projection Life			35								
Average Age			0								
Remaining Life			35								
Depreciation Rate	Input Positive or Zero		2.86%	2.86%	2.86%						
Retirements Calculated in Plant			-								
End Balance - Calculated											

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

DCF Calculation
19,492,272

DCF Forecast Parameters

	Forecast Base	Use	Forecast Parameters for Periods 1-5	6-15	16-19	20-26	27-33	34-40	40-46	47-53	54-60
420 - Not Used	Book Depreciation Life 35 yrs		420 Referenced to Plant C262								
Begin Balance		0.0286									
Depreciation - Book											
Survivor/Retirement Curve			R2.5								
Projection Life			35								
Average Age			0								
Remaining Life			35								
Depreciation Rate	Input Positive or Zero		2.86%	2.86%	2.86%						
Retirements Calculated in Plant			-								
End Balance - Calculated			-								
422 - Not Used	Book Depreciation Life 35 yrs		422 Referenced to Plant C269								
Begin Balance		0.0286									
Depreciation - Book											
Survivor/Retirement Curve			R2.5								
Projection Life			35								
Average Age			0								
Remaining Life			35								
Depreciation Rate	Input Positive or Zero		2.86%	2.86%	2.86%						
Retirements Calculated in Plant			-								
End Balance - Calculated			-								
424 - Not Used	Book Depreciation Life 35 yrs		424 Referenced to Plant C276								
Begin Balance		0.0286									
Depreciation - Book											
Survivor/Retirement Curve			R2.5								
Projection Life			35								
Average Age			0								
Remaining Life			35								
Depreciation Rate	Input Positive or Zero		2.86%	2.86%	2.86%						
Retirements Calculated in Plant			-								
End Balance - Calculated			-								
Total Balances - Calculated			(11,497,092)								
Balance Check			(11,497,092)								
Difference			-								

Depreciation - MACRS

			1 to 6	7 to 15	16 to 20	21-26	27-33	34-40	41-46	47-53	54-60
Use Depreciation Life MACRS (1)				1							
				3							
353.2 - Land & Land Rights - Collection System	Book Depreciation Life 25 yrs			353.3 Referenced to Plant C357							
Begin Balance		0.04									
Depreciation											
Depreciation Rate	Input Positive or Zero			4.00%	4.00%	4.00%					
Retirements Calculated in Plant				-							
End Balance - Calculated				130,045							
353.3 - Land & Land Rights - Pumping	Book Depreciation Life 25 yrs			353.3 Referenced to Plant C364							
Begin Balance		0.04									
Depreciation											
Depreciation Rate	Input Positive or Zero			4.00%	4.00%	4.00%					
Retirements Calculated in Plant				-							
End Balance - Calculated				63,918							
353.4 - Land & Land Rights - Treatment	Book Depreciation Life 25 yrs			353.4 Referenced to Plant C371							
Begin Balance		0.04									
Depreciation											
Depreciation Rate	Input Positive or Zero			4.00%	4.00%	4.00%					
Retirements Calculated in Plant				-							
End Balance - Calculated				1,130,613							
354.3 - Structures & Improvements - Pumping	Book Depreciation Life 15 yrs			354.3 Referenced to Plant C378							
Begin Balance		0.0667									
Depreciation											
Depreciation Rate	Input Positive or Zero			6.67%	6.67%	6.67%					
Retirements Calculated in Plant				-							
End Balance - Calculated				1,295,202							
354.4 - Structures & Improvements - Treatmen	Book Depreciation Life 15 yrs			354.4 Referenced to Plant C385							
Begin Balance		0.0667									
Depreciation											
Depreciation Rate	Input Positive or Zero			6.67%	6.67%	6.67%					
Retirements Calculated in Plant				-							
End Balance - Calculated				1,128,462							
355.3 - Generating Equipment - Pumping	Book Depreciation Life 25 yrs			355.3 Referenced to Plant C392							
Begin Balance		0.04									
Depreciation											
Depreciation Rate	Input Positive or Zero			4.00%	4.00%	4.00%					
Retirements Calculated in Plant				-							
End Balance - Calculated				164,335							
360.21 - Collection Sewers - Force - Mains	Book Depreciation Life 25 yrs			360.21 Referenced to Plant C399							
Begin Balance		0.04									
Depreciation											
Depreciation Rate	Input Positive or Zero			4.00%	4.00%	4.00%					
Retirements Calculated in Plant				-							
End Balance - Calculated				5,895,343							
361.21 - Collection Sewers - Gravity - Mains	Book Depreciation Life 25 yrs			361.21 Referenced to Plant C206							
Begin Balance		0.04									
Depreciation											
Depreciation Rate	Input Positive or Zero			4.00%	4.00%	4.00%					
Retirements Calculated in Plant				-							
End Balance - Calculated				4,678,279							
361.22 - Collection Sewers - Gravity - Mains Re	Book Depreciation Life 25 yrs			361.22 Referenced to Plant C213							
Begin Balance		0.04									
Depreciation											
Depreciation Rate	Input Positive or Zero			4.00%	4.00%	4.00%					
Retirements Calculated in Plant				-							
End Balance - Calculated				615,861							
361.23 - Collection Sewers - Gravity - Manhole	Book Depreciation Life 25 yrs			361.23 Referenced to Plant C220							
Begin Balance		0.04									
Depreciation											
Depreciation Rate	Input Positive or Zero			4.00%	4.00%	4.00%					
Retirements Calculated in Plant				-							
End Balance - Calculated				1,581,458							
363.2 - Service Laterals	Book Depreciation Life 25 yrs			363.2 Referenced to Plant C227							
Begin Balance		0.04									
Depreciation											
Depreciation Rate	Input Positive or Zero			4.00%	4.00%	4.00%					

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

DCF Calculated
19,492,222

DCF Forecast Parameters

	Forecast Rate	use	Forecast Parameters for Periods 1-5	6-12	13-19	20-26	27-33	34-40	40-46	47-53	54-60
Retirements Calculated in Plant			705,150								
End Balance - Calculated											
364.3 - Flow Measuring Devices - Pumping	Book Depreciation Life 15 yrs	0.0667	364.3 Referenced to Plant C234								
Begin Balance											
Depreciation											
Depreciation Rate	Input Positive or Zero		6.67%	6.67%	6.67%						
Retirements Calculated in Plant			9,921								
End Balance - Calculated											
390.7 - Office Furniture and Equipment	Book Depreciation Life 25 yrs	0.04	390.7 Referenced to Plant C241								
Begin Balance											
Depreciation											
Depreciation Rate	Input Positive or Zero		4.00%	4.00%	4.00%						
Retirements Calculated in Plant			107,442								
End Balance - Calculated											
416 - Not Used	Book Depreciation Life 25 yrs	0.04	416 Referenced to Plant C248								
Begin Balance											
Depreciation											
Depreciation Rate	Input Positive or Zero		4.00%	4.00%	4.00%						
Retirements Calculated in Plant			-								
End Balance - Calculated											
418 - Not Used	Book Depreciation Life 25 yrs	0.04	418 Referenced to Plant C248								
Begin Balance											
Depreciation											
Depreciation Rate	Input Positive or Zero		4.00%	4.00%	4.00%						
Retirements Calculated in Plant			-								
End Balance - Calculated											
420 - Not Used	Book Depreciation Life 25 yrs	0.04	420 Referenced to Plant C262								
Begin Balance											
Depreciation											
Depreciation Rate	Input Positive or Zero		4.00%	4.00%	4.00%						
Retirements Calculated in Plant			-								
End Balance - Calculated											
422 - Not Used	Book Depreciation Life 25 yrs	0.04	422 Referenced to Plant C269								
Begin Balance											
Depreciation											
Depreciation Rate	Input Positive or Zero		4.00%	4.00%	4.00%						
Retirements Calculated in Plant			-								
End Balance - Calculated											
424 - Not Used	Book Depreciation Life 25 yrs	0.04	424 Referenced to Plant C276								
Begin Balance											
Depreciation											
Depreciation Rate	Input Positive or Zero		4.00%	4.00%	4.00%						
Retirements Calculated in Plant											
End Balance - Calculated											
Total Balance											
Begin Balance											
Depreciation											
Depreciation Rate											
Retirements Calculated in Plant											
End Balance - Calculated			17,499,999								
Difference			17,499,999								

J4	J5	J6	J7	J8	J9	J0	J1	J2
%RCNLD	Allocated Cost to Asset Category			Depreciated RCN	Allocated per Depreciation	Condition	%RCNLD	Allocated APA
0.74%	130,000	352.2	Land & Land Rights - Cash	130,000	-	100.00%	0.74%	17,500,000
0.37%	63,918	353.1	Land & Land Rights - Part	63,918	-	100.00%	0.37%	130,000
6.46%	1,130,613	353.4	Land & Land Rights - Trea	1,130,613	-	100.00%	6.46%	63,918
7.37%	1,289,208	354.3	Structures & Improvement	2,943,384	1,654,182	43.80%	7.37%	1,130,613
6.45%	1,128,470	354.4	Structures & Improvement	1,903,292	774,830	59.29%	6.45%	1,289,202
0.94%	164,343	355.3	Generating Equipment - I	233,497	69,162	70.38%	0.94%	1,128,462
33.69%	5,895,313	360.2	Collection Sewers - Force	8,634,026	2,738,713	68.28%	33.69%	164,335
26.17%	4,577,775	361.2	Collection Sewers - Gravit	8,788,564	4,210,789	52.08%	26.17%	5,895,313
3.52%	615,860	361.2	Collection Sewers - Gravit	637,273	21,412	96.64%	3.52%	4,577,775
9.04%	1,581,458	361.2	Collection Sewers - Gravit	2,899,630	1,318,172	54.54%	9.04%	615,861
4.03%	705,145	363.2	Service Laterals	1,391,377	686,227	50.68%	4.03%	1,581,458
0.06%	9,913	364.3	Flow Measuring Devices	55,983	45,972	17.79%	0.06%	705,150
0.61%	107,450	390.2	Office Furniture and Equi	193,089	86,447	55.22%	0.61%	9,913
0.00%	-	416.0	Not Used	-	-	0.00%	0.00%	107,443
0.00%	-	418.0	Not Used	-	-	0.00%	0.00%	-
0.00%	-	420.0	Not Used	-	-	0.00%	0.00%	-
0.00%	-	422.0	Not Used	-	-	0.00%	0.00%	-
0.00%	-	424.0	Not Used	-	-	0.00%	0.00%	-
0.00%	-	426.0	Not Used	-	-	0.00%	0.00%	-
100.00%	17,500,021			28,997,091	11,497,992			17,499,999

\Users\dk1\OneDrive - Hazen and Sawyer\Documents\Working\Report & Testimony\Attleboro - Wastewater System Valuation.xlsx]J3 Forecast Parameters

Stats on Ethernet/water industry/Willingdon Township/Report & Testimony/Willingdon Wastewater System Valuation as of 12 2021

DRAFT Forecast Parameters

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DOI Renewal Parameters

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Township of Willistown, PA
Financial Summary

AUS Consultants
Suite 201
8555 West Forest Home Avenue
Greenfield, Wisconsin 53228
Office Telephone: 414-529-5755
J. Weinert's Cell: 414-698-8371
J. Weinert's E-Mail: weinertj@auswest.net

Willistown Township, Pennsylvania
Willistown Township Wastewater

	2016	2017	2018	2019	2020
Assets					
Current Assets					
Cash and Cash Equivalents	2,192,680	2,478,889	4,914,148	4,669,115	
Due from Other Funds	344,862	36,016	36,016	36,016	
Prepaid Expenses	835,253	33,055	33,055	33,055	
Account Receivables	149,681	814,408	862,127	888,077	
Total Current Assets	**3,522,476**	**3,362,368**	**5,845,346**	**5,626,263**	-
	3,177,614	**3,326,352**	**5,809,330**	**5,590,247**	-
CA Lessdue from other funds / Revenues	**167.08%**	**164.96%**	**288.79%**	**252.79%**	**0.00%**
Noncurrent Assets					
Capital Assets					
Property, Plant, and Equipment	7,652,651	7,976,084	7,799,427	8,673,707	
Accumulated Depreciation	(2,823,990)	(3,317,549)	(3,309,006)	(3,786,175)	
Total Noncurrent Assets	**4,828,661**	**4,658,535**	**4,490,421**	**4,887,532**	-
Total Assets	**8,351,137**	**8,020,903**	**10,335,767**	**10,513,795**	-
Liabilities					
Current Liabilities					
Accounts Payable	190,789	756,828	133,964	214,225	
Note Payable	250,100	258,300	262,400	266,500	
Due to fiduciary funds	20,433	5,129	5,129	5,129	
Due to other funds	926,964	971,939	420,504	420,504	
Unearned Revenues	11,665	1,900	1,900	1,900	
Accrued Interest	6,170	5,857	5,534	5,316	
Total Non-current Laibilities	**1,406,121**	**1,999,953**	**829,431**	**913,574**	-
CL less Notes Payable	**1,156,021**	**1,741,653**	**567,031**	**647,074**	-
CL / Revenues	**60.78%**	**86.37%**	**28.19%**	**29.26%**	**0.00%**
Noncurrent Liabilities					
Notes Payable	4,952,947	4,681,223	4,405,399	4,125,475	
Total Noncurrent Liabilities	**4,952,947**	**4,681,223**	**4,405,399**	**4,125,475**	-
Total Liabilities	**6,359,068**	**6,681,176**	**5,234,830**	**5,039,049**	-
Net Position					
Net investment in Capital Assets	207,230	(51,993)	54,423	832,961	
Restricted	-	-	-	-	
Unrestricted	1,784,839	1,391,720	5,046,514	4,641,785	
Total Net Position	**1,992,069**	**1,339,727**	**5,100,937**	**5,474,746**	-
Total Liabilities and Net Position	**8,351,137**	**8,020,903**	**10,335,767**	**10,513,795**	-
Statement of Revenues. Expenses, and Change in Net Position					
Operating Revenues					
Charge for Services					
Operating Service Charges	1,901,840	2,016,468	2,011,578	2,211,380	2,582,213
Total Operating Revenues	**1,901,840**	**2,016,468**	**2,011,578**	**2,211,380**	**2,582,213**
Operating Expenses					
Sewage treatment	701,513	911,624	622,865	1,008,250	2,164,639
Operations & Maintenance	2,987,201	590,685	693,045	639,049	-
General & Administrative	130,043	653,639	107,398	229,347	-
Depreciation & Amortization	-	-	-	-	-
Total Operating Expenses	**3,818,757**	**2,155,948**	**1,423,308**	**1,876,646**	**2,164,639**
Depreciation'	481,692	493,559	505,633	477,169	477,169
Operating Income (loss)	**(2,398,609)**	**(633,039)**	**82,637**	**(142,435)**	**(59,595)**
Non-Opertating Revenues (Expenses)					
Interest Income	11,416	9,983	21,167	49,269	49,269
Loss on disposal of property	-	-	(175,813)		
Interest expense	(143,929)	(134,343)	(126,830)	(119,186)	(119,186)
Other	152,687	70,175	3,959,905	586,163	586,163
Total Non-Opertating Revenues (Expenses)	**20,174**	**(54,185)**	**3,678,429**	**516,246**	**516,246**
Income (Loss) Before Capital Contributions	**(2,378,435)**	**(687,224)**	**3,761,066**	**373,811**	**456,651**
Other Financing Sources (Uses)					
Capital Contribution	153,209	37,301	144	-	-
Operating transfers out		(2,439)			
Operating transfers in					
Total Other Financing sources (Uses)	**153,209**	**34,862**	**144**	-	-
Change in Net Position	**(2,225,226)**	**(652,362)**	**3,761,210**	**373,811**	**456,651**
Net Position at Beginning of Year	4,217,295	1,992,069	1,339,727	5,100,937	5,100,937
Net Position at end of Year	**1,992,069**	**1,339,707**	**5,100,937**	**5,474,748**	**5,557,588**

	2,582,213
	2020 Budget
Sewer Operations	
Salaries & Wages	168,926
Employee Benefits	88,228
Materials & Services	1,404,366
Utilities	83,500
Vehicles Repair & Fuels	
Insurance	
Debt Service	
Capital Expenditures	394,619
Interfund Transfers	25,000
Total sanitary Sewer Operations	2,164,639

Willistown Township - Business-type Activities	Year	Begin Plant Balance	Increases	Decreases	End Balance	Begin Reserve Balance	Increases	Decreases	End Reserve Balance	Net Plant
Capital assets being depreciation										
Sewer collection system	2016	7,652,651	-	-	**7,652,651**	(2,342,298)	(481,692)		**(2,823,990)**	**4,828,661**
	2017	**7,652,651**	323,433	-	**7,976,084**	**(2,823,990)**	(493,559)		**(3,317,549)**	**4,658,535**
	2018	**7,976,084**	513,332	(689,989)	**7,799,427**	**(3,317,549)**	(505,633)	($14,176)	**(3,309,006)**	**4,490,421**
	2019	**7,799,427**	-	-	**7,799,427**	**(3,309,006)**	(481,692)		**(3,790,698)**	**4,008,729**
	2020	**7,799,427**	1,355,972	(481,692)	**8,673,707**	**(3,790,698)**	(477,169)	481,692	**(3,786,175)**	**4,887,532**

S:\water industry\Willistown Township\Willistown Wastewater System Valuation as of 6-27-2021

Revenues 2,582,213

	2020 Budget
Sewer Operations	
Salaries & Wages	168,926
Employee Benefits	88,228
Materials & Services	1,404,366
Utilities	83,500
Vehicles Repair & Fuels	
Insurance	
Debt Service	
Capital Expenditures	394,619
Interfund Transfers	25,000
Total sanitary Sewer Operations	2,164,639

Projections

Forecast Parameters for Periods

See Rate Increase Schedule on tab: DCF Investor Owned Cells: L263:BS263

Inflation since 3.0%

				1-5	6-15	6-15	16-20	21-26	27-33	34-40	40-46	47-53	54-60
Revenue Forecast	2,582,213	1.03	2,659,679										
Annual Subscriber Growth	Annual Subscriber Growth:		All Periods 0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Periodic Subscriber Growth	Periodic Customer Growth:		All period 0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth	0%												
Period every ? years	5												
	2021		2021										
Revenues	2,582,213	1.030	2,659,679	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Expense Level 1: Salaries, Wages & Benefits	257,154	1.030	264,869	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 2: Materials & Supplies	1,404,366	1.030	1,446,497	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 3: Utilities	83,500	1.030	86,005	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 4: Not Used	-	1.030	-	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 5: Not Used	-	1.030	-	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 6: Not Used	-	1.030	-	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 7: Depreciation	477,169	1.030	491,484										
Total Expenses	2,222,189		2,288,855										
check													
Operating Income	360,024		370,824										
			1,797,371										
Working Capital		Use											
Current Assets	0.00%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%
Current Liabilities	0.00%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Market Approach

AUS Consultants
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Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Data

Central Tendancy and Reliability Analysis

Market Sales Analysis - PP/OCLD

	Simple	Weighted	
Mean	1.7594	1.8494	
Standard Deviation	0.5882	0.5292	
Median	1.49	1.4375	
Mode	1.4418	1.4418	
Conclusion		1.8494	AUS Input
Willistown Wastewater Collection System OCLD		13,524,101	Cost Approach - OCLD
Market Value Indication		**25,011,472**	

Market Sales Analysis - PP/CORLD

	Simple	Weighted	
Mean	0.8087	0.8533	
Standard Deviation	0.1746	0.1493	
Median	0.8229	0.7558	
Mode	0.6918	0.6918	
Conclusion		0.8533	AUS Input
Willistown Wastewater Collection System CORLD		30,113,231	Cost Approach - CORLD
Market Value Indication		**25,695,620**	

Market Sales Analysis - PP/Customer

	Simple	Weighted	
Water & Wastewater Industryn			
Mean	7,963	10,962	
Standard Deviation	3,637	4,613	
Median	8,315	4,963	
Mode	7,243	7,243	
Water Tretment & Distribution			
Mean	6,123		
Standard Deviation			
Median	5,021		
Wastewater Collection & Treatment			
Mean	9,579		
Standard Deviation		-	AUS Input
Median	8,754		
Wastewater Collection			
Mean	6,507		
Standard Deviation			
Median	6,636		
Watewater Treatment Only			
Mean	3,072		
Standard Deviation			
Median	2,118		
Willistown Wastewater Collection System Customers		2,294	AUS Input
Wastewater Collection & Treatment PP/Customer		9,579	AUS Input
Collection and Treatement Customers Market Value Indic		**21,974,226**	
Treatement Only Market Value Indication			
Treatment Only PP/customer		2,118	AUS Input
Treatment Only Customers		-	AUS Input
Market Value Indication Treatment Only		**-**	
Total Market Value Indication		**21,974,226**	

Financial Basis[1]

Financial Markets	Market Value per Share to Book Value per Share	
Market to Book (equity)	3.40	
Market to Book (equity and debt)	2.11	
Use (equity and debt)	2.11	AUS Input
Willistown Wastewater Collection System OCLD	13,524,101	Cost Approach - OCLD
Market Value Indication	**28,535,853**	

Market Sales Analysis - PP/Cash Flows (EBITDA Period 1-5)

	Simple	Weighted	
Mean	17.48	15.32	
Standard Deviation	5.71	5.10	
Median	17.41	18.13	
Mode	10.68	10.68	
Forecast			
Conclusion		18.00	AUS Input
Willistown Wastewater Collection System Cash Flows		892,978	Income Approach
Market Value Indication		**16,073,611**	

Market Sales Analysis - PP/Cash Flows (EBITDA Period 1-13)

	Simple	Weighted	
Mean	11.62	11.45	
Standard Deviation	2.67	2.14	
Median	11.65	12.07	
Mode	9.55	9.55	
Forecast			
Conclusion		12.00	AUS Input
Willistown Wastewater Collection System Cash Flows		1,168,600	Income Approach
Market Value Indication		**14,023,202**	

Summary of Market Analyses

Indicators	
OCLD	25,011,472
CORLD	25,695,620
Customers	21,974,226
Cash Flows	
EBITDA Periods 1-5	16,073,611
EBITDA Periods 1-13	14,023,202
Value Line	28,535,853
Mean	21,885,664
Median	23,492,849
Conclusion	**25,695,620**

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Analysis - PP/OCLD

Property Acquired	Type of System and Attributes	Purchase Price (PP)	Proportion of Purchase Price to Total	Depreciated Original Cost (OCLD) (AUS Consultants Determination	Purchase Price to (PP/OCLD)	Variance to Simple Mean	Variance to Wtd Mean	(Variance to Wtd Mean)^2
City of McKeesport	Wastewater Collection and Treatment	159,000,000	19%	80,085,602	1.9854	0.226	0.136	0.0185
New Garden Twp. SA	Wastewater Collection and Paid for and Owned Treatment	29,500,000	3%	18,567,728	1.5888	-0.1706	-0.2606	0.0679
Limerick Township	Wastewater Collection and Treatment System	64,373,378	8%	46,153,867	1.3948	-0.3646	-0.4546	0.2067
East Bradford Township	Wastewater Collection and paid for treatment Capacity	5,000,000	1%	5,383,591	0.9287	-0.8307	-0.9207	0.8477
Mahoning	Water Distribution System	4,734,800	1%	3,507,138	1.3500	-0.4094	-0.4994	0.2494
Mahoning	Wastewater Collection	4,765,200	1%	3,234,859	1.4731	-0.2863	-0.3763	0.1416
Cheltenham	Wastewater Collection	50,250,000	6%	15,784,463	3.1835	1.4241	1.3341	1.7798
Steelton	Water Distribution and Treatment	21,750,000	3%	14,433,435	1.5069	-0.2525	-0.3425	0.1173
Sadsbury	Wastewater Collection	8,600,000	1%	6,128,876	1.4032	-0.3562	-0.4462	0.1991
Exeter	Wastewater Collection and Treatment	93,500,000	11%	40,057,634	2.3341	0.5747	0.4847	0.2349
East Norriton	Wastewater Collection	21,000,000	2%	8,407,007	2.4979	0.7385	0.6485	0.4206
Kane	Wastewater Collection and Treatment	17,560,000	2%	12,070,455	1.4548	-0.3046	-0.3946	0.1557
Royersford	Wastewater Collection and Treatment	13,000,000	2%	5,173,559	2.5128	0.7534	0.6634	0.4401
Valley	Water Treatment and Distribution System	7,325,000	1%	5,370,438	1.3639	-0.3955	-0.4855	0.2357
Valley	Wastewater Collection System	13,950,000	2%	9,214,738	1.5139	-0.2455	-0.3355	0.1126
Delaware County Regional Water Quality A	Wastewater Collection and Treatment	276,500,000	32%	191,774,486	1.4418	-0.3176	-0.4076	0.1661
Upper Pottsgrove	Wastewater Collection	13,750,000	2%	11,769,925	1.1682	-0.5912	-0.6812	0.464
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	53,000,000	6%	20,644,920	2.5672	0.8078	0.7178	0.5152
		857,558,378	100%	497,762,721	1.7228			6.3729

Simple Mean			Square Root[(Variance to Wtd Mean)^2]/Count
		1.7594	
Standard Deviation		0.5882	2.52446
SimpleMedian		1.4900	18
Simple Mode	DELCOR	1.4418	0.140248
Weighted Mean		1.849	
Standard Deviation		0.5292	
Wtd Median		1.4375	
Wtd Mode	DELCOR	1.4418	

Property Acquired		Depreciated Original Cost (OCLD) (AUS Consultants Determination	Purchase Price to (PP/OCLD)	Accummulated OCLD
East Bradford Township	Wastewater Collection and paid for treatment Capacity	5,383,591	0.9287	5,383,591
Upper Pottsgrove	Wastewater Collection	11,769,925	1.1682	17,153,516
Mahoning	Water Distribution System	3,507,138	1.35	20,660,654
Valley	Water Treatment and Distribution System	5,370,438	1.3639	26,031,092
Limerick Township	Wastewater Collection and Treatment System	46,153,867	1.3948	72,184,959
Sadsbury	Wastewater Collection	6,128,876	1.4032	78,313,835
Delaware County Regional Water Quality A	Wastewater Collection and Treatment	191,774,486	1.4418	270,088,321
Kane	Wastewater Collection and Treatment	12,070,455	1.4548	282,158,776
Mahoning	Wastewater Collection	3,234,859	1.4731	285,393,635
Steelton	Water Distribution and Treatment	14,433,435	1.5069	299,827,070
Valley	Wastewater Collection System	9,214,738	1.5139	309,041,808
New Garden Twp. SA	Wastewater Collection and Paid for and Owned Treatment	18,567,728	1.5888	327,609,536
City of McKeesport	Wastewater Collection and Treatment	80,085,602	1.9854	407,695,138
Exeter	Wastewater Collection and Treatment	40,057,634	2.3965	447,752,772
East Norriton	Wastewater Collection	8,407,007	2.4979	456,159,779
Royersford	Wastewater Collection and Treatment	5,173,559	2.5128	461,333,338
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	20,644,920	2.5672	481,978,258
Cheltenham	Wastewater Collection	15,784,463	3.1835	497,762,721
		497,762,721		

Middle OCLD		248,881,361
Bottomvalue of the range containg the Middle Value	1.4032	78,313,835
Top value of the range containing the Middle Valve	1.4418	270,088,321
Range containg the middle valve	0.0386	191,774,486
Range from bottom value to middle value	0.0343	170,567,526
Median Value	1.4375	

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Analysis - PP/CORLD

Property Acquired	Type of System and Attributes	Purchase Price (PP)	Proportion of Purchase Price to Total	Replacement Cost New less Depreciation (CORLD)	Purchase Price to CORLD	Variance to Simple Mean	Variance to Wtd Mean	(Variance to Wtd Mean)^2
City of McKeesport	Wastewater Collection and Treatment	159,000,000	19%	156,524,909	1.0158	0.2071	0.1625	0.0264
New Garden Twp. SA	Wastewater Collection and Paid for and Owned Treatment	29,500,000	3%	30,615,410	0.9636	0.1549	0.1103	0.0122
Limerick Township	Wastewater Collection and Treatment System	64,373,378	8%	73,068,377	0.881	0.0723	0.0277	0.0008
East Bradford Township	Wastewater Collection and paid for treatment Capacity	5,000,000	1%	9,236,581	0.5413	-0.2674	-0.312	0.0973
Mahoning	Water Distribution System	4,734,800	1%	8,899,336	0.532	-0.2767	-0.3213	0.1032
Mahoning	Wastewater Collection	4,765,200	1%	7,991,234	0.5963	-0.2124	-0.257	0.066
Cheltenham	Wastewater Collection	50,250,000	6%	49,940,486	1.0062	0.1975	0.1529	0.0234
Steelton	Water Distribution and Treatment	21,750,000	3%	23,921,473	0.9092	0.1005	0.0559	0.0031
Sadsbury	Wastewater Collection	8,600,000	1%	8,517,587	1.0097	0.2010	0.1564	0.0245
Exeter	Wastewater Collection and Treatment	93,500,000	11%	99,589,819	0.9389	0.1302	0.0856	0.0073
East Norriton	Wastewater Collection	21,000,000	2%	27,461,356	0.7647	-0.0440	-0.0886	0.0078
Kane	Wastewater Collection and Treatment	17,560,000	2%	29,015,055	0.6052	-0.2035	-0.2481	0.0616
Royersford	Wastewater Collection and Treatment	13,000,000	2%	13,376,109	0.9719	0.1632	0.1186	0.0141
Valley	Water Treatment and Distribution System	7,325,000	1%	11,664,026	0.628	-0.1807	-0.2253	0.0508
Valley	Wastewater Collection System	13,950,000	2%	19,252,333	0.7246	-0.0841	-0.1287	0.0166
Delaware County Regional Water Quality Authority	Wastewater Collection and Treatment	276,500,000	32%	399,664,111	0.6918	-0.1169	-0.1615	0.0261
Upper Pottsgrove	Wastewater Collection	13,750,000	2%	18,460,028	0.7449	-0.0638	-0.1084	0.0118
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	53,000,000	6%	51,414,555	1.0308	0.2221	0.1775	0.0315
		857,558,378	100%	1,038,612,785	0.8257			

Simple Mean	0.8087
Standard Deviation	0.1746
SimpleMedian	0.8229
Simple Mode	0.6918
Weighted Mean	0.8533
Standard Deviation	0.1493
Wtd Median	0.7558
Wtd Mode	0.6918

Property Acquired	Type of System and Attributes	Purchase Price (PP)	Proportion of Purchase Price to Total	Replacement Cost New less Depreciation (CORLD)	Purchase Price to CORLD	Accummulated CORLD
Mahoning	Water Distribution System	4,734,800	1%	8,899,336	0.532	8,899,336
East Bradford Township	Wastewater Collection and paid for treatment Capacity	5,000,000	1%	9,236,581	0.5413	18,135,917
Mahoning	Wastewater Collection	4,765,200	1%	7,991,234	0.5963	26,127,151
Kane	Wastewater Collection and Treatment	17,560,000	2%	29,015,055	0.6052	55,142,206
Valley	Water Treatment and Distribution System	7,325,000	1%	11,664,026	0.628	66,806,232
Delaware County Regional Water Quality Authority	Wastewater Collection and Treatment	276,500,000	32%	399,664,111	0.6918	466,470,343
Valley	Wastewater Collection System	13,950,000	2%	19,252,333	0.7246	485,722,676
Upper Pottsgrove	Wastewater Collection	13,750,000	2%	18,460,028	0.7449	504,182,704
East Norriton	Wastewater Collection	21,000,000	2%	27,461,356	0.7647	531,644,060
Limerick Township	Wastewater Collection and Treatment System	64,373,378	7%	73,068,377	0.881	604,712,437
Steelton	Water Distribution and Treatment	21,750,000	3%	23,921,473	0.9092	628,633,910
New Garden Twp. SA	Wastewater Collection and Paid for and Owned Treatment	29,500,000	3%	30,615,410	0.9636	659,249,320
Exeter	Wastewater Collection and Treatment	96,000,000	11%	99,589,819	0.964	758,839,139
Royersford	Wastewater Collection and Treatment	13,000,000	2%	13,376,109	0.9719	772,215,248
Cheltenham	Wastewater Collection	50,250,000	6%	49,940,486	1.0062	822,155,734
Sadsbury	Wastewater Collection	8,600,000	1%	8,517,587	1.0097	830,673,321
City of McKeesport	Wastewater Collection and Treatment	159,000,000	18%	156,524,909	1.0158	987,198,230
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	53,000,000	6%	51,414,555	1.0308	1,038,612,785
		860,058,378	100%	1,038,612,785	0.8281	

Middle OCLD		519,306,393
Bottomvalue of the range containg the Middle Value	0.7449	504,182,704
Top value of the range containing the Middle Value	0.7647	531,644,060
Range containing the middle value	0.0198	27,461,356
Range from bottom value to middle value	0.0109	15,123,689
Median Value	0.7558	

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Analysis - All Systems

Property Acquired	Type of System and Attributes		Asset Purchase Agreement (APA) Date	Purchase Price (PP)	Proportion of Purchase Price to Total	Customers	Purchase Price to Customers	Variance to Simple Mean	Variance to Wtd Mean	Variance to Wtd Median
City of McKeesport	Wastewater Collection and Treatment	2	2016.67	159.000.000	19%	21.953	7.243	(720)	(3.719)	13.830.961
New Garden Twp. SA	Wastewater Collection and Paid for and Owned Treatment	2	2016.59	29.500.000	3%	2.106	14.008	6.045	3.046	9.278.116
Limerick Township	Wastewater Collection and Treatment System	2	2016.88	64.373.378	8%	5.434	11.846	3.883	884	781.456
East Bradford Township	Wastewater Collection and paid for treatment Capacity	2	2017.94	5.000.000	1%	1.248	4.006	(3.957)	(6.956)	48.385.936
Mahoning	Water Distribution System	1	2018.30	4.734.800	1%	1.186	3.992	(3.971)	(6.970)	48.580.900
Mahoning	Wastewater Collection	3	2018.30	4.765.200	1%	1.451	3.284	(4.679)	(7.678)	58.951.684
Cheltenham	Wastewater Collection	3	2018.42	50.250.000	6%	10.500	4.786	(3.177)	(6.176)	38.142.976
Steelton	Water Distribution and Treatment	3	2018.87	21.750.000	3%	2.325	9.355	1.392	(1.607)	2.582.449
Salisbury	Wastewater Collection	1	2017.00	8.600.000	1%	998	8.617	654	(2.345)	5.499.025
Exeter	Wastewater Collection and Treatment	2	2018.41	93.500.000	11%	9.000	10.389	2.426	(573)	328.329
East Norriton	Wastewater Collection	3	2018.83	21.000.000	2%	4.950	4.242	(3.721)	(6.720)	45.158.400
Kane	Wastewater Collection and Treatment	2	2018.75	17.560.000	2%	2.006	8.754	791	(2.208)	4.875.264
Royersford	Wastewater Collection and Treatment	2	2019.94	13.000.000	2%	1.396	8.145	182	(2.817)	7.935.489
Valley	Water Treatment and Distribution System	1	2019.96	7.325.000	1%	1.459	5.021	(2.942)	(5.941)	35.295.481
Valley	Wastewater Collection System	3	2019.96	13.950.000	2%	1.644	8.485	522	(2.477)	6.135.529
Delaware County Regional Water Quality A	Wastewater Collection and Treatment	2	2020.00	276.500.000	32%	16.473	16.785	8.822	5.823	33.907.329
Upper Pottsgrove	Wastewater Collection	3	2020.33	13.750.000	2%	1.428	9.629	1.666	(1.333)	1.776.889
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	2	2020.71	53.000.000	6%	11.151	4.753	(3.210)	(6.209)	38.551.681
				857.558.378	100%	96.908	8.849			
Simple Mean							7963			
Standard Deviation							3637			
Simple Median							8.315			
Simple Mode							7.243			
Weighted Mean							10962			
Standard Deviation							4613			
Wtd Median							4.963			
Wtd Mode							7.243			
Forecast			2019.944064				7.600			
			2021				7.301			

Property Acquired	Type of System and Attributes	Asset Purchase Agreement (APA) Date	Purchase Price (PP)	Proportion of Purchase Price to Total	Customers	Purchase Price to Customers	Accumulated Customers
Mahoning	Wastewater Collection	2018.30	4.765.200	1%	1.451	3.284	1.451
Mahoning	Water Distribution System	2018.30	4.734.800	1%	1.186	3.992	2.637
East Bradford Township	Wastewater Collection and paid for treatment Capacity	2017.94	5.000.000	1%	1.248	4.006	3.885
East Norriton	Wastewater Collection	2018.83	21.000.000	2%	4.950	4.242	8.835
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	2020.71	53.000.000	6%	11.151	4.753	19.986
Cheltenham	Wastewater Collection	2018.42	50.250.000	6%	10.500	4.786	30.486
Valley	Water Treatment and Distribution System	2019.96	7.325.000	1%	1.459	5.021	31.945
City of McKeesport	Wastewater Collection and Treatment	2016.67	159.000.000	18%	21.953	7.243	53.898
Royersford	Wastewater Collection and Treatment	2019.94	13.000.000	2%	1.396	8.145	55.494
Valley	Wastewater Collection System	2019.96	13.950.000	2%	1.644	8.485	57.138
Salisbury	Wastewater Collection	2017.00	8.600.000	1%	998	8.617	58.136
Kane	Wastewater Collection and Treatment	2018.75	17.560.000	2%	2.006	8.754	60.142
Steelton	Water Distribution and Treatment	2018.87	21.750.000	3%	2.325	9.355	62.467
Upper Pottsgrove	Wastewater Collection	2020.33	13.750.000	2%	1.428	9.629	63.895
Exeter	Wastewater Collection and Treatment	2018.41	96.000.000	11%	9.000	10.667	72.895
Limerick Township	Wastewater Collection and Treatment System	2016.88	64.373.378	7%	5.434	11.846	78.329
New Garden Twp. SA	Wastewater Collection and Paid for and Owned Treatment	2016.59	29.500.000	3%	2.106	14.008	80.435
Delaware County Regional Water Quality A	Wastewater Collection and Treatment	2020.00	276.500.000	32%	16.473	16.785	96.908
			860.058.378	100%	96.908	8.875	
Middle OCLD							48.454
Bottom value of the range containing the Middle Value						4.786	31.945
Top value of the range containing the Middle Value						5.021	53.898
Range containing the Middle Value						235	21.953
Range from bottom value to Middle value						177	16.509
Median Value						4.963	

Property Acquired	Type of System and Attributes	Asset Purchase Agreement (APA) Date	Purchase Price (PP)	Proportion of Purchase Price to Total	Customers	Purchase Price to Customers	Accumulated Customers
Water Distribution and Treatment							
Mahoning	Water Distribution System	2018.304795	4.734.800	0.005505208	1186	3992	2637
Valley	Water Treatment and Distribution System	2019.963242	7.325.000	0.008516868	1459	5021	31945
Steelton	Water Distribution and Treatment	2018.875185	21.750.000	0.025286093	2325	9355	62467
Mean						6132.66667	
Median						5021	
Wastewater Collection and Treatment							
East Bradford Township	Wastewater Collection and paid for Treatment Capacity	2017.944064	5.000.000	0.005813539	1248	4006	3885
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	2020.713242	53.000.000	0.061623724	11151	4753	19986
City of McKeesport	Wastewater Collection and Treatment	2016.669406	159.000.000	0.184871142	21953	7243	53898
Royersford	Wastewater Collection and Treatment	2019.944064	13.000.000	0.015113433	1396	8145	55494
Kane	Wastewater Collection and Treatment	2018.748858	17.560.000	0.020413719	2006	8754	60142
Exeter	Wastewater Collection and Treatment	2018.410046	96.000.000	0.111616033	9000	10667	72895
Limerick Township	Wastewater Collection and Treatment System	2016.877169	64.373.378	0.074847684	5434	11846	78329
New Garden Twp. SA	Wastewater Collection and Paid for and Owned	2016.590753	29.500.000	0.034299997	2106	14008	80435
Delaware County Regional Water Quality A	Wastewater Collection and Treatment	2020.002186	276.500.000	0.321495805	16473	16785	96908
Mean						9578.55556	
Median						8754	
Wastewater Collection Only							
Mahoning	Wastewater Collection	2018.304795	4.765.200	0.005540564	1451	3284	1451
East Norriton	Wastewater Collection	2018.828452	21.000.000	0.024419947	4950	4242	8835
Cheltenham	Wastewater Collection	2018.413406	50.250.000	0.058426267	10500	4786	30486
Valley	Wastewater Collection System	2019.963242	13.950.000	0.016219839	1644	8485	57138
Salisbury	Wastewater Collection	2017.00274	8.600.000	0.009999371	998	8617	58136
Upper Pottsgrove	Wastewater Collection	2020.326712	13.750.000	0.015987287	1428	9629	63895
Mean						6837.16667	
Median						5836.5	

Description of Service	Purchase Price per Customer Mean	Median
Water Distribution and Treatment	6.121	5.021
Wastewater Collection and Treatment	5.573	6.754
Wastewater Collection	6.507	6.836
Wastewater Treatment Only	3.073	2.118

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Analysis - PP/Cash Flow (EBITDA Periods 1-5)

Property Acquired	Type of System and Attributes	Asset Purchase Agreement (APA) Date	Purchase Price (PP)	Proportion of Purchase Price to Total	Cash Flows (EBITDA Periods 1-5)	Purchase Price to Cash Flow	Variance to Simple Mean	Variance to Wtd Mean	Variance Squared	Wtd Mean Cash Flow
City of McKeesport	Wastewater Collection and Treatment	2016.67	159,000,000	19%	7,409,096	21.46	3.98	6.14	37.70	3.98
New Garden Twp. SA	Wastewater Collection and Paid for and Owned Treatment	2016.59	29,500,000	3%	1,717,347	17.18	(0.30)	1.86	3.46	0.59
Limerick Township	Wastewater Collection and Treatment System	2016.88	64,373,378	8%	3,542,124	18.17	0.69	2.85	8.12	1.36
East Bradford Township	Wastewater Collection and paid for treatment Capacity	2017.94	5,000,000	1%	283,367	17.64	0.16	2.32	5.38	0.10
Mahoning	Water Distribution System	2018.30	4,734,800	1%	233,922	20.24	2.76	4.92	24.21	0.11
Mahoning	Wastewater Collection	2018.30	4,765,200	1%	233,922	20.37	2.89	5.05	25.50	0.11
Cheltenham	Wastewater Collection	2018.42	50,250,000	6%	4,754,020	10.57	(6.91)	(4.75)	22.56	0.62
Steelton	Water Distribution and Treatment	2018.87	21,750,000	3%	2,278,514	9.55	(7.93)	(5.77)	33.29	0.24
Sadsbury	Wastewater Collection	2017.00	8,600,000	1%	714,645	12.03	(5.45)	(3.29)	10.82	0.12
Exeter	Wastewater Collection and Treatment	2018.41	93,500,000	11%	7,279,978	12.84	(4.64)	(2.48)	6.15	1.40
East Norriton	Wastewater Collection	2018.83	21,000,000	2%	1,265,269	16.60	(0.88)	1.28	1.64	0.41
Kane	Wastewater Collection and Treatment	2018.75	17,560,000	2%	1,039,593	16.89	(0.59)	1.57	2.46	0.35
Royersford	Wastewater Collection and Treatment	2019.94	13,000,000	2%	600,765	21.64	4.16	6.32	39.94	0.33
Valley	Water Treatment and Distribution System	2019.96	7,325,000	1%	398,458	18.38	0.90	3.06	9.36	0.16
Valley	Wastewater Collection System	2019.96	13,950,000	2%	392,972	35.50	18.02	20.18	407.23	0.58
Delaware County Regional Wa	Wastewater Collection and Treatment	2020.00	276,500,000	32%	25,883,282	10.68	(6.80)	(4.64)	21.53	3.44
Upper Pottsgrove	Wastewater Collection	2020.33	13,750,000	2%	845,182	16.27	(1.21)	0.95	0.90	0.26
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	2020.71	53,000,000	6%	2,839,988	18.66	1.18	3.34	11.16	1.15
			857,558,378	100%	61,712,444					
Simple Mean						17.48				
Standard Deviation						5.71				
SimpleMedian						17.41				
Simple Mode						10.68				
Weighted Mean						15.32				
Standard Deviation						5.10				
Wtd Median						18.13				
Wtd Mode						10.68				

Property Acquired	Type of System and Attributes	Asset Purchase Agreement (APA) Date	Purchase Price (PP)	Proportion of Purchase Price to Total	Cash Flows (EBITDA Periods 1-5)	Purchase Price to Cash Flow	Accummulated Cashflow (EBITDA Period 1-5)
Steelton	Water Distribution and Treatment	2018.871689	21,750,000	0.025288981	2,278,514	9.55	9.55
Cheltenham	Wastewater Collection	2018.419406	50,250,000	0.058426267	4,754,020	10.57	20.12
Delaware County Regional Wa	Wastewater Collection and Treatme	2020.001598	276,500,000	0.321489805	25,883,282	10.68	30.8
Sadsbury	Wastewater Collection	2017.00274	8,600,000	0.009999321	714,645	12.03	42.83
Exeter	Wastewater Collection and Treatme	2018.410046	96,000,000	0.11162033	7,279,978	13.19	56.02
Upper Pottsgrove	Wastewater Collection	2020.326712	13,750,000	0.015987287	845,182	16.27	72.29
East Norriton	Wastewater Collection	2018.829452	21,000,000	0.024416947	1,265,269	16.6	88.89
Kane	Wastewater Collection and Treatme	2018.748858	17,560,000	0.020417219	1,039,593	16.89	105.78
New Garden Twp. SA	Wastewater Collection and Paid for	2016.585073	29,500,000	0.034299997	1,717,347	17.18	122.96
East Bradford Township	Wastewater Collection and paid for	2017.944064	5,000,000	0.005813559	283,367	17.64	140.6
Limerick Township	Wastewater Collection and Treatme	2016.877169	64,373,378	0.074847684	3,542,124	18.17	158.77
Valley	Water Treatment and Distribution S	2019.963242	7,325,000	0.008516864	398,458	18.38	177.15
Lower Makefield	Wastewater Collection and Purchas	2020.713242	53,000,000	0.061623724	2,839,988	18.66	195.81
Mahoning	Water Distribution System	2018.304795	4,734,800	0.005505208	233,922	20.24	216.05
Mahoning	Wastewater Collection	2018.304795	4,765,200	0.005540554	233,922	20.37	236.42
City of McKeesport	Wastewater Collection and Treatme	2016.669406	159,000,000	0.184871172	7,409,096	21.46	257.88
Royersford	Wastewater Collection and Treatme	2019.944064	13,000,000	0.015115253	600,765	21.64	279.52
Valley	Wastewater Collection System	2019.963242	13,950,000	0.016219829	392,972	35.5	315.02
			860,058,378	1	61,712,444		
Middle Cash Flow							157.51
Bottomvalue of the range containng the Middle Value						17.64	140.60
Top value of the range containing the Middle Value						18.17	158.77
Range containng the middle value						0.53	18.17
Range from bottom value to middle value						0.49	16.91
Median Value						18.13	

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Analysis - PP/Cash Flow (EBITDA Periods 1-13)

Property Acquired	Type of System and Attributes	Asset Purchase Agreement (APA) Date	Purchase Price (PP)	Proportion of Purchase Price to Total	Cash Flows (EBITDA Periods 1-13)	Purchase Price to Cash Flow	Variance to Simple Mean	Variance to Wtd Mean	Variance Squared	Wtd Mean Cash Flow
City of McKeesport	Wastewater Collection and Treatment	2016.67	159,000,000	19%	11,958,224	13.30	1.68	1.85	3.42	2.47
New Garden Twp. SA	Wastewater Collection and Paid for and Owned Treatment	2016.59	29,500,000	3%	2,625,115	11.24	(0.38)	(0.21)	0.04	0.39
Limerick Township	Wastewater Collection and Treatment System	2016.88	64,373,378	8%	5,212,045	12.35	0.73	0.90	0.81	0.93
East Bradford Township	Wastewater Collection and paid for treatment Capacity	2017.94	5,000,000	1%	632,892	7.90	(3.72)	(3.55)	12.60	0.05
Mahoning	Water Distribution System	2018.30	4,734,800	1%	348,409	13.59	1.97	2.14	4.58	0.08
Mahoning	Wastewater Collection	2018.30	4,765,200	1%	348,409	13.68	2.06	2.23	4.97	0.08
Cheltenham	Wastewater Collection	2018.42	50,250,000	6%	4,326,210	11.62	-	0.17	0.03	0.68
Steelton	Water Distribution and Treatment	2018.87	21,750,000	3%	3,893,757	5.59	(6.03)	(5.86)	34.34	0.14
Sadsbury	Wastewater Collection	2017.00	8,600,000	1%	895,128	9.61	(2.01)	(1.84)	3.39	0.10
Exeter	Wastewater Collection and Treatment	2018.41	93,500,000	11%	8,011,315	11.67	0.05	0.22	0.05	1.27
East Norriton	Wastewater Collection	2018.83	21,000,000	2%	2,011,465	10.44	(1.18)	(1.01)	1.02	0.26
Kane	Wastewater Collection and Treatment	2018.75	17,560,000	2%	1,446,948	12.14	0.52	0.69	0.48	0.25
Royersford	Wastewater Collection and Treatment	2019.94	13,000,000	2%	1,209,765	10.75	(0.87)	(0.70)	0.49	0.16
Valley	Water Treatment and Distribution System	2019.96	7,325,000	1%	817,993	8.95	(2.67)	(2.50)	6.25	0.08
Valley	Wastewater Collection System	2019.96	13,950,000	2%	844,046	16.53	4.91	5.08	25.81	0.27
Delaware County Regional Water Q	Wastewater Collection and Treatment	2020.00	276,500,000	32%	28,960,162	9.55	(2.07)	(1.90)	3.61	3.08
Upper Pottsgrove	Wastewater Collection	2020.33	13,750,000	2%	932,042	14.75	3.13	3.30	10.89	0.24
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	2020.71	53,000,000	6%	3,432,340	15.44	3.82	3.99	15.92	0.95
			857,558,378	100%	77,906,265					

Simple Mean	11.62
Standard Deviation	2.67
SimpleMedian	11.65
Simple Mode	9.55
Weighted Mean	11.45
Standard Deviation	2.14
Wtd Median	12.07
Wtd Mode	9.55

Property Acquired	Type of System and Attributes	Asset Purchase Agreement (APA) Date	Purchase Price (PP)	Proportion of Purchase Price to Total	Cash Flows (EBITDA Periods 1-13)	Purchase Price to Cash Flow	Accummulated Cashflow (EBITDA Period 1-13)
Steelton	Water Distribution and Treatment	2018.87	21,750,000	3%	3,893,757	5.59	5.59
East Bradford Township	Wastewater Collection and paid for treatment Capacity	2017.94	5,000,000	1%	632,892	7.90	13.49
Valley	Water Treatment and Distribution System	2019.96	7,325,000	1%	817,993	8.95	22.44
Delaware County Regional Water Q	Wastewater Collection and Treatment	2020.00	276,500,000	32%	28,960,162	9.55	31.99
Sadsbury	Wastewater Collection	2017.00	8,600,000	1%	895,128	9.61	41.60
East Norriton	Wastewater Collection	2018.83	21,000,000	2%	2,011,465	10.44	52.04
Royersford	Wastewater Collection and Treatment	2019.94	13,000,000	2%	1,209,765	10.75	62.79
New Garden Twp. SA	Wastewater Collection and Paid for and Owned Treatment	2016.59	29,500,000	3%	2,625,115	11.24	74.03
Cheltenham	Wastewater Collection	2018.42	50,250,000	6%	4,326,210	11.62	85.65
Exeter	Wastewater Collection and Treatment	2018.41	96,000,000	11%	8,011,315	11.98	97.63
Kane	Wastewater Collection and Treatment	2018.75	17,560,000	2%	1,446,948	12.14	109.77
Limerick Township	Wastewater Collection and Treatment System	2016.88	64,373,378	7%	5,212,045	12.35	122.12
City of McKeesport	Wastewater Collection and Treatment	2016.67	159,000,000	18%	11,958,224	13.30	135.42
Mahoning	Water Distribution System	2018.30	4,734,800	1%	348,409	13.59	149.01
Mahoning	Wastewater Collection	2018.30	4,765,200	1%	348,409	13.68	162.69
Upper Pottsgrove	Wastewater Collection	2020.33	13,750,000	2%	932,042	14.75	177.44
Lower Makefield	Wastewater Collection and Purchased Treatment Capacity	2020.71	53,000,000	6%	3,432,340	15.44	192.88
Valley	Wastewater Collection System	2019.96	13,950,000	2%	844,046	16.53	209.41
			860,058,378	100%	77,906,265		

Middle Cash Flow		104.71
Bottomvalue of the range containng the Middle Value	11.98	97.63
Top value of the range containing the Middle Value	12.14	109.77
Range containng the middle value	0.16	12.14
Range from bottom value to middle value	0.09	7.08
Median Value	12.07	

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
As of January 20, 2021

Comparable Sales Approach

Market Sales Data

RowID	Approximate Date	Buyer	Seller	County	Type of Facility	Initial Purchase Price	Final Purchase Price[1]	Number of Total Customers	Relationship to the passage of Section 1329
1	9/1/2016	PA American Water	City of McKeesport	Allegheny	Wastewater Collection and Treatment	156,000,000	159,000,000	21,953	Post
2	8/1/2016	Aqua PA	New Garden Twp. SA	Chester	Wastewater Collection and Paid for and Owned Treatment	29,500,000	29,500,000	2,106	Post
3	11/16/2016	Aqua PA	Limerick Township	Montgomery	Wastewater Collection and Treatment System	75,100,000	64,373,378	5,434	Post
4	12/10/2017	Aqua PA	East Bradford Township	Chester	Wastewater Collection and paid for treatment	5,000,000	5,000,000	1,248	Post
5	4/20/2018	SUEZ	Mahoning	Carbon	Water Distribution System	4,734,800	4,734,800	1,186	Post
6	4/20/2018	SUEZ	Mahoning	Carbon	Wastewater Collection	4,765,200	4,765,200	1,451	Post
7	6/1/2018	Aqua PA	Cheltenham	Montgomery	Wastewater Collection	50,250,000	50,250,000	10,500	Post
8	11/14/2018	PA American Water	Steelton	Dauphin	Water Distribution and Treatment	22,500,000	21,750,000	2,325	Post
9	1/1/2017	PA American Water	Sadsbury	Chester	Wastewater Collection	9,250,000	8,600,000	998	Post
10	5/28/2018	PA American Water	Exeter	Berks	Wastewater Collection and Treatment	96,000,000	93,500,000	9,000	Post
11	10/29/2018	Aqua PA	East Norriton	Montgomery	Wastewater Collection	21,000,000	21,000,000	4,950	Post
12	9/30/2018	PA American	Kane	McKean	Wastewater Collection and Treatment	17,560,000	17,560,000	2,006	Post
13	12/10/2019	PA American	Royersford	Montgomery	Wastewater Collection and Treatment	13,000,000	13,000,000	1,596	Post
14	12/17/2019	PA American	Valley	Chester	Water Treatment and Distribution System	7,325,000	7,325,000	1,459	Post
15	12/17/2019	PA American	Valley	Chester	Wastewater Collection System	13,950,000	13,950,000	1,644	Post
16	12/31/2019	Aqua PA	Delaware County Regional Wa	Delaware	Wastewater Collection and Treatment	276,500,000	276,500,000	16,473	Post
17	4/28/2020	PA American Water	Upper Pottsgrove	Montgomery	Wastewater Collection	13,750,000	13,750,000	1,428	Post
18	9/17/2020	Aqua PA	Lower Makefield	Bucks	Wastewater Collection and Purchased Treatment Capacity	53,000,000	53,000,000	11,151	Post

Market Transactions

Willistown Township, Pennsylvania
Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Comparable Sales Approach

Financial Basis[1]

	Industry Averages	American & Aqua Averages	American States Water	American Water	Aqua America	California Water	Consol. Water Co.	Middlesex Water	SJW Corp	York	Totals
Price per Share			87.33	123.05	47.08	51.52	16.46	63.56	71.79	46.38	
Book value per share			16.1	34.4	18	15.85	10.95	15.7	31.2	10.4	
Market to Book Equity Ratio			5.42	3.58	2.62	3.25	1.5	4.05	2.3	4.46	
Minimum	1.5	2.62									
Mean	3.40	3.1		3.58	2.62						
Standard Deviation	1.18	0.480									
Weighted Market to Debt Ratio	3.41		20,013.22	112,367.28	34,710.24	11,207.07	371.03	5,481.74	5,874.18	3,135.10	193,159.86
Median	3.415	3.1									
Maximum	5.42	3.58									
Debt (Total) $s millions			475.3	9,143.0	3,086.4	967.9	-	294.0	511.1	100.7	
Outstanding Shares (millions)			36.84	180.78	215.84	48.15	15.03	16.67	28.46	12.98	
Debt per share			12.9	50.58	14.3	20.1	0	17.64	17.96	7.76	
Equity (Total) $s millions			3,217.18	22,244.51	10,161.78	2,480.43	247.35	1,059.52	2,042.89	602.24	
Total Capital (Debt + Equity)			3,692.48	31,387.51	13,248.18	3,448.33	247.35	1,353.52	2,553.99	702.94	56,634.30
			0.07	0.55	0.23	0.06	-	0.02	0.05	0.01	0.99
Market Value per Share (Equity+Debt)			100.23	173.63	61.38	71.62	16.46	81.2	89.75	54.14	
Book Value per Share (Equity+Debt)			29	84.98	32.3	35.95	10.95	33.34	49.16	18.16	
Market to Book (Total Capital) Ratio			3.46	2.04	1.9	1.99	1.5	2.44	1.83	2.98	
Minimum	1.5	1.9									
Mean	2.27	1.97		2.04	1.9						
Standard Deviation	0.61	0.070									
Weighted Market to Book (Debt&Equity) Ratio	2.11		12,775.97	64,030.52	25,171.55	6,862.18	371.03	3,302.58	4,673.80	2,094.75	119,282.38
Variance to Wtd Mean	0.1392		1.35	(0.07)	(0.21)	(0.12)	(0.61)	0.33	(0.28)	0.87	
Median	2.015	1.97									
Maximum	3.46	2.04									

1. Value Line Investment Survey January 10, 2020
2. Value Line dropped Connecticut Water in its January 10, 2020 publication

Water and Wastewater General Information

Appraisal Work Papers

Cost Indices

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Water and Wastewater General Information
Appraisal Work Papers

Cost Indices

Handy Whitman Index of Public System Construction Costs
Water Industry – Northeastern United States

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Bulletin No. 193

1912 to January 1, 2021

The Handy-Whitman Index® of Public Utility Construction Costs™

Trends of Construction Costs

COMPILED & PUBLISHED BY

Whitman, Requardt & Associates, LLP

Engineers, Architects and Planners

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Baltimore, Maryland 21231

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TABLE OF CONTENTS

TRENDS OF PUBLIC UTILITY CONSTRUCTION COSTS

TABLE OF CONTENTS i
GEOGRAPHIC REGIONS ii
FOREWORD iii
- Methods of Preparation of Indexes iii
- Geographic Regions iv
- Use of Index Numbers iv
- Value of Index Numbers iv
- Comments iv

COST TRENDS OF BUILDING CONSTRUCTION

Cost Trend Tables - 1912 to January 1, 2021	Table	Page
North Atlantic Region	B-1	B-1-1
South Atlantic Region	B-2	B-2-1
North Central Region	B-3	B-3-1
South Central Region	B-4	B-4-1
Plateau Region	B-5	B-5-1
Pacific Region	B-6	B-6-1
Utility Materials	M-1	B-M-1

COST TRENDS OF ELECTRIC UTILITY CONSTRUCTION

Cost Trend Tables - 1912 to January 1, 2021		
North Atlantic Region	E-1	E-1-1
South Atlantic Region	E-2	E-2-1
North Central Region	E-3	E-3-1
South Central Region	E-4	E-4-1
Plateau Region	E-5	E-5-1
Pacific Region	E-6	E-6-1

COST TRENDS OF GAS UTILITY CONSTRUCTION

Cost Trend Tables - 1912 to January 1, 2021		
North Atlantic Region	G-1	G-1-1
South Atlantic Region	G-2	G-2-1
North Central Region	G-3	G-3-1
South Central Region	G-4	G-4-1
Plateau Region	G-5	G-5-1
Pacific Region	G-6	G-6-1

COST TRENDS OF WATER UTILITY CONSTRUCTION

Cost Trend Tables - 1912 to January 1, 2021		
North Atlantic Region	W-1	W-1-1
South Atlantic Region	W-2	W-2-1
North Central Region	W-3	W-3-1
South Central Region	W-4	W-4-1
Plateau Region	W-5	W-5-1
Pacific Region	W-6	W-6-1

TRENDS OF PUBLIC UTILITY CONSTRUCTION COSTS

GEOGRAPHIC REGIONS

Tradition of Quality

The Handy-Whitman Index of Public Utility Construction Costs has been published continuously since 1924. Formerly the Handy Index, Bulletin Nos. 1 through 15 were developed by William W. Handy of Baltimore who had wide valuation experience in public utilities. *He believed that valuation studies should not be confined to rate cases but should be kept alive to the benefit of the utility industry.* He began publishing index numbers for electric and gas construction cost trends. Carrying on with the *tradition of quality*, after Mr. Handy's death, we continued publication for his estate beginning with Bulletin 16. Then, January 1, 1950, Whitman, Requardt and Associates, LLP purchased rights to the publication and have since been the sole publishers.

The name Handy-Whitman Index was adopted for Bulletin No. 53 and succeeding issues to combine the names of Mr. Handy and Ezra B. Whitman, a well-known valuation engineer. In 1957 an index of water utility construction costs was added. Mr. Whitman was a consultant on the publication of the Index until his death in 1963.

Whitman, Requardt and Associates, LLP

Ezra B. Whitman, a well-known valuation engineer was one of the founders of our firm. Major Whitman, as he was known from his World War I service, had already made a name for himself. Prior to the founding of the firm in 1915, Major Whitman had been President and Chief Engineer of the Water Board of the City of Baltimore. He designed the first rapid sand filtration plant serving a major city while he was the Baltimore Water Engineer. He was also president of the American Society of Civil Engineers and of the American Institute of Consulting Engineers and a chairman of the Public Service Commission of Maryland.

The Handy-Whitman Index is prepared especially for electric, gas and water utilities and is the only known publication of its kind available to the public. The list of subscribers is international and includes operating utilities, regulatory bodies, valuation engineers, equipment industries, insurance companies and reference libraries.

Tradition of Quality Continued

Since 1915, Whitman, Requardt and Associates, LLP, has been an independent consulting engineering firm organized to serve government, industry and private enterprise.

The firm has steadily expanded its engineering capabilities, providing complete services for civil, sanitary, structural, mechanical and electrical engineering and architectural projects from job inception through construction management. Construction cost data from utility projects of all types are available from design and valuation assignments. The staff is composed of specialists in these and related disciplines who bring a diverse professional and academic expertise to each assignment. A full-time staff is maintained specifically for preparing the Handy-Whitman Index.

Methods of Preparation of Indexes

An index number is a percentage ratio between the cost of an item at any stated time and its cost at a base period, or:

$$\text{Index Number} = \frac{\text{cost at stated time}}{\text{cost at base period}} \times 100$$

Index numbers have been prepared for many items, including wage rates, cost-of-living, material and equipment costs, and financial transactions. In the Handy-Whitman Index, index numbers have been developed for Building Construction, Electric Utility Construction, Gas Utility Construction and Water Utility Construction. Prices of basic materials such as cement, sand, gravel, cast iron pipe, wire, etc., are obtained from publications such as Engineering News-Record and checked against prices actually being paid for such materials. Labor cost trends are computed from labor rates obtained from sources such as the Construction Labor Research Council. Prices and cost trends of equipment are obtained from nationally recognized manufacturers, and operating utilities.

Handy-Whitman Index numbers are developed from wage rates and prices prevailing on January 1 and July 1 each year. The index numbers are generally based on 1973 = 100, although those items of recent origin are based on a later year.

The proportions of basic materials, labor, equipment and other cost components used in the Handy-Whitman Index are based on analyses developed during valuation and design assignments and on data furnished by utilities and industrial sources willing to assist with the Index. These data are reviewed continuously, and weightings and components are revised as required. This review assures that the indexes published reflect current construction practice.

Geographic Regions

To reflect differing cost trends throughout the 48 contiguous states, the index has been divided into six geographical regions of similar characteristics. They are shown on the accompanying map.

Use of Index Numbers

Handy-Whitman Index numbers have been widely used to trend earlier valuations and original cost records to estimate reproduction cost at prices prevailing at a certain date. The use of indexes for an appropriate property item or group will provide a reliable guide to changes in cost. Cost trends are given for all the important items of property. The electric and gas groups are arranged by the Federal Energy Regulatory Commission Uniform System of Accounts. The water property accounts are arranged to follow the classification of the National Association of Regulatory Utility Commissioners and the American Water Works Association.

The Handy-Whitman Index will furnish a yardstick for the fluctuations in value of property which will be satisfactory for many purposes. In rate cases, when a more exact determination of value is desired, however, the Index must be used carefully. Average prices and cost trends are used to develop the Index, and any direct application of cost trends without checking with actual local experience may not be accepted without controversy. When local experience is compared with the index and the correlation between the two trends is determined, the result is satisfactory. Costs trended by such a method are used to assist in establishing a rate base.

Indexes in these bulletins are used to trend earlier valuations or original cost records for insurance purposes.

The Handy-Whitman Index has a general application in valuations of all types of property. The building construction cost trends may be used wherever similar items of property are to be compared. Many of the other trends may be used for related items in other industries because of their similarity.

State-of-the-art changes often affect costs independently of inflation. New regulatory and environmental requirements, changes in work rules and improved design standards, for instance, increase construction costs even though the price of wages, materials and equipment may be static. Trended construction costs will not reflect such changes. However, trended costs are a reasonably accurate measure of the cost of reproducing actual plant.

Although every effort is made to maintain accuracy, Whitman, Requardt and Associates, LLP disclaim any responsibility for the use of these indexes, because local conditions may vary.

No guarantee or warranty of any kind is made in the sale of the Handy-Whitman Index. Published numbers are occasionally subject to change based upon receipt of new or different information. These numbers will be bolded.

Further inquiries on electric, gas and water indexes should be addressed to Whitman, Requardt and Associates, LLP.

Total Electric Plant and Function

Three indexes are provided for total plant. The first is for all steam generation and the other two for weighted combinations of steam and nuclear, and steam and hydro generation. Indexes are also provided for each function.

Indexes are not maintained for plant accounts 323,324,325,341,345 and 346. We believe that indexes for comparable accounts in other functions are sufficiently accurate for these accounts.

The indexes for total nuclear production and total other production incorporate comparable indexes from the steam production function for the accounts not listed.

Value of Index Numbers

We believe that present-day reproduction cost of any property can be calculated more accurately using index numbers than by repricing a complete inventory.

Trending the controlling items of property in any utility by the index method saves time and effort in arriving at a valuation. Analyzing and determining cost trends for all of the great numbers of articles of plant that represent only a very small proportion of the value of the utility is not necessary. They may be assumed to follow in general the trend of the controlling items, and the fluctuations in value above or below the trends of the controlling items will tend to offset each other and have a very slight effect on the total value.

Comments on Bulletin No. 193

During the twelve-month period ending January 1, 2021, the average index of all geographical regions for Total Gas Plant increased 0.9%, and the comparable index for Electric Plant-All Steam Generation increased 4.5%.

May 2021
Whitman, Requardt and Associates, LLP

Cost Trends Of

Building Construction

COST TREND TABLES
1912 to January 1, 2021

B-1

COST TRENDS OF BUILDING CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

Line	CONSTRUCTION, MATERIAL, AND LABOR	COST INDEX NUMBERS															
		1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
1	**Building Construction**																
2	Reinf. Conc. Bldg. Construction	8	8	8	8	12	18	19	19	20	15	14	17	17	17	17	16
3	Brick Building Construction	8	8	8	9	11	15	17	19	21	17	16	18	19	18	18	18
4	Structural Steel Erected	9	9	9	8	16	29	26	22	22	16	15	19	19	17	17	16
5	Reinf. Concrete (Ready-Mix)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7																	
8	**Building Material**																
9	Ready-Mix Concrete	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	Lumber for Reinf. Concrete	7	7	7	7	9	13	19	19	20	14	13	15	19	19	15	15
11	Steel Bars for Reinf. Concrete	15	15	15	17	34	47	37	35	37	24	22	28	29	27	25	24
12	Common Brick	10	10	10	14	16	19	20	27	34	31	30	33	30	28	28	28
13	Concrete Block	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14																	
15	**Labor**																
16	Building Trades Labor	6	6	6	6	6	7	8	10	11	11	11	12	13	14	15	15
17	Heavy Constr. Trades Labor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	Labor for Reinf. Concrete	5	5	5	5	5	6	8	10	11	9	9	10	11	11	11	11
19	Common Labor	4	4	4	4	5	5	8	10	11	9	8	9	9	9	9	9
20	Electricians	5	5	5	6	6	6	8	9	10	11	11	11	12	13	14	14
21	Pipefitters	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	Plumbers	6	6	6	6	6	7	8	9	9	11	11	12	12	13	14	14
23																	

Line	CONSTRUCTION, MATERIAL, AND LABOR	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943
1	**Building Construction**																
2	Reinf. Conc. Bldg. Construction	16	16	15	14	12	13	15	15	15	16	16	16	17	18	20	20
3	Brick Building Construction	18	17	17	16	14	14	16	16	16	17	17	17	17	19	20	20
4	Structural Steel Erected	16	16	15	13	11	12	14	15	15	17	15	15	15	19	20	20
5	Reinf. Concrete (Ready-Mix)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	Reinf. Concrete (Plant-Mix)	16	16	15	14	12	13	15	15	15	17	17	17	17	18	19	19
7																	
8	**Building Material**																
9	Ready-Mix Concrete	-	-	-	-	-	-	32	32	32	33	33	32	31	31	32	33
10	Lumber for Reinf. Concrete	15	15	14	12	10	12	16	13	13	15	15	15	16	19	21	22
11	Steel Bars for Reinf. Concrete	24	25	22	20	20	21	24	23	25	31	29	28	27	28	28	28
12	Common Brick	25	23	20	20	19	19	22	20	20	20	20	20	20	21	22	22
13	Concrete Block	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14																	
15	**Labor**																
16	Building Trades Labor	15	15	15	15	14	12	13	13	13	15	15	15	16	17	18	18
17	Heavy Constr. Trades Labor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	Labor for Reinf. Concrete	11	11	10	10	9	9	11	11	11	12	13	13	14	14	14	15
19	Common Labor	9	9	9	9	8	6	8	9	9	10	10	11	11	12	12	13
20	Electricians	14	15	15	16	16	14	14	14	15	16	16	17	17	18	19	19
21	Pipefitters	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	Plumbers	14	15	15	15	13	13	14	14	14	15	16	16	17	17	18	18
23																	

B-1

COST TRENDS OF BUILDING CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

Line	CONSTRUCTION, MATERIAL, AND LABOR	COST INDEX NUMBERS															
		1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
1	**Building Construction**																
2	Reinf. Conc. Bldg. Construction	20	20	24	28	32	34	35	37	38	40	42	44	48	52	53	55
3	Brick Building Construction	21	21	24	28	32	34	35	37	38	39	41	42	46	49	50	52
4	Structural Steel Erected	20	20	24	30	37	39	41	43	43	47	48	50	59	66	67	67
5	Reinf. Concrete (Ready-Mix)	-	-	-	-	-	-	-	-	35	37	39	41	43	46	48	50
7																	
8	**Building Material**																
9	Ready-Mix Concrete	33	33	35	39	44	45	46	47	49	50	54	57	60	63	66	66
10	Lumber for Reinf. Concrete	23	23	29	33	38	34	37	37	38	36	39	42	44	45	44	47
11	Steel Bars for Reinf. Concrete	28	28	30	34	37	43	45	47	48	51	53	56	61	68	70	72
12	Common Brick	23	27	31	33	38	42	43	47	47	48	50	51	52	53	54	54
13	Concrete Block	-	-	-	-	-	56	58	62	63	63	62	67	69	70	69	73
14																	
15	**Labor**																
16	Building Trades Labor	18	19	21	23	26	27	28	31	31	33	34	36	37	39	41	43
17	Heavy Constr. Trades Labor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	Labor for Reinf. Concrete	15	16	18	22	24	25	26	27	29	30	32	33	35	37	39	41
19	Common Labor	13	14	17	19	21	23	24	25	27	28	30	31	33	35	37	40
20	Electricians	19	19	20	23	25	27	28	30	32	33	34	35	37	38	41	42
21	Pipefitters	-	-	-	-	-	26	27	28	29	31	32	33	35	35	39	41
22	Plumbers	18	18	19	22	25	27	28	29	30	32	34	35	37	38	40	41
23																	

Line	CONSTRUCTION, MATERIAL, AND LABOR	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
1	**Building Construction**																
2	Reinf. Conc. Bldg. Construction	55	54	55	55	57	58	59	62	65	70	75	84	91	100	121	134
3	Brick Building Construction	53	52	53	54	56	57	59	61	64	68	74	84	91	100	118	127
4	Structural Steel Erected	66	62	62	62	63	63	65	66	69	74	77	83	89	100	140	161
5	Reinf. Concrete (Ready-Mix)	51	52	53	54	55	57	59	61	64	69	77	88	94	100	111	119
6	Reinf. Concrete (Plant-Mix)	49	48	50	51	52	53	56	58	61	66	73	83	91	100	108	115
7																	
8	**Building Material**																
9	Ready-Mix Concrete	66	66	66	65	64	64	65	65	68	73	82	91	94	100	112	123
10	Lumber for Reinf. Concrete	47	39	41	40	39	38	41	42	46	53	53	63	75	100	93	91
11	Steel Bars for Reinf. Concrete	72	72	72	72	74	81	82	81	81	81	84	91	91	100	157	156
12	Common Brick	56	56	56	57	58	58	60	62	65	65	68	78	84	100	123	126
13	Concrete Block	68	70	70	70	70	67	70	72	75	77	81	90	98	100	109	113
14																	
15	**Labor**																
16	Building Trades Labor	45	46	48	50	52	54	56	59	62	68	76	87	96	100	108	115
17	Heavy Constr. Trades Labor	-	45	47	48	50	53	56	58	61	67	76	86	96	100	107	116
18	Labor for Reinf. Concrete	43	45	47	49	51	53	56	58	62	67	77	88	96	100	108	116
19	Common Labor	42	44	45	47	49	52	55	58	61	66	75	88	97	100	109	117
20	Electricians	43	45	48	49	51	53	55	57	60	64	72	82	91	100	108	117
21	Pipefitters	41	44	45	45	48	50	52	55	57	62	70	85	97	100	107	114
22	Plumbers	43	44	46	48	49	51	53	56	58	64	71	86	96	100	107	114
23																	

B-1

COST TRENDS OF BUILDING CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

Line	CONSTRUCTION, MATERIAL, AND LABOR	COST INDEX NUMBERS															
		1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	**Building Construction**																
2	Reinf. Conc. Bldg. Construction	134	139	150	167	184	190	189	196	211	222	229	234	246	258	262	257
3	Brick Building Construction	130	136	148	164	183	192	197	206	217	225	233	239	252	265	271	272
4	Structural Steel Erected	153	154	170	193	225	227	202	202	225	240	249	255	272	286	286	261
5	Reinf. Concrete (Ready-Mix)	124	131	140	154	166	176	191	201	210	220	225	229	238	244	251	260
7																	
8	**Building Material**																
9	Ready-Mix Concrete	126	133	143	163	185	207	226	227	235	248	245	252	254	244	250	255
10	Lumber for Reinf. Concrete	106	118	130	148	139	138	135	143	144	140	140	146	143	148	147	145
11	Steel Bars for Reinf. Concrete	145	147	166	206	215	216	203	190	198	202	205	205	227	232	222	199
12	Common Brick	130	136	159	190	232	247	255	257	256	246	258	270	292	320	320	316
13	Concrete Block	116	120	139	185	210	228	260	260	262	278	285	287	285	301	288	288
14																	
15	**Labor**																
16	Building Trades Labor	122	129	135	143	152	164	184	199	212	221	229	234	245	256	268	285
17	Heavy Constr. Trades Labor	123	131	137	146	155	165	184	199	210	220	229	233	244	255	264	279
18	Labor for Reinf. Concrete	122	130	137	147	157	166	184	198	210	220	227	232	242	253	262	277
19	Common Labor	124	133	141	152	163	172	190	204	214	223	231	234	243	254	265	280
20	Electricians	124	129	135	143	150	164	186	207	224	234	239	244	261	271	280	298
21	Pipefitters	122	131	135	143	154	170	192	207	219	228	236	242	248	263	276	290
22	Plumbers	122	131	136	141	152	168	191	205	217	226	235	241	242	257	279	294
23																	

Line	CONSTRUCTION, MATERIAL, AND LABOR	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005 Jan. 1	2005 Jul. 1
1	**Building Construction**															
2	Reinf. Conc. Bldg. Construction	262	279	298	305	311	322	324	330	342	**354**	363	371	403	415	422
3	Brick Building Construction	278	290	304	310	315	328	337	345	359	**372**	383	391	414	425	431
4	Structural Steel Erected	260	278	305	317	325	334	336	344	360	**372**	375	385	433	443	452
5	Reinf. Concrete (Ready-Mix)	268	279	291	296	304	312	320	327	336	**350**	364	372	389	402	409
6	Reinf. Concrete (Plant-Mix)	247	265	281	279	286	298	296	299	304	**316**	324	328	351	364	373
7																
8	**Building Material**															
9	Ready-Mix Concrete	257	262	270	281	295	286	301	307	315	**332**	350	356	344	351	371
10	Lumber for Reinf. Concrete	150	193	227	196	206	218	186	182	168	**179**	164	153	182	182	215
11	Steel Bars for Reinf. Concrete	194	212	234	236	236	250	246	229	225	**224**	221	243	296	348	360
12	Common Brick	315	310	313	315	311	335	369	384	412	**426**	426	427	429	429	439
13	Concrete Block	288	263	262	258	258	285	306	332	354	**365**	381	384	394	406	406
14																
15	**Labor**															
16	Building Trades Labor	296	307	318	326	331	344	353	362	376	**392**	412	424	442	458	458
17	Heavy Constr. Trades Labor	291	300	311	319	325	337	348	358	372	**386**	402	411	430	446	446
18	Labor for Reinf. Concrete	289	297	308	314	320	333	343	354	366	**382**	400	407	426	439	439
19	Common Labor	293	303	315	315	327	338	349	359	376	**389**	400	407	421	428	428
20	Electricians	309	324	336	343	353	365	377	390	401	**416**	441	454	475	497	497
21	Pipefitters	305	317	323	335	342	352	361	374	388	**409**	423	435	470	488	488
22	Plumbers	305	320	330	339	348	355	363	368	385	**405**	425	438	455	469	469
23																

B-1

COST TRENDS OF BUILDING CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

Line	CONSTRUCTION, MATERIAL, AND LABOR	COST INDEX NUMBERS															
		2006		2007		2008		2009		2010		2011		2012		2013	
		Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1
1	**Building Construction**																
2	Reinf. Conc. Bldg. Construction	431	436	446	472	493	501	505	486	497	498	515	515	524	527	537	534
3	Brick Building Construction	441	443	457	472	492	497	506	494	506	507	521	518	530	532	542	539
4	Structural Steel Erected	462	471	480	534	550	563	555	509	511	511	531	532	538	542	558	553
5	Reinf. Concrete (Ready-Mix)	414	418	434	446	469	476	484	484	500	506	516	517	525	526	527	527
7																	
8	**Building Material**																
9	Ready-Mix Concrete	371	379	382	425	425	425	429	430	430	437	431	439	441	441	436	436
10	Lumber for Reinf. Concrete	195	195	150	164	157	162	162	159	158	149	147	152	150	165	170	168
11	Steel Bars for Reinf. Concrete	324	361	380	420	398	490	334	326	358	416	417	406	393	391	365	356
12	Common Brick	439	439	457	457	460	460	460	453	453	453	453	434	448	451	458	452
13	Concrete Block	428	450	460	386	390	390	390	390	443	432	430	432	428	428	445	445
14																	
15	**Labor**																
16	Building Trades Labor	478	478	499	499	527	527	550	550	572	572	590	590	607	607	619	619
17	Heavy Constr. Trades Labor	459	459	483	483	517	517	542	542	564	564	584	584	596	596	605	605
18	Labor for Reinf. Concrete	452	452	476	476	512	512	541	541	562	562	579	579	591	591	598	598
19	Common Labor	436	436	475	475	510	510	550	550	572	572	590	590	604	604	604	604
20	Electricians	512	512	543	543	564	564	582	582	615	615	632	632	665	665	674	674
21	Pipefitters	514	514	526	526	566	566	590	590	607	607	642	642	658	658	668	668
22	Plumbers	502	502	520	520	545	545	580	580	597	597	610	610	623	623	634	634
23																	

Line	CONSTRUCTION, MATERIAL, AND LABOR	2014		2015		2016		2017		2018		2019		2020		2021	
		Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1
1	**Building Construction**																
2	Reinf. Conc. Bldg. Construction	546	549	557	549	552	558	569	576	589	611	611	605	617	613	653	
3	Brick Building Construction	550	552	585	580	586	589	604	608	633	647	647	643	664	662	692	
4	Structural Steel Erected	561	567	568	555	549	556	561	569	579	617	618	604	609	594	652	
5	Reinf. Concrete (Ready-Mix)	541	543	556	554	564	567	581	585	602	609	611	608	625	629	650	
6	Reinf. Concrete (Plant-Mix)	482	482	497	490	497	505	519	527	541	561	553	551	565	568	599	
7																	
8	**Building Material**																
9	Ready-Mix Concrete	441	452	455	461	471	471	481	485	488	488	489	488	492	514	521	
10	Lumber for Reinf. Concrete	174	170	188	182	178	204	222	240	244	309	255	249	243	259	330	
11	Steel Bars for Reinf. Concrete	363	373	368	326	288	307	316	349	342	393	413	381	333	325	342	
12	Common Brick	449	449	617	617	618	618	636	637	725	725	709	709	757	757	765	
13	Concrete Block	444	499	505	485	483	429	427	411	411	443	429	461	462	461	463	
14																	
15	**Labor**																
16	Building Trades Labor	636	636	646	646	660	660	678	678	696	696	707	707	732	732	755	
17	Heavy Constr. Trades Labor	620	620	640	640	659	659	673	673	696	696	705	705	732	732	754	
18	Labor for Reinf. Concrete	616	616	633	633	651	651	666	666	690	690	693	693	723	723	745	
19	Common Labor	620	620	644	644	661	661	674	674	705	705	712	712	750	750	777	
20	Electricians	691	691	702	702	724	724	731	731	753	753	775	775	787	787	815	
21	Pipefitters	694	694	704	704	717	717	738	738	755	755	768	768	780	780	796	
22	Plumbers	655	655	668	668	674	674	696	696	716	716	734	734	751	751	776	
23																	

M

UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	COST INDEX NUMBERS													
		1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
1	Boilers	6	6	6	7	8	13	17	15	16	14	12	14	15	15
2	Coal & Ash Handling Equipment	12	12	12	12	19	31	29	20	28	24	21	23	23	21
3	Pumps	9	9	9	12	14	16	18	18	18	17	16	16	16	17
4	Steam Pipe	17	17	17	12	18	39	44	35	37	35	34	36	37	37
5	Cranes	6	6	6	7	7	7	7	8	8	9	9	9	9	10
6	Regulators	32	32	32	32	32	39	47	45	49	50	49	50	53	52
7	Switchboards	20	20	20	20	21	23	26	35	44	49	43	40	43	43
8	Power Transformers	23	23	23	23	23	32	41	41	49	48	42	43	46	46
9	Oil Switches	27	27	27	27	27	30	38	45	49	53	50	50	51	51
10	Motors	21	21	21	21	21	28	31	37	42	43	34	29	29	29
11	Line Transformers	48	48	48	48	48	51	69	72	77	79	69	67	69	68
12	Meters-Electrric	37	37	37	37	37	41	46	51	53	57	53	50	50	48
13	Treated Pine Poles	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	Standard Cross Arms	7	7	7	7	7	9	10	12	12	11	12	12	12	13
15	Standard Galv. Steel Guy Wire	12	12	12	14	15	19	22	23	22	22	21	21	20	20
16	Fibre Conduit	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Plastic Conduit	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	Mercury Luminaires w/Standard	-	-	-	-	-	-	-	-	-	-	-	-	27	26
19	Power Wire & Control Cable	23	23	23	30	36	42	48	51	49	37	29	33	31	34
20	Overhead Conductor-Transmission	28	26	23	25	45	49	54	53	51	31	28	32	31	32
21	Underground Conductor-Transmission	15	13	12	12	19	22	25	27	26	21	21	26	23	23
22	Overhead Conductor-Distribution	25	23	20	23	40	43	48	47	45	28	25	28	28	29
23	Underground Conductor-Distribution	16	15	14	14	22	25	28	30	29	22	22	28	25	25
24	Service Cable	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	Condensers & Tubes	7	7	7	7	11	13	20	21	21	20	17	17	18	18
26	Turbo-Generators	9	9	9	9	13	13	17	18	21	23	20	19	19	19
27															
28	Gas Compressors	18	18	18	18	18	19	25	25	27	26	25	25	25	25
29	Gas Transmission Line Pipe	23	24	23	24	34	44	44	45	44	43	40	41	43	43
30	Steel Distribution Pipe	15	16	16	17	24	36	40	36	34	32	28	30	31	31
31	Plastic Pipe	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	Meters-Gas	17	18	18	18	19	23	33	33	32	33	30	30	28	27
33	House Regulators	24	25	25	25	26	31	47	46	45	45	41	41	39	37
34															
35	Cast Iron Pipe	16	17	16	17	23	40	44	48	53	44	39	45	47	40
36	Cast Iron Fittings	10	10	10	13	13	24	27	25	34	29	25	25	25	27
37	Ductile Iron Pipe	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	Chemical Feeders-Small	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	Chemical Feeders-Large	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	Gate Valves	15	15	15	17	17	17	24	24	30	28	25	29	29	27
41	Meter Yokes	24	24	24	24	24	24	29	29	31	31	29	29	29	29
42	Corporation Stops	27	27	27	27	27	27	25	25	25	25	25	25	24	24
43	Curb Stops	20	20	20	20	20	20	22	22	22	22	22	22	21	21
44	Hydrants	23	23	23	23	23	23	23	24	27	27	23	26	27	26
45	Meters-Water	23	23	23	23	26	29	35	37	37	37	37	37	37	37
46															
47															
48															
49															
50	Construction Equipment	-	-	-	11	15	19	26	28	30	22	19	23	21	22
51															
52															
53															
54															
55															
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UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	COST INDEX NUMBERS													
		1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
1	Boilers	15	15	14	14	14	14	12	12	15	15	16	18	19	20
2	Coal & Ash Handling Equipment	21	20	20	20	19	17	16	17	20	20	20	21	20	20
3	Pumps	19	19	19	20	20	19	18	18	19	19	19	21	22	22
4	Steam Pipe	37	37	37	36	36	36	35	32	31	31	32	36	35	35
5	Cranes	10	10	11	11	11	11	10	10	10	10	10	10	10	11
6	Regulators	42	41	40	41	42	43	42	43	48	48	48	52	53	53
7	Switchboards	44	44	45	48	48	47	43	43	48	48	48	52	53	53
8	Power Transformers	46	43	41	42	40	40	39	40	46	47	47	50	52	52
9	Oil Switches	51	49	49	51	53	52	51	55	59	59	59	63	65	65
10	Motors	29	28	28	29	29	29	29	30	33	32	32	32	32	32
11	Line Transformers	63	59	58	62	61	59	57	59	61	62	62	66	67	67
12	Meters-Electrric	48	48	48	48	48	48	48	50	54	55	55	55	55	55
13	Treated Pine Poles	28	27	26	25	24	23	21	22	23	24	23	24	23	23
14	Standard Cross Arms	10	9	9	9	9	8	8	9	10	11	11	12	12	12
15	Standard Galv. Steel Guy Wire	18	17	16	16	15	14	14	15	17	17	17	18	19	18
16	Fibre Conduit	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Plastic Conduit	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	Mercury Luminaires w/Standard	26	23	26	27	28	29	29	29	30	30	30	30	30	30
19	Power Wire & Control Cable	33	30	27	29	26	21	19	23	26	27	29	35	29	26
20	Overhead Conductor-Transmission	29	27	32	38	26	22	19	23	28	27	29	32	27	27
21	Underground Conductor-Transmission	22	21	23	27	20	19	19	21	23	23	25	27	24	24
22	Overhead Conductor-Distribution	26	24	28	34	23	19	17	20	25	24	26	28	24	24
23	Underground Conductor-Distribution	24	22	25	29	22	21	20	22	25	25	27	29	26	26
24	Service Cable	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	Condensers & Tubes	18	16	15	19	20	19	18	19	21	24	24	27	27	27
26	Turbo-Generators	19	19	20	21	22	22	21	22	25	25	26	29	30	30
27															
28	Gas Compressors	24	23	24	24	24	24	24	24	24	24	23	23	23	23
29	Gas Transmission Line Pipe	43	43	43	43	43	43	42	35	35	35	34	35	34	34
30	Steel Distribution Pipe	31	31	31	31	30	29	29	26	29	29	26	28	26	25
31	Plastic Pipe	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	Meters-Gas	27	27	27	27	27	26	25	25	25	25	25	26	26	26
33	House Regulators	37	38	38	38	37	36	34	34	34	34	34	35	37	40
34															
35	Cast Iron Pipe	40	34	29	30	30	28	25	30	34	35	36	39	39	38
36	Cast Iron Fittings	27	25	25	25	24	21	19	20	22	23	23	23	24	24
37	Ductile Iron Pipe	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	Chemical Feeders-Small	18	19	22	22	20	15	17	17	17	17	17	17	17	17
39	Chemical Feeders-Large	-	-	-	-	-	-	-	-	-	12	12	13	13	13
40	Gate Valves	26	26	28	28	28	24	23	23	22	22	23	25	26	26
41	Meter Yokes	29	29	29	29	29	29	28	28	28	28	28	28	29	29
42	Corporation Stops	24	24	24	24	24	24	24	22	21	21	21	21	21	21
43	Curb Stops	21	21	21	21	21	21	21	21	21	21	21	21	21	21
44	Hydrants	24	24	25	25	25	23	23	23	20	22	22	24	25	25
45	Meters-Water	37	37	37	37	37	37	37	35	26	26	26	31	32	32
46															
47															
48															
49															
50	Construction Equipment	21	22	21	22	22	20	19	19	20	21	21	23	23	23
51															
52															
53															
54															
55															
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M UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	COST INDEX NUMBERS													
		1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953
1	Boilers	20	21	21	21	21	21	22	25	31	36	37	41	41	43
2	Coal & Ash Handling Equipment	20	23	25	25	24	24	29	35	42	44	47	50	51	55
3	Pumps	22	23	24	24	24	24	26	32	35	37	40	47	47	48
4	Steam Pipe	35	35	35	35	35	35	37	42	45	50	52	53	53	55
5	Cranes	11	11	11	11	12	17	20	23	26	29	31	33	35	38
6	Regulators	53	53	53	53	52	51	57	63	65	69	70	74	74	81
7	Switchboards	53	53	51	50	45	44	50	58	59	59	62	72	72	77
8	Power Transformers	52	52	51	49	46	45	50	60	62	67	70	78	78	83
9	Oil Switches	65	65	65	65	59	58	67	78	79	79	89	102	102	110
10	Motors	31	32	33	33	31	32	37	45	46	49	53	63	63	66
11	Line Transformers	67	69	68	64	64	64	72	90	93	96	100	113	113	121
12	Meters-Electric	55	55	55	55	55	55	61	69	74	80	80	80	78	81
13	Treated Pine Poles	23	24	27	28	33	39	37	41	43	43	42	44	46	49
14	Standard Cross Arms	13	16	17	19	22	23	25	35	37	34	36	41	42	42
15	Standard Galv. Steel Guy Wire	17	17	17	18	18	18	19	29	35	38	40	42	43	51
16	Fibre Conduit	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Plastic Conduit	-	-	-	-	-	-	-	-	-	-	-	-	179	170
18	Mercury Luminaires w/Standard	30	30	31	31	31	31	32	40	44	48	47	53	52	51
19	Power Wire & Control Cable	31	39	40	40	40	40	48	56	65	66	66	75	77	74
20	Overhead Conductor-Transmission	29	28	31	32	32	32	40	48	52	48	52	59	63	69
21	Underground Conductor-Transmission	25	29	30	29	28	28	34	41	50	56	56	59	61	59
22	Overhead Conductor-Distribution	26	25	27	28	28	28	35	43	46	43	46	52	56	61
23	Underground Conductor-Distribution	27	31	32	32	31	31	36	44	54	59	59	63	64	64
24	Service Cable	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	Condensers & Tubes	27	27	27	27	26	27	30	32	33	36	37	40	40	43
26	Turbo-Generators	30	30	30	30	30	31	36	44	47	49	49	54	54	58
27															
28	Gas Compressors	24	25	27	27	26	28	31	31	35	40	40	41	42	43
29	Gas Transmission Line Pipe	34	34	34	34	34	34	36	41	44	48	50	51	52	54
30	Steel Distribution Pipe	25	25	25	25	25	25	28	33	37	41	43	46	47	52
31	Plastic Pipe	-	-	-	-	-	-	-	-	-	-	-	-	175	175
32	Meters-Gas	26	26	26	26	26	26	33	41	42	45	48	55	55	55
33	House Regulators	48	48	48	48	48	48	53	63	64	68	69	74	74	74
34															
35	Cast Iron Pipe	39	39	40	39	39	40	45	58	69	68	67	73	73	73
36	Cast Iron Fittings	24	26	27	27	27	28	33	42	49	48	48	54	56	59
37	Ductile Iron Pipe	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	Chemical Feeders-Small	17	17	17	17	17	18	22	26	31	34	38	40	40	40
39	Chemical Feeders-Large	13	14	15	15	16	19	20	24	29	35	40	42	42	42
40	Gate Valves	26	28	29	29	29	29	34	39	42	45	52	57	57	57
41	Meter Yokes	29	29	30	30	30	31	37	39	40	39	41	48	48	48
42	Corporation Stops	22	22	23	23	23	24	31	36	37	37	37	45	45	45
43	Curb Stops	22	23	23	23	23	25	31	36	38	37	38	45	45	45
44	Hydrants	25	27	27	27	27	27	32	36	39	43	50	55	55	55
45	Meters-Water	33	35	37	37	37	37	40	42	48	52	59	61	61	65
46															
47															
48															
49															
50	Construction Equipment	24	25	28	29	29	29	34	37	39	40	42	45	46	49
51															
52															
53															
54															
55															
56															

M UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	COST INDEX NUMBERS													
		1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
1	Boilers	45	47	54	61	63	65	65	66	66	66	68	70	71	74
2	Coal & Ash Handling Equipment	56	58	68	76	77	79	77	72	72	72	73	73	74	76
3	Pumps	49	50	55	56	56	62	68	68	69	69	70	70	74	77
4	Steam Pipe	56	57	61	67	69	71	71	71	71	71	73	73	73	74
5	Cranes	40	43	45	47	49	52	54	55	55	55	56	56	58	64
6	Regulators	83	85	98	105	108	108	108	96	96	90	87	84	83	84
7	Switchboards	79	81	96	105	108	106	98	81	78	77	77	78	82	90
8	Power Transformers	85	87	100	103	107	103	95	88	84	76	81	84	87	91
9	Oil Switches	112	110	115	131	136	132	109	75	74	64	70	82	80	88
10	Motors	67	68	79	89	93	96	92	87	86	85	85	87	87	88
11	Line Transformers	123	123	127	135	130	125	122	118	107	100	100	101	101	105
12	Meters-Electric	83	79	82	87	89	92	92	91	90	89	89	88	88	89
13	Treated Pine Poles	51	51	55	59	60	57	57	56	56	56	56	56	58	61
14	Standard Cross Arms	42	42	49	50	47	46	46	44	44	44	44	45	47	46
15	Standard Galv. Steel Guy Wire	54	55	58	62	63	63	63	63	63	63	63	63	63	63
16	Fibre Conduit	-	-	-	-	-	-	82	86	86	86	86	84	76	71
17	Plastic Conduit	170	157	159	159	154	154	154	150	146	146	143	139	141	136
18	Mercury Luminaires w/Standard	59	59	60	66	68	68	68	67	67	66	67	66	72	82
19	Power Wire & Control Cable	71	68	72	65	50	50	40	38	40	40	44	55	67	72
20	Overhead Conductor-Transmission	67	73	80	81	79	72	73	73	74	63	69	73	76	78
21	Underground Conductor-Transmission	60	65	72	65	63	65	66	64	63	63	69	77	77	79
22	Overhead Conductor-Distribution	59	67	72	63	58	63	64	62	62	62	64	71	75	78
23	Underground Conductor-Distribution	64	71	78	69	67	70	71	69	67	68	74	82	83	85
24	Service Cable	-	-	93	89	74	69	68	69	67	62	66	68	71	74
25	Condensers & Tubes	44	45	48	53	56	56	56	56	56	57	61	65	71	75
26	Turbo-Generators	59	61	72	80	84	84	78	72	70	70	70	71	72	73
27															
28	Gas Compressors	44	46	49	54	58	61	61	61	61	64	68	73	74	78
29	Gas Transmission Line Pipe	55	56	59	65	67	69	69	69	69	69	71	71	71	72
30	Steel Distribution Pipe	54	56	60	68	69	71	71	71	71	71	71	71	71	73
31	Plastic Pipe	154	147	146	142	140	139	137	133	132	132	128	123	126	126
32	Meters-Gas	55	56	63	66	71	71	71	73	79	79	79	79	86	88
33	House Regulators	74	74	74	76	80	80	80	81	82	82	82	80	80	80
34															
35	Cast Iron Pipe	79	80	86	91	95	95	95	95	95	95	95	95	95	95
36	Cast Iron Fittings	62	64	67	69	72	74	74	74	73	72	72	72	72	75
37	Ductile Iron Pipe	-	-	-	-	-	-	-	96	96	96	96	96	96	96
38	Chemical Feeders-Small	40	41	45	48	49	54	60	60	63	63	64	69	73	77
39	Chemical Feeders-Large	42	44	54	61	68	68	68	68	71	72	71	70	72	79
40	Gate Valves	55	51	57	59	58	58	58	59	62	63	62	62	68	72
41	Meter Yokes	51	57	64	61	59	59	62	63	65	65	66	70	75	77
42	Corporation Stops	46	54	59	59	59	60	62	62	65	65	66	71	79	81
43	Curb Stops	46	54	59	59	59	60	62	63	65	65	67	71	79	82
44	Hydrants	55	52	58	59	59	59	59	59	59	59	59	59	61	66
45	Meters-Water	67	70	77	78	78	78	78	78	84	87	87	93	101	101
46															
47															
48															
49															
50	Construction Equipment	49	51	55	59	62	64	65	67	67	68	70	71	73	76
51															
52															
53															
54															
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M

UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	COST INDEX NUMBERS													
		1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	Boilers	76	78	83	89	94	100	119	143	159	172	186	203	221	245
2	Coal & Ash Handling Equipment	79	84	88	93	95	100	124	150	154	162	175	192	213	225
3	Pumps	78	80	85	89	93	100	127	154	177	183	195	212	235	259
4	Steam Pipe	78	82	86	92	98	100	112	131	143	155	178	206	223	236
5	Cranes	68	72	78	82	88	100	122	139	147	171	186	215	237	267
6	Regulators	84	87	90	92	97	100	128	150	165	170	174	179	189	206
7	Switchboards	92	93	94	96	97	100	131	196	212	222	234	238	261	295
8	Power Transformers	93	95	97	95	93	100	129	157	162	172	182	193	210	223
9	Oil Switches	96	92	93	93	95	100	123	140	143	174	186	195	203	229
10	Motors	89	94	100	104	100	100	110	155	167	186	186	188	195	210
11	Line Transformers	109	106	105	104	100	100	110	133	136	147	158	166	165	194
12	Meters-Electrric	92	95	98	101	101	100	107	126	135	140	144	148	144	160
13	Treated Pine Poles	62	66	69	73	77	100	150	205	192	190	206	234	265	289
14	Standard Cross Arms	44	50	65	60	58	100	162	157	146	155	161	223	244	252
15	Standard Galv. Steel Guy Wire	63	64	72	86	97	100	133	153	151	162	178	205	214	244
16	Fibre Conduit	72	78	83	82	85	100	119	130	133	149	173	203	218	235
17	Plastic Conduit	116	105	100	98	100	100	118	133	129	144	161	187	199	190
18	Mercury Luminaires w/Standard	74	78	94	101	102	100	125	173	194	211	234	263	288	314
19	Power Wire & Control Cable	81	86	84	74	86	100	115	95	97	95	101	109	135	142
20	Overhead Conductor-Transmission	75	84	97	107	103	100	121	167	204	220	189	201	232	250
21	Underground Conductor-Transmission	76	82	86	83	89	100	149	142	142	154	148	188	238	259
22	Overhead Conductor-Distribution	75	84	97	107	102	100	121	166	203	220	192	210	246	257
23	Underground Conductor-Distribution	76	86	94	92	100	100	135	130	132	140	148	196	231	222
24	Service Cable	71	77	92	98	99	100	105	124	126	131	149	183	221	217
25	Condensers & Tubes	80	84	89	94	99	100	109	128	142	157	171	189	209	229
26	Turbo-Generators	72	75	81	89	96	100	111	131	144	158	170	188	206	230
27															
28	Gas Compressors	84	88	91	91	90	100	120	150	161	172	188	213	237	265
29	Gas Transmission Line Pipe	75	80	83	89	98	100	122	145	172	187	212	225	253	290
30	Steel Distribution Pipe	73	76	82	89	97	100	127	142	155	170	194	213	225	254
31	Plastic Pipe	123	111	98	96	100	100	112	116	120	125	129	142	152	142
32	Meters-Gas	88	89	94	100	100	100	111	128	131	136	139	143	149	158
33	House Regulators	81	83	92	98	100	100	106	125	132	136	144	171	201	210
34															
35	Cast Iron Pipe	95	95	96	100	100	100	153	178	180	183	195	201	217	235
36	Cast Iron Fittings	77	80	87	99	99	100	144	142	148	152	163	173	194	209
37	Ductile Iron Pipe	96	96	97	100	100	100	153	182	186	189	201	207	215	228
38	Chemical Feeders-Small	81	81	86	90	92	100	126	180	209	230	249	257	287	316
39	Chemical Feeders-Large	80	81	87	92	94	100	125	177	194	195	201	212	232	249
40	Gate Valves	74	74	79	91	96	100	127	160	191	197	220	252	270	289
41	Meter Yokes	79	87	93	95	95	100	132	139	160	227	246	262	296	320
42	Corporation Stops	85	90	96	99	99	100	126	133	133	136	139	154	168	178
43	Curb Stops	86	90	96	99	99	100	126	133	135	140	146	161	177	187
44	Hydrants	71	76	84	94	95	100	143	185	214	229	261	279	293	315
45	Meters-Water	101	107	108	108	106	100	93	93	98	101	105	108	122	127
46															
47															
48															
49															
50	Construction Equipment	80	84	88	93	95	100	117	141	153	164	178	197	222	246
51															
52															
53															
54															
55															
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M

UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	COST INDEX NUMBERS													
		1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
1	Boilers	264	273	283	292	298	307	330	344	364	380	385	404	413	425
2	Coal & Ash Handling Equipment	224	229	240	246	250	255	270	289	296	300	302	308	318	325
3	Pumps	276	281	284	292	296	300	310	327	342	353	361	391	406	419
4	Steam Pipe	254	226	215	215	215	231	271	264	241	229	222	199	199	216
5	Cranes	302	328	344	384	411	423	442	458	474	482	490	537	598	615
6	Regulators	216	225	227	229	231	236	239	248	253	257	257	256	260	241
7	Switchboards	318	317	319	333	338	343	366	398	429	439	449	499	496	572
8	Power Transformers	231	226	229	237	242	253	264	291	327	337	343	360	371	388
9	Oil Switches	279	280	275	271	268	273	336	380	402	411	399	358	369	395
10	Motors	224	250	260	261	257	266	285	339	365	357	348	376	478	495
11	Line Transformers	208	210	211	212	213	211	212	221	224	222	223	226	230	225
12	Meters-Electric	188	201	200	202	207	205	187	175	174	186	190	189	174	169
13	Treated Pine Poles	291	280	276	283	289	284	289	300	310	323	332	367	416	445
14	Standard Cross Arms	249	240	243	230	228	226	250	291	333	366	381	419	441	464
15	Standard Galv. Steel Guy Wire	254	236	227	233	233	235	249	253	252	252	251	253	254	255
16	Fibre Conduit	175	210	231	225	221	225	301	470	379	260	230	198	222	228
17	Plastic Conduit	158	183	197	189	188	199	280	409	366	316	289	237	251	260
18	Mercury Luminaires w/Standard	333	326	343	358	352	321	321	334	345	353	361	389	408	430
19	Power Wire & Control Cable	132	131	123	107	110	123	137	139	136	130	126	119	121	127
20	Overhead Conductor-Transmission	247	271	246	242	242	218	359	366	355	372	379	334	352	399
21	Underground Conductor-Transmission	270	268	256	242	277	281	298	328	405	461	469	477	477	485
22	Overhead Conductor-Distribution	252	266	259	249	244	229	349	366	354	363	366	322	341	386
23	Underground Conductor-Distribution	206	201	196	202	216	222	223	243	254	258	259	254	253	263
24	Service Cable	207	198	229	209	194	201	250	285	271	264	258	227	240	271
25	Condensers & Tubes	247	256	257	247	222	239	263	268	268	270	270	275	288	308
26	Turbo-Generators	242	256	266	270	270	274	292	302	306	312	315	325	333	343
27															
28	Gas Compressors	280	284	295	301	303	307	325	354	371	388	405	438	446	455
29	Gas Transmission Line Pipe	315	271	262	254	265	272	301	298	269	257	250	233	235	243
30	Steel Distribution Pipe	268	270	282	272	237	250	291	316	318	323	323	327	370	381
31	Plastic Pipe	132	149	157	146	146	159	218	283	285	290	275	230	235	244
32	Meters-Gas	158	146	147	158	166	165	170	177	185	190	190	191	189	190
33	House Regulators	217	221	230	237	236	243	247	253	269	280	283	297	303	302
34															
35	Cast Iron Pipe	234	254	247	265	244	244	266	282	278	275	275	275	278	266
36	Cast Iron Fittings	216	232	229	240	259	289	296	317	324	324	324	350	377	370
37	Ductile Iron Pipe	228	262	249	281	246	246	275	278	271	271	271	271	273	250
38	Chemical Feeders-Small	341	353	358	366	373	379	398	410	424	430	432	444	453	453
39	Chemical Feeders-Large	273	286	294	306	324	341	353	379	402	418	423	438	437	477
40	Gate Valves	321	358	375	395	417	441	468	517	530	540	548	561	524	540
41	Meter Yokes	336	389	389	383	394	399	445	470	478	507	516	551	566	603
42	Corporation Stops	189	200	207	212	220	220	240	254	257	273	279	303	308	318
43	Curb Stops	198	210	220	225	233	233	254	270	273	289	296	321	330	348
44	Hydrants	352	384	385	414	439	456	480	521	558	560	560	559	561	577
45	Meters-Water	128	141	148	135	135	137	140	143	152	160	173	195	175	200
46															
47															
48															
49															
50	Construction Equipment	263	269	273	276	280	286	295	281	298	320	316	324	331	333
51															
52															
53															
54															
55															
56															

M UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	COST INDEX NUMBERS														
											2005		2006		2007	
		1996	1997	1998	1999	2000	2001	2002	2003	2004	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1
1	Boilers	433	443	452	460	467	474	481	489	517	535	550	565	578	590	604
2	Coal & Ash Handling Equipment	328	333	344	351	353	357	359	362	397	426	426	425.4	431	441	453
3	Pumps	440	476	496	510	528	524	525	544	557	567	575	592.3	602	620	640
4	Steam Pipe	215	204	190	183	178	170	167	160	194	270	286	292	299	307	304
5	Cranes	615	656	689	728	747	749	749	749	800	817	817	816.8	817	817	817
6	Regulators	234	232	234	237	242	240	243	255	261	271	276	290.3	343	360	375
7	Switchboards	620	656	662	689	749	813	892	983	1066	1111	1173	1227	1340	1447	1596
8	Power Transformers	370	371	400	400	400	400	383	375	486	540	545	583.7	591	648	671
9	Oil Switches	399	409	415	415	409	408	399	391	382	379	389	412	420	429	436
10	Motors	475	467	476	497	533	535	541	543	610	691	695	685.7	658	683	601
11	Line Transformers	219	206	210	210	209	217	223	225	237	250	258	298.8	345	397	405
12	Meters-Electric	172	187	193	181	176	206	241	263	290	276	276	276	283	283	291
13	Treated Pine Poles	463	473	471	473	471	489	505	515	534	541	554	562.3	601	600	604
14	Standard Cross Arms	466	477	443	413	417	437	433	411	394	440	435	451.1	456	487	471
15	Standard Galv. Steel Guy Wire	261	280	314	313	318	249	220	227	271	302	302	300.7	280	323	323
16	Fibre Conduit	204	209	199	225	246	226	275	252	250	284	284	432.2	432	460	390
17	Plastic Conduit	252	256	251	266	281	291	319	311	323	354	354	447.3	447	527	495
18	Mercury Luminaires w/Standard	460	471	469	472	479	492	529	571	583	601	615	637.4	774	808	826
19	Power Wire & Control Cable	121	121	119	112	110	108	103	99.8	112	132	137	159.5	187	263	265
20	Overhead Conductor-Transmission	402	405	420	354	398	426	409	404	457	491	540	633.3	698	742	770
21	Underground Conductor-Transmission	487	487	487	493	485	468	461	462	519	536	559	614.6	615	615	615
22	Overhead Conductor-Distribution	386	387	399	345	381	403	388	387	437	467	515	600.3	648	692	715
23	Underground Conductor-Distribution	266	263	265	268	270	257	245	239	264	295	308	342.2	343	457	459
24	Service Cable	267	264	264	249	260	265	259	266	297	313	347	396	396	432	439
25	Condensers & Tubes	305	306	309	290	284	287	291	304	388	439	433	447.3	465	466	506
26	Turbo-Generators	348	364	369	371	387	372	380	395	397	411	400	401.8	424	440	452
27																
28	Gas Compressors	461	470	478	480	483	487	495	497	503	506	586	535.3	544	557	574
29	Gas Transmission Line Pipe	269	272	273	267	263	258	256	257	377	449	452	440.4	460	525	482
30	Steel Distribution Pipe	376	388	389	399	428	424	421	448	637	875	855	924.4	954	829	839
31	Plastic Pipe	249	251	252	255	265	295	304	308	325	351	351	393	393	509	509
32	Meters-Gas	192	196	196	191	202	209	202	193	183	185	184	187.6	197	205	231
33	House Regulators	303	303	307	306	305	312	319	318	323	336	339	343.8	356	377	377
34																
35	Cast Iron Pipe	268	279	281	285	291	297	299	301	306	341	341	345.9	346	402	402
36	Cast Iron Fittings	368	379	379	378	378	384	476	500	514	520	520	660.6	690	706	720
37	Ductile Iron Pipe	251	268	270	279	290	292	292	292	276	274	274	283.2	283	327	327
38	Chemical Feeders-Small	462	476	514	522	546	561	563	566	606	640	661	669.4	596	640	676
39	Chemical Feeders-Large	493	506	537	569	562	581	612	612	597	576	576	586.2	544	531	570
40	Gate Valves	553	592	611	630	651	685	691	691	704	718	718	718.4	720	720	720
41	Meter Yokes	670	673	677	679	699	708	713	737	762	769	794	793.6	1111	1111	1169
42	Corporation Stops	329	329	329	329	338	341	344	353	364	367	367	367.2	527	527	527
43	Curb Stops	361	361	361	361	371	374	377	387	399	403	403	402.7	577	577	577
44	Hydrants	625	795	840	874	909	961	970	970	980	989	989	989.2	1097	1097	1116
45	Meters-Water	207	197	197	198	205	206	207	207	207	207	207	234.7	248	260	262
46																
47																
48																
49																
50	Construction Equipment	336	351	380	385	389	391	396	402	414	427	443	448.3	461	463	470.6
51																
52																
53																
54																
55																
56																

M UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	COST INDEX NUMBERS													
		2008		2009		2010		2011		2012		2013		2014	
		Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1
1	Boilers	596	616	620	599	608	620	624	634	649	649	669	653	661	665
2	Coal & Ash Handling Equipment	478	537	543	513	499	503	522	536	550	559	562	563	580	581
3	Pumps	643	663	673	675	703	704	706	756	781	787	799	846	859	922
4	Steam Pipe	324	400	454	413	376	417	419	448	438	455	439	425	429	431
5	Cranes	817	899	899	899	899	899	899	899	899	899	899	965	965	1007
6	Regulators	401	427	389	390	402	408	410	418	415	428	422	428	441	425
7	Switchboards	1791	1954	2077	2218	2373	2504	2616	2757	2879	3034	3173	3319	3471	3594
8	Power Transformers	694	725	746	745	780	788	804	814	818	826	815	814	813	816
9	Oil Switches	437	455	460	461	469	475	480	483	483	485	485	488	498	500
10	Motors	635	674	696	719	717	695	713	770	777	782	804	837	849	851
11	Line Transformers	615	505	534	560	588	617	630	650	673	690	737	756	799	819
12	Meters-Electric	292	293	295	295	307	307	295	294	288	291	295	298	303	305
13	Treated Pine Poles	611	643	653	665	672	686	664	678	687	697	700	700	675	675
14	Standard Cross Arms	464	486	518	501	482	465	446	446	452	453	464	466	440	434
15	Standard Galv. Steel Guy Wire	351	381	548	536	550	405	405	405	404	423	423	488	458	486
16	Fibre Conduit	411	420	468	468	380	380	390	390	419	419	417	417	497	497
17	Plastic Conduit	522	526	609	609	463	463	468	468	521	521	477	477	478	478
18	Mercury Luminaires w/Standard	839	899	1024	1053	1087	972	990	1034	1052	1079	1061	1077	990	993
19	Power Wire & Control Cable	242	250	228	234	213	220	245	251	268	270	271	270	267	254
20	Overhead Conductor-Transmission	860	985	985	553	700	714	675	782	650	659	701	729	729	740
21	Underground Conductor-Transmission	877	927	919	929	906	885	973	971	977	1016	1026	1052	1083	1093
22	Overhead Conductor-Distribution	793	898	898	539	661	682	672	772	647	656	686	710	716	735
23	Underground Conductor-Distribution	499	541	631	609	515	518	563	577	621	647	617	654	631	645
24	Service Cable	472	510	511	390	430	460	516	579	497	505	502	512	530	562
25	Condensers & Tubes	496	603	516	462	473	525	527	575	580	566	567	528	536	549
26	Turbo-Generators	457	538	468	417	439	488	474	501	498	487	564	480	478	483
27															
28	Gas Compressors	581	603	621	626	625	631	633	656	662	677	674	692	693	707
29	Gas Transmission Line Pipe	502	604	600	510	444	506	510	525	586	616	542	535	626	627
30	Steel Distribution Pipe	833	1122	1019	929	911	987	1081	1123	1350	1327	1305	1276	1253	1266
31	Plastic Pipe	541	541	644	644	464	464	470	470	535	535	464	464	403	403
32	Meters-Gas	241	250	261	252	257	252	252	256	261	271	271	272	341	342
33	House Regulators	387	392	412	400	406	414	425	430	432	438	443	443	454	454
34															
35	Cast Iron Pipe	421	468	541	541	563	563	550	550	565	676	688	697	770	779
36	Cast Iron Fittings	783	837	897	909	986	987	961	961	1091	1120	1148	1168	1230	1395
37	Ductile Iron Pipe	363	363	485	485	521	521	500	500	524	524	545	545	575	575
38	Chemical Feeders-Small	817	819	831	880	880	880	907	908	1068	1086	1092	1203	1249	1249
39	Chemical Feeders-Large	676	683	654	700	700	700	633	715	753	770	774	803	805	805
40	Gate Valves	736	736	759	759	736	778	762	762	755	755	770	790	803	824
41	Meter Yokes	1169	1169	1202	1202	1202	1241	1241	1241	1323	1594	1594	1594	1594	1594
42	Corporation Stops	527	527	527	527	527	542	542	542	542	723	723	723	723	723
43	Curb Stops	577	577	577	577	577	582	582	582	582	739	739	739	739	739
44	Hydrants	1133	1133	1155	1155	1150	1081	1089	1089	1132	1132	1166	1189	1221	1339
45	Meters-Water	373	373	373	373	374	376	379	379	379	379	380	381	381	381
46															
47															
48															
49															
50	Construction Equipment	474	483	499	502	502	501	505	516	527	539	547	552	554	562
51															
52															
53															
54															
55															
56															

M

UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	COST INDEX NUMBERS													
		2015		2016		2017		2018		2019		2020		2021	
		Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1
1	Boilers	669	691	697	698	700	681	683	707	710	739	738	743	745	
2	Coal & Ash Handling Equipment	584	583	582	584	589	595	596	608	620	630	640	664	638	
3	Pumps	958	963	1043	1076	1120	1244	1248	1345	1401	1492	1526	1639	1640	
4	Steam Pipe	417	416	404	411	421	415	407	462	483	468	481	469	492	
5	Cranes	1007	1007	1007	1007	1007	1007	1041	1083	1108	1108	1141	1175	1222	
6	Regulators	416	406	396	403	412	416	420	430	436	437	442	436	445	
7	Switchboards	3757	3760	3931	3930	4109	4300	4461	4629	4847	4852	5080	5367	5620	
8	Power Transformers	812	801	795	798	822	827	868	879	901	901	902	895	911	
9	Oil Switches	500	502	502	501	501	503	505	507	511	521	530	533	539	
10	Motors	859	857	869	869	893	883	910	917	937	1006	1023	1026	963	
11	Line Transformers	854	856	884	882	918	946	982	1008	1048	1048	1086	1129	1170	
12	Meters-Electric	307	307	307	298	298	298	304	304	306	306	323	323	332	
13	Treated Pine Poles	670	658	676	678	670	730	665	668	687	693	799	798	706	
14	Standard Cross Arms	458	448	457	458	456	451	450	450	456	456	508	512	535	
15	Standard Galv. Steel Guy Wire	486	486	486	486	515	515	515	515	541	541	623	623	671	
16	Fibre Conduit	475	475	430	430	412	412	511	511	523	523	525	525	407	
17	Plastic Conduit	479	479	468	468	452	452	514	514	521	521	549	549	611	
18	Mercury Luminaires w/Standard	981	1018	986	981	998	942	964	1008	1130	1085	1188	1206	1046	
19	Power Wire & Control Cable	258	253	224	221	225	228	246	253	255	257	261	259	303	
20	Overhead Conductor-Transmission	743	743	777	777	740	740	838	838	885	885	919	919	483	
21	Underground Conductor-Transmission	1095	1103	1108	1108	1113	1180	1252	1271	1329	1329	1339	1385	1435	
22	Overhead Conductor-Distribution	747	750	768	768	741	745	785	801	818	834	868	868	539	
23	Underground Conductor-Distribution	622	637	589	589	539	562	561	572	605	605	622	650	702	
24	Service Cable	592	600	580	578	580	593	496	544	490	540	567	564	541	
25	Condensers & Tubes	547	551	520	535	536	510	516	569	583	574	509	566	604	
26	Turbo-Generators	485	551	538	561	579	506	507	537	560	548	462	562	607	
27															
28	Gas Compressors	713	720	722	727	728	735	747	759	779	783	787	795	793	
29	Gas Transmission Line Pipe	616	589	535	544	570	601	615	693	716	689	680	639	733	
30	Steel Distribution Pipe	1243	1189	1088	1116	1175	1247	1218	1382	1432	1394	1590	1555	1564	
31	Plastic Pipe	403	403	403	403	394	394	410	410	413	413	447	447	559	
32	Meters-Gas	372	372	388	388	442	442	475	477	511	511	489	490	469	
33	House Regulators	469	469	481	481	487	487	533	533	558	565	559	559	549	
34															
35	Cast Iron Pipe	758	748	731	731	809	808	867	868	878	881	912	877	885	
36	Cast Iron Fittings	1278	1322	1380	1418	1478	1478	1481	1565	1627	1736	1883	1955	2130	
37	Ductile Iron Pipe	579	579	600	600	622	622	715	715	721	721	768	768	781	
38	Chemical Feeders-Small	1316	1404	1471	1471	1496	1589	1618	1738	1792	1871	2019	2106	2176	
39	Chemical Feeders-Large	805	805	842	842	863	891	900	939	965	990	1080	1140	1145	
40	Gate Valves	814	814	868	868	825	825	771	789	812	832	863	863	1105	
41	Meter Yokes	1594	1594	1594	1594	1594	1706	1706	1706	1706	1768	1768	1821	1821	
42	Corporation Stops	723	723	723	723	723	723	723	723	773	861	861	887	887	
43	Curb Stops	780	780	780	780	780	780	780	780	835	929	929	957	957	
44	Hydrants	1418	1591	1694	1694	1681	1681	1735	1759	1803	1830	1886	1886	2086	
45	Meters-Water	400	400	403	403	404	418	434	434	443	443	459	459	485	
46															
47															
48															
49															
50	Construction Equipment	564	568	570	574	575	579	580	575	600	609	613	620	621	
51															
52															
53															
54															
55															
56															

Cost Trends Of

Water Utility Construction

COST TREND TABLES
1912 to January 1, 2021

COST TRENDS OF WATER UTILITY CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	NARUC	COST INDEX NUMBERS													
			1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
1	**Source of Supply Plant**															
2	Collecting & Impounding Res.	305	7	7	7	7	9	13	15	15	17	16	16	16	16	16
3																
4																
5																
6																
7	**Pumping Plant**															
8	Structures & Improvements	304	8	8	8	9	11	16	17	18	20	18	18	18	19	18
9	Electric Pumping Equipment	311	-	-	15	15	17	20	22	24	24	23	21	22	23	23
10																
11																
12																
13																
14	**Water Treatment Plant**															
15	Structures & Improvements	304	8	8	8	9	11	16	17	18	20	18	18	18	19	18
16	Large Treatment Plant Equip.	320	9	9	9	9	11	14	16	17	20	19	18	18	20	20
17	Small Treatment Plant Equip.	320	10	10	10	10	13	17	19	19	22	20	20	20	21	20
18																
19																
20																
21																
22	**Transmission Plant**															
23	Steel Reservoirs	330	4	4	4	12	15	17	19	20	15	13	12	13	13	13
24	Elevated Steel Tanks	330	4	4	4	11	14	16	18	19	16	13	11	12	11	10
25	Concrete Reservoirs	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26																
27	Cast Iron Mains	331	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	Steel Mains	331	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	Concrete Cylinder Mains	331	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30																
31																
32																
33	**Distribution Plant**															
34	Mains-Average All Types	331	9	10	8	9	11	16	19	20	22	22	20	21	22	21
35	Cast Iron Mains	331	9	10	9	9	12	18	20	22	25	24	22	23	24	23
36	Cement-Asbestos Mains	331	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	Steel Mains	331	6	7	6	7	8	11	13	13	14	15	14	14	14	15
38	PVC Mains	331	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	Services Installed	333	6	6	5	6	6	9	10	11	12	13	12	12	13	13
40	Meters	334	23	23	23	23	26	29	35	37	37	37	37	37	37	37
41	Meter Installations	334	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	Hydrants Installed	335	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43																
44																
45	**Miscellaneous Items**															
46	Flocculating Equipment-Installed		14	16	13	14	26	38	31	29	29	24	25	26	24	23
47	Clarifier Equipment-Installed		-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	Filter Gallery Piping-Installed		8	8	8	8	10	14	16	18	20	18	17	18	19	19
49																
50																
51																
52																
53																
54																
55																
56																

W-1

COST TRENDS OF WATER UTILITY CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	NARUC	COST INDEX NUMBERS													
			1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
1	**Source of Supply Plant**															
2	Collecting & Impounding Res.	305	17	17	17	17	17	16	14	14	15	15	15	17	17	17
3																
4																
5																
6																
7	**Pumping Plant**															
8	Structures & Improvements	304	19	18	18	18	17	16	15	15	16	16	16	18	18	18
9	Electric Pumping Equipment	311	23	23	23	22	22	22	22	23	24	24	25	26	26	26
10																
11																
12																
13																
14	**Water Treatment Plant**															
15	Structures & Improvements	304	19	18	18	18	17	16	15	15	16	16	16	18	18	18
16	Large Treatment Plant Equip.	320	20	20	20	20	20	19	17	17	18	18	18	20	20	20
17	Small Treatment Plant Equip.	320	20	20	20	20	20	19	17	17	19	19	19	21	21	21
18																
19																
20																
21																
22	**Transmission Plant**															
23	Steel Reservoirs	330	12	12	12	12	11	10	9	9	12	11	12	14	14	14
24	Elevated Steel Tanks	330	11	10	10	10	10	9	8	8	10	10	11	12	13	13
25	Concrete Reservoirs	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26																
27	Cast Iron Mains	331	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	Steel Mains	331	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	Concrete Cylinder Mains	331	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30																
31																
32																
33	**Distribution Plant**															
34	Mains-Average All Types	331	21	21	20	20	20	20	18	18	19	19	20	21	22	22
35	Cast Iron Mains	331	23	21	20	21	21	20	18	18	20	20	21	23	24	24
36	Cement-Asbestos Mains	331	-	-	-	-	-	-	-	-	-	-	31	32	32	33
37	Steel Mains	331	15	15	15	16	16	16	14	13	14	14	14	16	16	16
38	PVC Mains	331	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	Services Installed	333	13	13	13	14	14	14	13	11	12	13	13	14	14	14
40	Meters	334	37	37	37	37	37	37	37	35	26	26	26	31	32	32
41	Meter Installations	334	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	Hydrants Installed	335	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43																
44																
45	**Miscellaneous Items**															
46	Flocculating Equipment-Installed		23	22	22	22	21	20	20	20	21	21	23	26	25	25
47	Clarifier Equipment-Installed		-	-	-	-	-	-	-	-	-	-	-	17	23	24
48	Filter Gallery Piping-Installed		19	18	18	18	18	18	15	16	18	18	18	19	20	20
49																
50																
51																
52																
53																
54																
55																
56																

W-1

COST TRENDS OF WATER UTILITY CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	NARUC	COST INDEX NUMBERS													
			1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953
1	**Source of Supply Plant**															
2	Collecting & Impounding Res.	305	17	18	20	20	20	21	23	27	31	32	33	35	36	38
3																
4																
5																
6																
7	**Pumping Plant**															
8	Structures & Improvements	304	18	19	20	21	21	22	24	28	32	35	36	38	38	39
9	Electric Pumping Equipment	311	26	27	27	27	27	27	31	39	43	45	49	55	55	55
10																
11																
12																
13																
14	**Water Treatment Plant**															
15	Structures & Improvements	304	18	19	20	21	21	22	24	28	32	35	36	38	38	39
16	Large Treatment Plant Equip.	320	21	22	23	24	24	25	28	32	35	36	38	40	41	42
17	Small Treatment Plant Equip.	320	21	22	24	24	24	25	28	33	37	39	41	43	43	44
18																
19																
20																
21																
22	**Transmission Plant**															
23	Steel Reservoirs	330	14	16	16	13	14	16	20	26	29	27	28	30	31	32
24	Elevated Steel Tanks	330	12	15	15	14	15	14	17	23	26	25	26	28	29	31
25	Concrete Reservoirs	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26																
27	Cast Iron Mains	331	-	-	-	-	-	-	-	-	-	-	-	42	43	45
28	Steel Mains	331	-	-	-	-	-	-	-	-	-	-	-	40	40	43
29	Concrete Cylinder Mains	331	-	-	-	-	-	-	-	-	-	-	-	44	45	47
30																
31																
32																
33	**Distribution Plant**															
34	Mains-Average All Types	331	23	23	24	25	25	26	29	35	41	42	43	45	47	48
35	Cast Iron Mains	331	24	25	27	27	28	28	32	39	46	46	48	50	51	53
36	Cement-Asbestos Mains	331	33	34	36	36	37	37	44	49	59	61	62	64	65	67
37	Steel Mains	331	16	17	18	18	18	19	21	24	28	29	31	32	34	36
38	PVC Mains	331	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	Services Installed	333	14	15	16	16	17	17	19	22	25	27	28	29	31	33
40	Meters	334	33	35	37	37	37	37	40	42	48	52	59	61	61	65
41	Meter Installations	334	-	-	-	-	-	-	-	-	-	29	31	34	35	36
42	Hydrants Installed	335	-	-	-	-	-	-	-	-	-	35	37	41	41	43
43																
44																
45	**Miscellaneous Items**															
46	Flocculating Equipment-Installed		25	27	28	28	28	30	33	38	44	45	45	49	49	50
47	Clarifier Equipment-Installed		25	26	27	27	27	29	32	37	43	43	44	46	46	49
48	Filter Gallery Piping-Installed		21	21	22	22	22	23	25	30	35	37	37	39	40	41
49																
50																
51																
52																
53																
54																
55																
56																

W-1

COST TRENDS OF WATER UTILITY CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	NARUC	COST INDEX NUMBERS													
			1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
1	**Source of Supply Plant**															
2	Collecting & Impounding Res.	305	39	41	44	47	49	51	52	53	55	56	57	59	61	64
3																
4																
5																
6																
7	**Pumping Plant**															
8	Structures & Improvements	304	41	43	46	49	50	52	53	53	54	55	56	57	59	61
9	Electric Pumping Equipment	311	55	56	63	69	73	74	74	71	71	71	73	74	78	81
10																
11																
12																
13																
14	**Water Treatment Plant**															
15	Structures & Improvements	304	41	43	46	49	50	52	53	53	54	55	56	57	59	61
16	Large Treatment Plant Equip.	320	44	45	48	50	52	54	55	56	58	59	60	62	64	67
17	Small Treatment Plant Equip.	320	46	47	50	53	54	56	58	58	60	60	62	63	66	68
18																
19																
20																
21																
22	**Transmission Plant**															
23	Steel Reservoirs	330	32	33	38	42	37	36	35	35	35	41	44	45	46	47
24	Elevated Steel Tanks	330	31	33	35	38	38	38	38	37	36	37	38	38	41	44
25	Concrete Reservoirs	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26																
27	Cast Iron Mains	331	47	50	52	56	57	61	62	63	64	65	66	67	69	71
28	Steel Mains	331	44	46	49	52	55	57	57	58	59	60	61	63	65	67
29	Concrete Cylinder Mains	331	48	50	52	54	56	59	60	60	61	62	62	64	66	70
30																
31																
32																
33	**Distribution Plant**															
34	Mains-Average All Types	331	51	53	57	60	63	65	68	69	71	72	73	74	75	76
35	Cast Iron Mains	331	56	59	62	66	68	72	73	75	77	79	79	80	80	81
36	Cement-Asbestos Mains	331	68	70	75	78	81	84	86	86	87	89	88	81	82	82
37	Steel Mains	331	38	40	43	46	48	51	53	55	56	58	60	63	65	66
38	PVC Mains	331	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	Services Installed	333	35	36	39	41	44	46	48	50	51	53	55	58	60	63
40	Meters	334	67	70	77	78	78	78	78	78	84	87	87	93	101	101
41	Meter Installations	334	38	40	44	45	46	48	51	52	54	55	57	59	62	65
42	Hydrants Installed	335	44	44	48	50	51	53	54	55	56	57	58	58	61	64
43																
44																
45	**Miscellaneous Items**															
46	Flocculating Equipment-Installed		52	53	57	58	58	59	60	61	61	62	65	66	67	68
47	Clarifier Equipment-Installed		50	49	53	55	57	58	58	59	60	60	63	65	66	67
48	Filter Gallery Piping-Installed		44	46	48	50	53	54	56	57	58	59	60	61	63	65
49																
50																
51																
52																
53																
54																
55																
56																

W-1

COST TRENDS OF WATER UTILITY CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	NARUC	COST INDEX NUMBERS													
			1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1	**Source of Supply Plant**															
2	Collecting & Impounding Res.	305	67	72	78	86	94	100	115	127	133	139	148	164	179	189
3																
4																
5																
6																
7	**Pumping Plant**															
8	Structures & Improvements	304	64	69	75	84	92	100	117	127	130	137	148	163	181	191
9	Electric Pumping Equipment	311	81	84	89	93	96	100	122	155	174	184	192	205	222	245
10																
11																
12																
13																
14	**Water Treatment Plant**															
15	Structures & Improvements	304	64	69	75	84	92	100	117	127	130	137	148	163	181	191
16	Large Treatment Plant Equip.	320	69	73	79	89	96	100	118	134	144	152	162	175	191	208
17	Small Treatment Plant Equip.	320	70	74	80	90	96	100	120	139	150	160	172	186	204	223
18																
19																
20																
21																
22	**Transmission Plant**															
23	Steel Reservoirs	330	49	53	75	82	85	100	140	159	171	172	173	178	191	208
24	Elevated Steel Tanks	330	48	55	71	80	86	100	152	183	182	183	195	206	228	250
25	Concrete Reservoirs	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26																
27	Cast Iron Mains	331	74	78	84	91	96	100	129	137	142	150	158	166	180	196
28	Steel Mains	331	69	74	80	88	96	100	113	125	133	141	152	166	180	199
29	Concrete Cylinder Mains	331	72	78	80	88	95	100	113	134	138	140	148	162	176	189
30																
31																
32																
33	**Distribution Plant**															
34	Mains-Average All Types	331	77	80	84	94	98	100	110	146	154	162	173	185	202	219
35	Cast Iron Mains	331	82	83	88	97	99	100	143	158	163	167	178	185	202	218
36	Cement-Asbestos Mains	331	82	85	88	97	98	100	127	148	159	167	176	202	212	234
37	Steel Mains	331	68	72	78	88	97	100	115	128	139	151	164	179	197	212
38	PVC Mains	331	-	-	-	-	-	-	25	100	104	108	113	122	132	138
39	Services Installed	333	66	72	79	89	96	100	115	123	130	139	145	160	175	184
40	Meters	334	101	106	108	108	106	100	93	93	98	101	105	108	122	127
41	Meter Installations	334	68	73	79	89	97	100	113	120	131	147	152	162	177	189
42	Hydrants Installed	335	68	72	80	90	96	100	123	143	157	167	182	194	207	222
43																
44																
45	**Miscellaneous Items**															
46	Flocculating Equipment-Installed		69	74	82	93	98	100	139	174	195	218	246	290	350	406
47	Clarifier Equipment-Installed		68	72	82	93	98	100	140	167	181	199	210	232	272	310
48	Filter Gallery Piping-Installed		68	72	78	90	97	100	119	130	136	144	151	158	171	185
49																
50																
51																
52																
53																
54																
55																
56																

W-1

COST TRENDS OF WATER UTILITY CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	NARUC	COST INDEX NUMBERS													
			1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
1	**Source of Supply Plant**															
2	Collecting & Impounding Res.	305	197	206	217	227	234	238	248	255	258	262	270	282	295	302
3																
4																
5																
6																
7	**Pumping Plant**															
8	Structures & Improvements	304	198	206	218	225	233	239	251	265	271	274	281	294	308	316
9	Electric Pumping Equipment	311	260	271	277	282	284	299	311	330	349	355	368	386	428	442
10																
11																
12																
13																
14	**Water Treatment Plant**															
15	Structures & Improvements	304	198	206	218	225	233	239	251	265	271	274	281	294	308	316
16	Large Treatment Plant Equip.	320	227	242	251	262	269	276	286	301	313	322	332	342	348	357
17	Small Treatment Plant Equip.	320	243	259	268	279	286	293	303	317	328	334	343	354	360	366
18																
19																
20																
21																
22	**Transmission Plant**															
23	Steel Reservoirs	330	210	182	184	181	184	196	220	216	229	253	261	248	246	250
24	Elevated Steel Tanks	330	244	197	200	198	207	219	260	268	278	285	277	249	242	252
25	Concrete Reservoirs	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26																
27	Cast Iron Mains	331	208	222	225	236	235	242	253	266	273	279	284	295	305	305
28	Steel Mains	331	215	223	230	234	232	241	255	272	279	287	293	302	316	324
29	Concrete Cylinder Mains	331	203	213	218	232	239	243	258	269	277	288	295	303	311	317
30																
31																
32																
33	**Distribution Plant**															
34	Mains-Average All Types	331	231	239	244	254	255	263	280	295	301	307	311	321	327	332
35	Cast Iron Mains	331	223	245	253	264	263	269	282	296	304	313	320	329	339	341
36	Cement-Asbestos Mains	331	253	244	249	255	259	275	315	340	338	332	319	335	338	354
37	Steel Mains	331	233	228	231	237	242	248	265	277	281	288	295	302	304	311
38	PVC Mains	331	137	151	149	151	150	160	197	217	211	200	183	193	191	204
39	Services Installed	333	198	207	215	221	226	230	245	258	262	272	283	292	300	307
40	Meters	334	128	141	148	135	135	137	140	150	159	162	196	195	175	200
41	Meter Installations	334	207	230	239	247	255	259	269	282	294	310	320	337	347	358
42	Hydrants Installed	335	245	264	270	285	296	307	320	343	363	372	378	385	391	398
43																
44																
45	**Miscellaneous Items**															
46	Flocculating Equipment-Installed		458	496	506	540	560	575	579	580	565	528	539	555	562	566
47	Clarifier Equipment-Installed		356	389	398	431	442	446	451	455	442	416	435	458	492	514
48	Filter Gallery Piping-Installed		201	217	223	234	237	243	251	266	279	289	297	309	319	321
49																
50																
51																
52																
53																
54																
55																
56																

W-1

COST TRENDS OF WATER UTILITY CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	NARUC	COST INDEX NUMBERS									2005		2006		2007	
			1996	1997	1998	1999	2000	2001	2002	2003	2004	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1
1	**Source of Supply Plant**																
2	Collecting & Impounding Res.	305	309	317	318	318	326	336	344	350	373	388	394	400	405	413	439
3																	
4																	
5																	
6																	
7	**Pumping Plant**																
8	Structures & Improvements	304	321	331	337	343	362	378	389	394	421	442	447	456	464	481	494
9	Electric Pumping Equipment	311	450	473	489	505	530	527	529	543	572	604	611	620	619	639	628
10																	
11																	
12																	
13																	
14	**Water Treatment Plant**																
15	Structures & Improvements	304	321	331	337	343	362	378	389	394	421	442	447	456	464	481	494
16	Large Treatment Plant Equip.	320	367	380	391	401	413	428	443	452	466	480	482	499	500	516	533
17	Small Treatment Plant Equip.	320	375	389	401	410	424	439	452	460	480	498	502	520	518	539	559
18																	
19																	
20																	
21																	
22	**Transmission Plant**																
23	Steel Reservoirs	330	251	255	268	268	270	274	275	276	308	329	338	348	375	494	537
24	Elevated Steel Tanks	330	268	273	283	288	299	341	429	431	481	524	524	524	596	657	657
25	Concrete Reservoirs	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26																	
27	Cast Iron Mains	331	311	320	323	328	348	363	383	385	393	411	415	442	451	480	484
28	Steel Mains	331	329	337	342	351	377	391	400	404	451	509	508	530	539	528	527
29	Concrete Cylinder Mains	331	324	331	338	345	372	404	415	415	425	436	440	454	459	460	462
30																	
31																	
32																	
33	**Distribution Plant**																
34	Mains-Average All Types	331	339	347	355	361	377	391	404	407	432	462	464	485	494	524	523
35	Cast Iron Mains	331	348	358	364	370	390	404	421	425	436	457	460	483	492	525	528
36	Cement-Asbestos Mains	331	364	372	375	382	405	423	444	446	460	480	483	538	546	599	597
37	Steel Mains	331	316	322	334	339	346	358	363	367	416	459	460	467	477	494	487
38	PVC Mains	331	211	216	216	219	231	242	253	254	263	277	278	321	321	365	361
39	Services Installed	333	321	323	330	334	348	354	360	368	388	404	407	421	459	478	481
40	Meters	334	207	197	197	198	205	206	207	207	207	207	207	235	248	260	262
41	Meter Installations	334	375	381	387	392	406	417	428	440	456	466	467	482	530	549	552
42	Hydrants Installed	335	418	475	493	508	526	551	565	570	585	597	597	613	647	663	669
43																	
44																	
45	**Miscellaneous Items**																
46	Flocculating Equipment-Installed		579	603	622	642	652	671	683	697	758	801	801	852	852	869	983
47	Clarifier Equipment-Installed		540	562	572	579	593	603	617	630	663	709	709	729	729	760	892
48	Filter Gallery Piping-Installed		328	337	344	349	363	378	398	408	421	438	438	468	470	500	501
49																	
50																	
51																	
52																	
53																	
54																	
55																	
56																	

W-1

COST TRENDS OF WATER UTILITY CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	NARUC	COST INDEX NUMBERS													
			2008		2009		2010		2011		2012		2013		2014	
			Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1
1	**Source of Supply Plant**															
2	Collecting & Impounding Res.	305	457	466	470	465	475	478	492	495	501	502	507	505	515	517
3																
4																
5																
6																
7	**Pumping Plant**															
8	Structures & Improvements	304	516	543	551	536	552	558	571	583	597	600	618	608	621	630
9	Electric Pumping Equipment	311	640	666	679	688	707	701	708	760	780	785	800	844	856	900
10																
11																
12																
13																
14	**Water Treatment Plant**															
15	Structures & Improvements	304	516	543	551	536	552	558	571	583	597	600	618	608	621	630
16	Large Treatment Plant Equip.	320	566	582	614	616	631	638	642	653	669	680	689	697	713	725
17	Small Treatment Plant Equip.	320	602	624	666	669	686	693	706	712	740	754	764	779	800	813
18																
19																
20																
21																
22	**Transmission Plant**															
23	Steel Reservoirs	330	537	722	722	722	722	722	771	771	795	810	778	780	715	742
24	Elevated Steel Tanks	330	680	866	866	866	866	867	1079	1079	1059	1082	1089	1099	1131	1131
25	Concrete Reservoirs	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26																
27	Cast Iron Mains	331	510	534	578	576	601	601	602	610	634	669	691	684	712	743
28	Steel Mains	331	543	606	605	585	593	609	644	658.5	711	708	724	704	694	708
29	Concrete Cylinder Mains	331	468	475	502	502	494	495	510	517	523	526	547	534	535	547
30																
31																
32																
33	**Distribution Plant**															
34	Mains-Average All Types	331	550	588	624	608	617	623	633	644	669	690	698	693	720	733
35	Cast Iron Mains	331	556	579	625	624	647	648	654	660	681	716	733	730	759	781
36	Cement-Asbestos Mains	331	621	632	691	678	638	649	658	683	716	721	712	707	704	721
37	Steel Mains	331	514	582	595	559	565	575	593	606	633	637	638	631	665	665
38	PVC Mains	331	372	374	419	408	353	363	369	389	412	412	391	392	383	383
39	Services Installed	333	501	511	534	534	545	554	568	574	589	600	602	602	603	605
40	Meters	334	373	373	373	373	374	376	379	379	379	379	380	381	381	381
41	Meter Installations	334	572	573	597	598	612	623	635	635	646	673	677	677	688	688
42	Hydrants Installed	335	693	699	732	731	740	721	730	731	757	758	774	784	807	849
43																
44																
45	**Miscellaneous Items**															
46	Flocculating Equipment-Installed		1187	1373	1645	1645	1699	1744	1823	1848	1904	1973	1978	2015	2041	2078
47	Clarifier Equipment-Installed		920	944	997	997	991	1001	1056	1060	1077	1102	1105	1136	1154	1162
48	Filter Gallery Piping-Installed		530	543	589	590	613	614	620	620	641	666	677	680	713	728
49																
50																
51																
52																
53																
54																
55																
56																

W-1

COST TRENDS OF WATER UTILITY CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

Line	CONSTRUCTION AND EQUIPMENT	NARUC	COST INDEX NUMBERS													
			2015		2016		2017		2018		2019		2020		2021	
			Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1
1	**Source of Supply Plant**															
2	Collecting & Impounding Res.	305	526	521	526	532	543	549	559	570	576	575	584	583	605	
3																
4																
5																
6																
7	**Pumping Plant**															
8	Structures & Improvements	304	642	646	655	659	672	671	687	706	717	713	719	730	762	
9	Electric Pumping Equipment	311	928	931	990	1013	1052	1135	1146	1216	1261	1346	1374	1454	1436	
10																
11																
12																
13																
14	**Water Treatment Plant**															
15	Structures & Improvements	304	642	646	655	659	672	671	687	706	717	713	719	730	762	
16	Large Treatment Plant Equip.	320	736	737	755	758	774	785	797	812	832	842	871	890	922	
17	Small Treatment Plant Equip.	320	832	840	861	864	881	897	911	934	960	975	1012	1035	1075	
18																
19																
20																
21																
22	**Transmission Plant**															
23	Steel Reservoirs	330	742	742	742	774	784	784	801	820	832	832	836	836	836	
24	Elevated Steel Tanks	330	1131	1131	1131	1143	1161	1161	1181	1200	1244	1244	1244	1244	1244	
25	Concrete Reservoirs	330	-	-	-	-	-	-	-	-	-	-	-	-	-	
26																
27	Cast Iron Mains	331	733	744	754	759	793	785	810	825	844	858	884	895	931	
28	Steel Mains	331	712	713	697	705	723	726	733	770	792	785	824	830	845	
29	Concrete Cylinder Mains	331	562	575	591	592	601	592	620	626	639	641	638	653	664	
30																
31																
32																
33	**Distribution Plant**															
34	Mains-Average All Types	331	736	738	747	750	774	772	790	801	819	826	847	850	883	
35	Cast Iron Mains	331	780	785	795	797	832	826	855	864	883	894	920	924	952	
36	Cement-Asbestos Mains	331	724	731	741	743	751	746	763	770	784	793	820	831	900	
37	Steel Mains	331	673	670	678	681	697	701	704	717	734	736	748	748	775	
38	PVC Mains	331	387	387	388	388	387	387	397	397	401	401	417	418	471	
39	Services Installed	333	617	616	622	617	638	651	661	667	677	684	706	701	712	
40	Meters	334	400	400	403	403	404	418	434	434	443	443	459	459	485	
41	Meter Installations	334	702	702	709	708.5	722	733	750	750	765	772	790	797	815	
42	Hydrants Installed	335	877	930	971	972	980	981	1012	1024	1049	1063	1101	1104	1184	
43																
44																
45	**Miscellaneous Items**															
46	Flocculating Equipment-Installed		2167	2177	2192	2192	2198	2213	2223	2264	2360	2360	2470	2481	2567	
47	Clarifier Equipment-Installed		1184	1188	1229	1272	1311	1315	1369	1401	1462	1462	1523	1557	1662	
48	Filter Gallery Piping-Installed		727	728	735	738	772	772	801	808	825	834	868	866	900	
49																
50																
51																
52																
53																
54																
55																
56																

Water and Wastewater General Information
Appraisal Work Papers

Cost Indices

AUS Consultants Index of General Support Assets

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AUS Telephone Plant Index

Cost Trend Tables from 1946 to January 1, 2021

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Table of Contents

Trends of Public Utility Construction

Map-Geographic iv

Foreword v

Telephone Plant Index Description v

Index History v

Index Design vi

Index Functions vii

Telephone Plant Index	**Table**	**Page**
North Atlantic Region	T-1	1-7
South Atlantic Region	T-2	8-14
North Central Region	T-3	15-21
South Central Region	T-4	22-28
Plateau Region	T-5	29-35
Pacific Region	T-6	36-42

FOREWORD

The AUS Telephone Plant Index, which follows this foreword was first introduced in 1977 by Associated Utility Services, Inc., and published as part of the Handy-Whitman Index of Public Utility Construction Costs through 1989. In 1990 AUS Consultants, the successor company to Associated Utility Services, Inc., decided to publish the Telephone Plant Index under the name C.A. Turner Utility Reports publication division. In 2005 the index changed its name from C.A. Turner Telephone Plant Index to AUS Telephone Plant Index.

The 1990 AUS Telephone Plant Index (TPI) was the first nationally available TPI based on the Federal Communication Commission (FCC) Uniform System of Accounts (USOA) Part 32. The prior published TPI, also prepared by AUS staff, was based on the earlier USOA Part 31 Standards.

Telephone Plant Index Description

The TPI consists of a separate cost index series for each of six geographic regions shown on the map at page iv. These regions are designated: North Atlantic, South Atlantic, North Central, South Central, Plateau, and Pacific Coast. The regional designation are the same as those used in the prior issues of the cost index and are based on similarity of characteristics among the contiguous 48 states.

Each cost index series within a region consists of one index labeled "Total Plant Account" and up to 31 individual cost index series for the individual plant account identified in the left hand columns.

The Base Year for each cost index is 1973=100. Some plant accounts will not show an index number of 100 at year 1973 due to a subsequent adjustment for FCC Part 31 to Part 32, changes explained later in this foreword. In a few accounts the item described in the account was not included in the index series until after 1973 and the base year is considered the first year of entry.

The index for most plant accounts begins with a single entry in year 1946 and continues with a single number for each year through 1973. Beginning in 1974 there are two index numbers for each year; one for January 1 and one for July 1. These numbers represent the prevailing wages and material prices and weightings at that point in time.

Index History

An index is a tool for identifying the relative price change of an item, or group of items over an identified period of time. Price indexes have been in use for many years for a variety of reasons. One example is an index developed in the eighteenth century by an Italian named Carli to determine the effect of the discovery of America upon the level of prices in Italy of three commodities between the years 1500 and 1750. In the current century, numerous organizations, including the United States Bureau of Statistic, have developed a variety of indexes ranging from the cost of basic commodities to manufactured goods and building construction cost.

Interest in telephone utility cost indexes has varied over time depending on the need to develop reproduction cost values for utility properties. Previous uses of cost indexes included such things as the determination trended original cost in fair value rate jurisdictions and current cost pricing for FASB-33 financial accounting disclosures. Due to changes in rate regulation proceedings and financial disclosure requirements, the need in these two specific areas has declined. Other areas in which reproduction cost indexes were utilized included insurance valuations, property tax valuations, retirement accounting and cost forecasting, etc.

Most recently, interest in cost indexes for the telecommunication industry has increased due to the possible implementation of price cap regulation. This form of regulation incorporates the use of changes in price levels by regulators to set rates. Under one proposal, customer tariff prices are adjusted to give consideration to productivity improvements, therefore, the development of the construction cost indexes will have an indirect bearing on the level of the company revenue requirements.

Index Design

The telephone plant index was designed as a product which could be utilized by any of the various telephone operating companies to develop the reproduction cost of the company's property at the selected test year date. Due to the variation of many design construction specifics from one company to another, it is impossible to produce an index which will exactly mirror the construction cost changes for each company. In circumstances where companies desire a more specific reproduction cost of their property, a custom index should be prepared or, alternately, the company's property should be inventoried and unit priced. Such unit cost work efforts, of course, will be significantly more expensive and time consuming to complete.

As indicated, the telephone plant index is a standard index which is published on a semi-annual basis. The yearly average index is calculated via a 1-2-1 weighting process which is the sum of 25% of the January index, 50 of the July index, and 25% of the succeeding year's January index.

In general terms, the telephone plant index was constructed around the FCC Part 32 system of accounts to aid companies in ease of application of the published index. Each embedded property account was reviewed to determine the components which comprise the large segment of the property investment in each account. In this manner, the resulting telephone plant index was a reasonable proxy for determining the reproduction cost of the embedded investment of the independent telephone industry.

With the exception of the General Support Asset Group, the FCC Part 32 based indexes were adjusted for all index years 1987 and prior to compensate for the change in overhead capitalization policies effective with the new regulations. That is, under FCC Part 31 regulation, a greater level of overheads were previously incorporated in the plant in service investments contained on the company's books and records. The adjusted indexes for the years 1946 through 1987, when applied to the company's original costs, will produce the applicable reproduction cost under FCC Part 32 accounting treatment. The index adjustment for Part 31 to Part 32 accounting results in the plant accounts not having an index number of 100 at the 1973 base year.

The AUS Telephone Plant Index was designed around thirty-six component indexes representing the basic components of material and labor which make up the construction of the various telephone plant accounts. The components include such items as Buildings, Switching Equipment, Circuit Equipment, Poles, Cable, Wire Vehicles, Tools, Furniture, Installer Labor and Lineman Labor, etc. The components were composited together into account level indexes based upon material and labor weights derived from a study of independent telephone construction cost experience.

Introduction of new technologies into a reproduction cost index required the review of composite weight included in development of the account level index to reflex the new mix of property.

The goal of the telephone plant index was to produce a product which when utilized together with each companies' books and records would produce a reproduction cost value.

The AUS Telephone Plant Index does not reflect replacement cost inasmuch as it was designed to produce the reproduction cost (the cost in today's dollars to reproduce the company's embedded plant in service).

Index Functions

The AUS Telephone Plant Index series was initially prepared to address a very specific function. That is, it was designed to enable companies to produce trended original cost values to the historical original cost of plant in service on the companies' books and records. This trended original cost is a general representation of the cost to reconstruct the property in question at the price level of the selected period. If a company desires a more specific estimate of reconstruction, the property specific indexes can be developed giving consideration to the actual history of the company's wages and material cost in comparison to the labor and material costs. For an even more specific cost estimated to rebuild the plant in serve, engineering estimated can be completed based upon the property inventory and the current unit costs for constructing the various plant categories.

In summary, the index was designed to be applied on a vintage and account level basis to determine the reproduction cost of local distribution companies' plant in service, as of the selected price level.

A tool can be utilized correctly only within the boundaries for which the product was originally designed. Uses above and beyond the scope of the original design may or may not produce reliable results. That is, the use of a generalized index to prepare a reproduction cost will provide general results within the range of reasonableness. If more specific or exact results are required, alternative methods or procedures (i.e., custom indexes or specific detail pricing) should be employed.

An effort has been made to carefully construct an index which produces a reasonable proxy of reproduction cost for the telephone plant or local distribution companies giving consideration to the fact that there are variances in material and labor costs, as well as, construction methods and practices from one company to another. Nevertheless, we believe that there is sufficient similarity in the cost trends to make the AUS Telephone Plant Index a useful tool when carefully applied to a company's historical cost base.

North Atlantic

SCHEDULE NO. T-1

AUS TELEPHONE PLANT INDEX

NORTH ATLANTIC REGION 1973-100

LINE NO	PLANT IN SERVICE DESCRIPTION	FCC Acct	COST INDEX NUMBER																LINE NO
			1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	
1	Total Plant		85	89	91	91	92	95	96	96	94	94	97	97	96	96	97	96	1
2																			2
3																			3
4	Motor Vehicles	2112	57	57	63	67	67	70	74	74	74	77	81	84	87	89	88	87	4
5	Aircraft	2113	56	56	62	66	66	69	73	73	73	75	80	83	86	88	86	86	5
6	Special Purpose Vehicles	2114	30	34	38	41	42	46	47	48	49	51	56	60	62	65	66	67	6
7	Garagare Work Equipment	2115	36	38	42	44	46	51	51	52	53	56	61	65	67	69	70	70	7
8	Other Work Equipment	2116	50	50	52	54	55	59	59	61	62	64	67	70	71	74	75	77	9
9																			10
10																			11
11	Buildings	2121	24	28	32	34	35	37	38	39	41	42	46	49	50	52	53	52	12
12	Furniture	2122	43	43	46	47	50	56	56	57	57	60	64	68	70	70	71	71	12
13	Office Equipment	2123	67	67	69	69	70	75	74	76	77	79	82	85	87	88	88	89	13
14	General Purpose Computer	2124	67	67	69	69	70	75	74	76	77	79	82	85	87	88	88	89	14
15																			15
16																			16
17	Analog Electronic Switching	2211	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
18	Ditgital Electronic Switching	2212	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
19																			19
20																			20
21	Electro Mechanical Switching	2215	36	48	49	57	62	64	67	66	64	65	68	70	69	72	70	72	21
22																			22
23	Operator Systems	2220	37	50	51	59	64	67	69	68	66	67	70	72	71	73	71	74	23
24																			24
25																			25
26																			26
27	Radio System-Analog	22311	51	57	62	63	63	66	64	60	58	58	49	49	46	47	36	36	27
28	Radio System-Digital	22312	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
29	Circuit Equipment-Analog	22321	347	392	417	411	410	423	410	401	388	311	319	317	303	299	312	297	29
30	Circuit Equipment-Digital	22322	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
31																			31
32	Public Telephone Term Eq	2351	148	151	145	145	148	154	143	144	146	158	159	164	164	164	165	165	32
33																			33
34																			34
35	Poles	2411	33	37	39	41	42	45	47	49	51	50	54	58	59	59	60	61	35
36	Aerial Cable-Metallic	24211	44	47	49	49	51	58	61	64	64	68	74	72	70	71	72	70	36
37	Aerial Cable-Fiber	24212	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38	Underground Cable-Metallic	24221	48	52	54	53	55	64	67	71	69	75	82	78	75	76	78	75	38
39	Underground Cable-Fiber	24222	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40	Buried Cable-Metallic	24231	50	54	56	55	57	66	70	74	72	78	85	81	77	78	80	76	40
41	Buried Cable-Fiber	24232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41
42	Submarine Cable-Metallic	24241	43	45	48	48	50	56	59	62	61	65	71	69	68	69	71	70	42
43	Submarine Cable-Fiber	24241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43
44	Intra Building Cable-Metallic	24261	43	47	49	48	50	58	61	64	63	68	74	71	69	70	72	70	44
45	Intra Building Cable-Fiber	24262	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45
46	Aerial Wire	2431	33	36	38	38	40	45	47	50	50	55	58	57	57	59	61	62	46
47	Conduit Systems	2441	54	55	57	59	60	63	64	64	65	65	67	69	71	72	73	74	47
48																			48
49	Aerial Cable-FTTP (Distribution)	24213	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49
50	Underground Cable-FTTP (Dist.)	24223	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50
51	Buried Cable-FTTP (Distribution)	24233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51
52	Submarine Cable-FTTP (Dist.)	24243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52
53	Intra Building Cable-FTTP (Dist.)	24263	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53
54																			54

SCHEDULE NO. T-1

AUS TELEPHONE PLANT INDEX

NORTH ATLANTIC REGION 1973-100

LINE NO	COST INDEX NUMBER																							LINE NO
	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974 Jan 1	1974 Jul 1	1975 Jan 1	1975 Jul 1	1976 Jan 1	1976 Jul 1	1977 Jan 1	1977 Jul 1	1978 Jan 1	1978 Jul 1	1979 Jan 1	1979 Jul 1	
1	95	94	94	94	95	96	96	97	101	101	102	105	108	113	116	116	117	120	122	123	125	128	131	135	1
2																									2
3																									3
4	87	86	86	85	85	86	88	89	92	97	99	100	102	105	116	116	123	124	131	132	140	143	149	155	4
5	85	85	84	84	84	84	86	88	91	96	99	100	102	109	119	123	128	131	136	140	146	151	157	163	5
6	67	68	70	72	74	77	81	85	89	93	96	100	103	114	130	141	147	151	158	162	171	177	187	195	6
7	71	71	72	73	76	79	82	85	90	94	96	100	114	118	134	139	143	147	153	159	165	172	180	189	7
8	78	79	79	79	81	85	88	93	98	100	100	100	100	111	118	122	119	122	124	130	131	137	141	147	8
9																									9
10																									10
11	53	54	56	57	59	61	64	68	74	84	91	100	107	119	125	128	126	131	132	136	140	148	154	163	11
12	71	71	72	72	73	77	80	83	89	91	93	100	103	114	130	128	129	135	136	144	149	155	160	171	12
13	89	90	90	90	91	92	93	93	96	97	99	100	101	105	109	111	110	112	111	113	114	118	119	123	13
14	89	90	90	90	91	92	93	93	96	97	99	100	100	100	102	103	100	100	98	90	90	90	90	90	14
15																									15
16																									16
17	0	0	0	0	0	0	0	0	0	0	0	104	103	106	110	111	111	113	113	113	115	119	122	125	17
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	105	105	100	95	95	95	96	96	18
19																									19
20																									20
21	71	76	78	75	72	71	75	81	84	88	98	104	106	110	115	120	124	127	132	136	140	145	151	156	21
22																									22
23	73	77	79	76	72	71	76	81	85	89	98	104	106	108	111	114	117	119	121	122	125	128	132	136	23
24																									24
25																									25
26																									26
27	46	49	52	60	58	63	62	66	78	97	102	104	102	102	102	102	97	98	103	104	106	106	103	103	27
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
29	273	234	228	214	224	210	173	159	163	128	108	104	105	108	111	112	111	111	115	118	118	119	120	122	29
30	0	0	0	0	0	0	0	0	0	0	0	104	104	104	105	105	110	116	121	126	126	127	123	120	30
31																									31
32	165	165	166	130	122	123	120	118	108	107	108	107	106	107	110	109	109	111	112	114	116	119	123	127	32
33																									33
34																									34
35	62	63	65	66	68	71	76	79	83	88	97	107	119	131	144	157	158	160	164	169	176	183	196	208	35
36	70	70	70	73	77	81	84	88	96	97	100	107	114	125	129	126	130	135	140	144	148	152	158	170	36
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38	74	73	72	75	80	84	87	91	100	99	100	107	114	127	130	125	129	134	138	143	145	149	155	168	38
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40	76	74	73	77	81	85	88	91	101	99	100	107	114	128	131	124	128	133	138	142	144	147	153	167	40
41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41
42	70	70	71	73	77	81	84	88	95	96	101	107	113	123	128	126	131	136	141	145	150	154	160	171	42
43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43
44	70	70	70	73	77	81	84	88	96	96	100	107	114	125	129	126	130	136	140	145	148	152	158	170	44
45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45
46	63	65	66	70	73	75	78	84	91	93	100	107	114	125	130	131	134	139	142	146	145	150	158	172	46
47	74	77	78	79	82	84	84	87	89	94	102	107	111	117	127	130	135	139	144	150	159	163	169	180	47
48																									48
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53
54																									54

SCHEDULE NO. T-1

AUS TELEPHONE PLANT INDEX

NORTH ATLANTIC REGION 1973-100

LINE NO	PLANT IN SERVICE DESCRIPTION	FCC Acct	COST INDEX NUMBERS																LINE NO
			1980		1981		1982		1983		1984		1985		1986		1987		
			Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	
1	Total Plant		140	146	146	149	150	152	156	159	156	154	156	158	156	154	154	155	1
2																			2
3																			3
4	Motor Vehicles	2112	162	167	178	186	195	195	201	199	203	204	206	210	215	215	227	220	4
5	Aircraft	2113	170	180	195	205	215	217	224	223	227	228	230	234	238	237	233	231	5
6	Special Purpose Vehicles	2114	206	220	231	245	254	263	266	270	271	274	274	277	278	281	283	287	6
7	Garagare Work Equipment	2115	200	213	223	234	241	248	250	251	253	257	260	263	264	267	268	270	7
8	Other Work Equipment	2116	153	165	170	181	183	189	189	189	189	190	192	197	199	202	204	205	8
9																			9
10																			10
11	Buildings	2121	176	183	188	193	192	198	200	206	210	218	223	224	228	234	234	239	11
12	Furniture	2122	174	182	187	199	210	213	215	222	224	229	232	238	242	245	248	252	12
13	Office Equipment	2123	125	130	132	136	137	140	140	143	142	142	140	142	143	143	143	146	13
14	General Purpose Computer	2124	90	90	90	90	87	83	76	69	59	48	48	48	48	47	47	47	14
15																			15
16																			16
17	Analog Electronic Switching	2211	130	140	149	163	168	175	183	188	193	199	202	204	205	208	210	210	17
18	Ditgital Electronic Switching	2212	96	96	97	97	94	90	84	77	67	57	57	57	57	56	56	56	18
19																			19
20																			20
21	Electro Mechanical Switching	2215	167	188	199	213	219	226	232	248	268	277	282	281	283	286	287	287	21
22																			22
23	Operator Systems	2220	146	157	166	176	180	185	191	197	204	211	213	215	216	218	219	219	23
24																			24
25																			25
26																			26
27	Radio System-Analog	22311	100	100	101	102	90	91	94	94	79	80	80	81	77	78	82	82	27
28	Radio System-Digital	22312	0	0	0	0	0	0	115	115	115	117	119	121	122	124	126	124	28
29	Circuit Equipment-Analog	22321	125	130	129	128	130	132	121	154	153	152	153	152	147	144	145	146	29
30	Circuit Equipment-Digital	22322	114	107	100	93	93	94	95	96	89	82	80	78	68	59	49	39	30
31																			31
32	Public Telephone Term Eq	2351	132	141	145	150	158	167	190	196	201	206	210	212	213	217	219	218	32
33																			33
34																			34
35	Poles	2411	220	232	240	249	254	259	263	268	272	273	280	283	287	292	295	297	35
36	Aerial Cable-Metallic	24211	182	193	191	197	202	204	208	213	211	209	219	231	227	223	225	228	36
37	Aerial Cable-Fiber	24212	0	0	0	0	0	0	136	138	132	127	119	111	108	105	108	110	37
38	Underground Cable-Metallic	24221	181	192	187	191	195	196	199	203	197	193	204	217	212	205	206	209	38
39	Underground Cable-Fiber	24222	0	0	0	0	0	0	130	131	125	119	110	101	98	94	97	100	39
40	Buried Cable-Metallic	24231	180	192	186	189	192	193	195	199	192	187	198	212	205	198	198	201	40
41	Buried Cable-Fiber	24232	0	0	0	0	0	0	129	131	124	118	109	100	97	93	96	98	41
42	Submarine Cable-Metallic	24241	181	192	193	199	205	209	214	219	219	218	227	238	237	235	238	240	42
43	Submarine Cable-Fiber	24241	0	0	0	0	0	0	147	149	145	141	134	128	126	124	127	130	43
44	Intra Building Cable-Metallic	24261	182	193	191	197	202	205	209	214	211	210	220	231	228	224	226	230	44
45	Intra Building Cable-Fiber	24262	0	0	0	0	0	0	136	138	132	127	119	111	108	105	108	111	45
46	Aerial Wire	2431	182	191	198	206	210	214	219	225	232	239	243	248	250	252	253	253	46
47	Conduit Systems	2441	188	196	203	211	219	220	228	240	246	253	257	262	267	271	276	278	47
48																			48
49	Aerial Cable-FTTP (Distribution)	24213	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49
50	Underground Cable-FTTP (Dist)	24223	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50
51	Buried Cable-FTTP (Distribution)	24233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51
52	Submarine Cable-FTTP (Dist)	24243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52
53	Intra Building Cable-FTTP (Dist)	24263	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53
54																			54

SCHEDULE NO. T-1

AUS TELEPHONE PLANT INDEX

NORTH ATLANTIC REGION 1973-100

LINE NO	COST INDEX NUMBERS																								LINE NO
	1988		1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		
	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	
1	150	153	158	165	164	165	167	165	165	165	167	168	169	170	174	178	182	182	184	185	186	184	184	181	1
2																									2
3																									3
4	221	222	231	229	236	232	244	241	254	251	258	261	267	271	275	270	279	276	277	271	270	263	273	266	4
5	234	234	234	240	246	254	261	271	274	284	285	291	297	300	304	312	318	322	326	328	327	328	329	330	5
6	289	293	298	309	312	319	325	328	333	337	343	348	348	351	353	360	362	368	370	374	377	382	383	388	6
7	273	279	286	294	298	305	309	316	318	322	324	328	332	336	338	345	349	354	356	359	361	364	366	368	7
8	206	210	215	218	221	228	230	234	235	240	240	243	244	250	250	254	254	258	258	260	260	262	263	265	8
9																									9
10																									10
11	242	254	257	268	268	272	272	274	270	279	283	290	295	306	310	310	311	312	323	329	331	338	341	343	11
12	255	263	269	274	278	284	287	290	291	294	296	299	302	309	309	315	320	322	326	328	330	330	330	333	12
13	147	149	151	153	154	154	152	153	153	156	154	155	155	155	154	156	155	156	155	157	156	157	156	157	13
14	45	43	37	31	30	29	26	24	23	21	21	21	21	21	21	20	17	15	14	14	14	14	13	13	14
15																									15
16																									16
17	204	207	210	212	214	211	212	214	213	213	213	216	215	216	213	212	211	204	204	200	196	194	193	192	17
18	52	50	45	40	39	38	36	33	32	31	31	31	32	32	32	31	28	27	26	26	26	26	25	25	18
19																									19
20																									20
21	278	284	289	291	291	292	296	302	303	304	309	317	316	324	329	327	334	333	336	339	331	336	338	342	21
22																									22
23	213	216	217	218	218	218	220	223	224	224	227	231	231	236	238	236	239	240	239	239	234	237	237	239	23
24																									24
25																									25
26																									26
27	80	80	81	81	81	82	81	82	84	85	86	87	87	87	89	89	91	91	91	93	94	95	95	96	27
28	117	117	117	118	118	118	116	116	117	118	119	120	119	120	120	121	121	122	123	125	125	123	123	124	28
29	140	141	142	144	145	144	145	146	147	147	147	149	150	150	152	149	149	146	146	145	143	143	142	143	29
30	36	35	35	35	35	34	34	34	37	38	39	39	39	39	37	37	37	38	35	36	36	36	36	35	30
31																									31
32	205	209	212	214	216	213	213	215	214	214	213	216	215	216	213	212	211	204	204	200	196	195	194	192	32
33																									33
34																									34
35	278	285	291	295	300	304	310	315	319	327	331	338	352	365	368	369	379	385	400	402	406	413	418	421	35
36	226	237	257	275	273	277	282	277	279	275	281	282	283	282	294	310	319	323	325	328	333	324	322	314	36
37	94	87	85	89	89	89	90	90	89	90	89	89	88	87	88	89	90	91	91	92	93	94	94	95	37
38	210	221	244	265	261	265	270	261	263	256	262	260	260	257	270	289	299	304	305	308	312	299	297	285	38
39	84	75	73	77	76	76	77	77	76	76	75	74	73	72	72	73	74	75	75	76	76	77	77	77	39
40	204	215	240	262	257	261	265	256	257	249	256	253	252	249	262	283	293	298	298	301	306	291	288	275	40
41	82	73	71	75	74	74	75	75	74	74	73	72	71	69	70	71	72	73	73	73	74	74	75	75	41
42	235	244	260	274	274	277	283	278	282	279	285	286	287	288	298	310	319	324	324	327	332	325	325	319	42
43	114	107	106	111	111	111	113	113	113	114	113	114	113	113	114	115	118	119	119	120	121	122	123	123	43
44	227	238	257	275	273	277	282	277	279	275	281	282	282	282	293	309	318	323	324	328	333	324	322	314	44
45	95	87	85	90	89	89	90	91	90	90	89	89	88	87	88	89	91	92	92	93	94	94	95	95	45
46	249	261	270	278	279	283	290	291	293	298	302	305	307	312	320	324	329	332	334	337	341	344	342	342	46
47	269	277	301	309	311	309	316	308	307	310	314	320	325	331	336	340	345	347	350	353	355	358	362	366	47
48																									48
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53
54																									54

SCHEDULE NO. T-1

AUS TELEPHONE PLANT INDEX

NORTH ATLANTIC REGION 1973-100

LINE NO	PLANT IN SERVICE DESCRIPTION	FCC Acct	COST INDEX NUMBERS																LINE NO
			2000		2001		2002		2003		2004		2005		2006		2007		
			Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	
1	Total Plant		182	185	188	190	191	193	194	197	201	206	210	213	227	244	244	249	1
2																			2
3																			3
4	Motor Vehicles	2112	275	269	276	266	270	263	264	257	268	266	272	261	262	258	264	257	4
5	Aircraft	2113	334	343	351	359	362	364	369	377	387	393	408	417	424	438	447	450	5
6	Special Purpose Vehicles	2114	388	392	392	392	392	398	400	404	404	413	428	445	449	462	465	472	6
7	Gargare Work Equipment	2115	369	372	373	377	376	376	377	378	379	387	393	403	408	416	422	430	7
8	Other Work Equipment	2116	266	267	268	273	271	272	271	273	273	275	276	278	278	275	278	279	8
9																			9
10																			10
11	Buildings	2121	353	359	364	374	377	384	385	385	407	412	425	431	441	443	457	472	11
12	Furniture	2122	335	337	338	341	341	341	344	346	346	350	360	368	372	376	380	386	12
13	Office Equipment	2123	156	157	157	158	159	158	158	157	159	160	158	162	161	161	160	161	13
14	General Purpose Computer	2124	12	11	9	9	7	7	6	4 8	3 4	3 4	3 3	3 3	3 0	2 8	2 6	2 7	14
15																			15
16																			16
17	Analog Electronic Switching	2211	193	193	193	190	189	190	189	190	189	190	190	189	187	193	196	186	17
18	Ditgital Electronic Switching	2212	25	24	22	23	23	23	21	22	22	22	22	22	22	22	23	23	18
19																			19
20																			20
21	Electro Mechanical Switching	2215	344	348	350	358	366	376	379	386	391	395	403	405	414	421	430	432	21
22																			22
23	Operator Systems	2220	241	242	243	247	251	257	258	261	264	266	271	272	276	282	287	287	23
24																			24
25																			25
26																			26
27	Radio System-Analog	22311	96	96	96	95	95	95	95	95	95	96	95	95	94	97	98	94	27
28	Radio System-Digital	22312	125	125	126	127	128	127	125	125	135	126	127	127	128	129	130	130	28
29	Circuit Equipment-Analog	22321	143	144	144	142	143	143	143	144	1-3	145	145	145	144	148	150	144	29
30	Circuit Equipment-Digital	22322	36	36	36	37	37	38	38	39	38	38	39	39	39	40	40	41	30
31																			31
32	Public Telephone Term Eq	2351	193	193	193	191	190	190	190	191	190	191	190	189	187	193	195	186	32
33																			33
34																			34
35	Poles	2411	421	429	434	446	451	459	463	472	477	490	495	503	502	521	526	529	35
36	Aerial Cable-Metallic	24211	313	322	328	333	335	338	340	349	357	371	379	386	430	486	477	492	36
37	Aerial Cable-Fiber	24212	96	98	100	102	104	105	105	108	110	112	114	116	118	119	121	122	37
38	Underground Cable-Metallic	24221	281	289	295	299	298	299	299	307	314	326	334	340	394	461	448	466	38
39	Underground Cable-Fiber	24222	78	80	82	83	84	86	85	87	89	91	92	94	95	96	98	98	39
40	Buried Cable-Metallic	24231	271	278	284	287	285	289	286	293	30	312	320	326	383	456	441	460	40
41	Buried Cable-Fiber	24232	76	77	79	80	81	83	82	84	85	87	89	90	91	92	93	94	41
42	Submarine Cable-Metallic	24241	320	327	334	338	341	343	346	353	362	372	379	384	417	459	454	466	42
43	Submarine Cable-Fiber	24241	125	127	130	132	134	136	136	138	141	144	146	148	149	150	153	154	43
44	Intra Building Cable-Metallic	24261	313	322	328	333	335	338	340	349	357	370	378	385	429	483	474	489	44
45	Intra Building Cable-Fiber	24262	97	99	101	103	104	106	106	108	110	113	115	117	118	120	121	122	45
46	Aerial Wire	2431	348	355	362	368	372	377	381	391	399	412	419	427	446	466	465	472	46
47	Conduit Systems	2441	375	380	391	395	403	412	418	422	432	442	453	458	474	478	495	493	47
48																			48
49	Aerial Cable-FTTP (Distribution)	24213	0	0	0	0	0	0	0	0	0	100	97	95	92	89	88	87	49
50	Underground Cable-FTTP (Dist)	24223	0	0	0	0	0	0	0	0	0	100	99	98	98	97	96	96	50
51	Buried Cable-FTTP (Distribution)	24233	0	0	0	0	0	0	0	0	0	100	102	105	104	103	103	102	51
52	Submarine Cable-FTTP (Dist)	24243	0	0	0	0	0	0	0	0	0	100	99	98	98	97	96	96	52
53	Intra Building Cable-FTTP (Dist)	24263	0	0	0	0	0	0	0	0	0	100	100	100	100	100	101	103	53
54																			54

SCHEDULE NO. T-1

AUS TELEPHONE PLANT INDEX

NORTH ATLANTIC REGION 1973-100

LINE NO	COST INDEX NUMBERS																				LINE NO
	2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		
	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	
1	251	256	245	248	258	260	279	282	282	282	285	283	284	285	289	287	283	282	288	290	298	304	1
2																							2
3																							3
4	263	257	272	273	274	269	272	273	280	279	286	282	291	287	291	295	299	298	305	301	307	304	4
5	461	471	495	480	485	490	497	502	514	520	523	528	532	537	541	543	543	547	548	553	557	562	5
6	476	485	499	504	503	503	507	518	529	541	548	555	557	564	566	570	572	576	577	581	583	578	6
7	435	445	457	457	456	458	462	474	479	485	489	494	497	503	505	509	510	513	514	519	522	533	7
8	281	286	290	286	286	288	288	290	291	294	295	296	304	307	309	315	318	322	322	324	327	330	8
9																							9
10																							10
11	492	497	506	494	506	507	521	518	530	532	542	539	550	552	585	580	586	589	604	608	633	647	11
12	389	402	417	415	418	420	415	429	433	437	433	437	439	450	449	454	454	455	457	461	464	482	12
13	162	171	184	171	169	169	170	171	173	173	164	165	166	166	171	172	172	172	173	171	171	169	13
14	2 7	2 6	2 6	2 1	2 01	1 98	1 97	1 49	0 82	0 66	0 67	0 50	0 57	0 60	0 55	0 63	0 64	0 65	0 73	0 71	0 67	0 64	14
15																							15
16																							16
17	180	179	178	178	177	177	174	175	174	174	174	175	176	176	176	176	177	177	177	179	177	179	17
18	24	24	25	25	25	25	25	25	26	26	26	27	27	27	27	28	28	28	28	29	29	29	18
19																							19
20																							20
21	439	445	456	458	460	469	474	481	486	478	484	491	497	495	499	499	496	497	502	502	509	506	21
22																							22
23	288	292	297	299	300	305	307	311	313	309	312	317	320	319	322	322	320	321	324	325	328	327	23
24																							24
25																							25
26																							26
27	91	90	90	90	89	89	88	89	88	88	88	88	89	89	89	89	89	89	89	90	90	90	27
28	131	132	134	134	135	137	138	138	137	138	138	138	138	138	139	140	140	140	140	141	141	142	28
29	140	139	139	139	138	138	137	138	137	137	137	138	139	139	140	140	141	141	141	142	142	143	29
30	41	41	41	41	40	40	40	41	41	42	42	42	43	43	44	44	44	45	45	45	46	46	30
31																							31
32	180	179	177	178	177	177	174	175	173	174	173	174	175	175	176	176	177	177	177	179	177	179	32
33																							33
34																							34
35	537	547	554	563	570	578	576	587	594	600	603	607	605	616	620	621	629	633	634	652	643	652	35
36	494	507	461	473	506	509	573	582	577	576	582	572	573	573	578	570	555	551	566	568	590	604	36
37	123	124	126	127	128	130	131	133	135	136	137	138	140	142	143	144	146	148	149	151	153	155	37
38	465	481	421	435	475	476	555	562	554	552	556	544	552	540	544	533	513	506	523	524	548	563	38
39	100	100	102	103	103	105	106	108	109	110	111	112	113	114	116	116	118	119	120	122	123	125	39
40	459	475	410	425	467	467	553	560	550	547	552	538	536	533	537	524	501	493	511	511	537	552	40
41	95	96	97	98	99	100	101	103	104	105	106	107	108	109	111	111	113	114	115	116	118	120	41
42	468	479	447	458	484	486	535	541	539	540	545	539	541	542	547	544	534	532	546	548	566	578	42
43	155	157	159	161	163	164	166	168	170	172	173	174	177	179	181	183	185	187	189	191	194	196	43
44	491	504	459	471	504	507	570	578	573	573	578	569	569	570	575	567	553	549	564	566	588	602	44
45	124	125	127	128	129	131	132	134	135	137	138	139	141	142	144	145	147	148	150	152	154	156	45
46	475	488	469	478	496	501	519	528	525	527	531	530	533	538	543	543	540	541	551	556	569	580	46
47	502	507	525	530	516	521	526	532	545	550	549	552	559	565	571	577	581	586	591	596	611	618	47
48																							48
49	82	77	75	73	65	58	55	53	52	50	50	50	50	50	50	49	50	49	49	50	49	50	49
50	94	92	89	87	83	80	75	70	66	62	58	54	54	54	53	53	54	54	54	55	54 3	55 3	50
51	92	82	78	74	71	68	66	63	61	59	57	54	54	55	54	54	54	53	53	54	52 7	53 7	51
52	94	92	89	87	83	80	75	70	66	62	58	54	54	54	53	53	54	54	54	55	54 3	55 3	52
53	104	105	90	75	68	61	54	47	43	39	39	39	39	39	38	38	39	44	44	44	43 7	44 7	53
54																							54

SCHEDULE NO. T-1

AUS TELEPHONE PLANT INDEX

NORTH ATLANTIC REGION 1973-100

LINE NO	PLANT IN SERVICE DESCRIPTION	FCC Acct	COST INDEX NUMBERS														LINE NO
			2019		2020		2021		2022		2023		2024		2025		
			Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	Jan 1	Jul 1	
1	Total Plant		304	305	308	310	318										1
2																	2
3																	3
4	Motor Vehicles	2112	309	305	308	304	310										4
5	Aircraft	2113	567	574	575	581	583										5
6	Special Purpose Vehicles	2114	602	612	616	622	623										6
7	Gargare Work Equipment	2115	541	550	550	555	556										7
8	Other Work Equipment	2116	333	335	336	340	343										8
9																	9
10																	10
11	Buildings	2121	647	643	664	662	662										11
12	Furniture	2122	491	497	503	512	513										12
13	Office Equipment	2123	170	172	171	170	169										13
14	General Purpose Computer	2124	0 60	0 60	0 51	0 51	0 34										14
15																	15
16																	16
17	Analog Electronic Switching	2211	179	179	181	180	180										17
18	Ditgital Electronic Switching	2212	29	29	30	30	30										18
19																	19
20																	20
21	Electro Mechanical Switching	2215	513	517	518	528	529										21
22																	22
23	Operator Systems	2220	331	334	335	340	341										23
24																	24
25																	25
26																	26
27	Radio System-Analog	22311	90	90	91	91	91										27
28	Radio System-Digital	22312	143	144	146	147	147										28
29	Circuit Equipment-Analog	22321	143	144	145	145	145										29
30	Circuit Equipment-Digital	22322	47	47	48	48	49										30
31																	31
32	Public Telephone Term Eq	2351	179	180	181	181	181										32
33																	33
34																	34
35	Poles	2411	661	671	699	710	715										35
36	Aerial Cable-Metallic	24211	601	603	605	608	634										36
37	Aerial Cable-Fiber	24212	157	158	160	162	164										37
38	Underground Cable-Metallic	24221	558	557	558	559	590										38
39	Underground Cable-Fiber	24222	126	128	129	130	132										39
40	Buried Cable-Metallic	24231	545	544	544	545	577										40
41	Buried Cable-Fiber	24232	121	122	123	125	126										41
42	Submarine Cable-Metallic	24241	578	580	583	587	608										42
43	Submarine Cable-Fiber	24241	199	200	203	205	207										43
44	Intra Building Cable-Metallic	24261	599	601	603	606	632										44
45	Intra Building Cable-Fiber	24262	158	159	161	163	165										45
46	Aerial Wire	2431	583	587	592	597	612										46
47	Conduit Systems	2441	626	631	642	648	655										47
48																	48
49	Aerial Cable-FTTP (Distribution)	24213	50 5	50	50	50	50										49
50	Underground Cable-FTTP (Dist)	24223	55 8	55 1	55 1	55 1	55 1										50
51	Buried Cable-FTTP (Distribution)	24233	54 2	53 7	53 7	53 7	53 7										51
52	Submarine Cable-FTTP (Dist)	24243	55 8	55 1	55 1	55 1	55 1										52
53	Intra Building Cable-FTTP (Dist)	24263	45 2	44 7	44 7	44 7	44 7										53
54																	54

Water and Wastewater General Information
Appraisal Work Papers

Cost Indices

United States Bureau of Labor Statistics – General Inf Cost Indexes

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AUS Consultants
Bureau of Labor Statistics Indexes

Index	Table	Region	Year	Begin Date	End Date	CPI	1	2 Communic Equipment pcu3342	3 Technical Labor ecu11122I linked CIU20154
Earliest Year							1913	1986	1985
Index	Table	Region					1	2	3
BLS	BLS	All	1913	1/1/1913	12/31/1913		10	7	6
BLS	BLS	All	1914	1/1/1914	12/31/1914		10	7	6
BLS	BLS	All	1915	1/1/1915	12/31/1915		10	7	6
BLS	BLS	All	1916	1/1/1916	12/31/1916		11	8	7
BLS	BLS	All	1917	1/1/1917	12/31/1917		13	10	8
BLS	BLS	All	1918	1/1/1918	12/31/1918		15	11	9
BLS	BLS	All	1919	1/1/1919	12/31/1919		17	12	10
BLS	BLS	All	1920	1/1/1920	12/31/1920		20	14	12
BLS	BLS	All	1921	1/1/1921	12/31/1921		18	13	11
BLS	BLS	All	1922	1/1/1922	12/31/1922		17	12	10
BLS	BLS	All	1923	1/1/1923	12/31/1923		17	12	10
BLS	BLS	All	1924	1/1/1924	12/31/1924		17	12	10
BLS	BLS	All	1925	1/1/1925	12/31/1925		18	13	11
BLS	BLS	All	1926	1/1/1926	12/31/1926		18	13	11
BLS	BLS	All	1927	1/1/1927	12/31/1927		17	12	10
BLS	BLS	All	1928	1/1/1928	12/31/1928		17	12	10
BLS	BLS	All	1929	1/1/1929	12/31/1929		17	12	10
BLS	BLS	All	1930	1/1/1930	12/31/1930		17	12	10
BLS	BLS	All	1931	1/1/1931	12/31/1931		15	11	9
BLS	BLS	All	1932	1/1/1932	12/31/1932		14	10	8
BLS	BLS	All	1933	1/1/1933	12/31/1933		13	9	7
BLS	BLS	All	1934	1/1/1934	12/31/1934		13	9	7
BLS	BLS	All	1935	1/1/1935	12/31/1935		14	10	7
BLS	BLS	All	1936	1/1/1936	12/31/1936		14	10	7
BLS	BLS	All	1937	1/1/1937	12/31/1937		14	10	7
BLS	BLS	All	1938	1/1/1938	12/31/1938		14	10	7
BLS	BLS	All	1939	1/1/1939	12/31/1939		14	10	7
BLS	BLS	All	1940	1/1/1940	12/31/1940		14	10	7
BLS	BLS	All	1941	1/1/1941	12/31/1941		15	11	8
BLS	BLS	All	1942	1/1/1942	12/31/1942		16	12	9
BLS	BLS	All	1943	1/1/1943	12/31/1943		17	13	10
BLS	BLS	All	1944	1/1/1944	12/31/1944		18	14	11
BLS	BLS	All	1945	1/1/1945	12/31/1945		18	14	11
BLS	BLS	All	1946	1/1/1946	12/31/1946		20	16	12
BLS	BLS	All	1947	1/1/1947	12/31/1947		22	18	13
BLS	BLS	All	1948	1/1/1948	12/31/1948		24	20	14
BLS	BLS	All	1949	1/1/1949	12/31/1949		24	20	14
BLS	BLS	All	1950	1/1/1950	12/31/1950		24	20	14
BLS	BLS	All	1951	1/1/1951	12/31/1951		26	22	15

AUS Consultants
Bureau of Labor Statistics Indexes

Index	Table	Region	Year	Begin Date	End Date	CPI	1	2 Communic Equipment pcu3342	3 Technical Labor ecu11122l linked CIU20154
Earliest Year							1913	1986	1985
Index	Table	Region					1	2	3
BLS	BLS	All	1952	1/1/1952	12/31/1952		27	23	16
BLS	BLS	All	1953	1/1/1953	12/31/1953		27	23	16
BLS	BLS	All	1954	1/1/1954	12/31/1954		27	23	16
BLS	BLS	All	1955	1/1/1955	12/31/1955		27	23	16
BLS	BLS	All	1956	1/1/1956	12/31/1956		27	23	16
BLS	BLS	All	1957	1/1/1957	12/31/1957		28	24	17
BLS	BLS	All	1958	1/1/1958	12/31/1958		29	25	18
BLS	BLS	All	1959	1/1/1959	12/31/1959		29	25	18
BLS	BLS	All	1960	1/1/1960	12/31/1960		30	26	19
BLS	BLS	All	1961	1/1/1961	12/31/1961		30	26	19
BLS	BLS	All	1962	1/1/1962	12/31/1962		30	26	19
BLS	BLS	All	1963	1/1/1963	12/31/1963		31	27	20
BLS	BLS	All	1964	1/1/1964	12/31/1964		31	27	20
BLS	BLS	All	1965	1/1/1965	12/31/1965		32	28	21
BLS	BLS	All	1966	1/1/1966	12/31/1966		32	28	21
BLS	BLS	All	1967	1/1/1967	12/31/1967		33	29	22
BLS	BLS	All	1968	1/1/1968	12/31/1968		35	31	23
BLS	BLS	All	1969	1/1/1969	12/31/1969		37	33	24
BLS	BLS	All	1970	1/1/1970	12/31/1970		39	35	25
BLS	BLS	All	1971	1/1/1971	12/31/1971		41	37	26
BLS	BLS	All	1972	1/1/1972	12/31/1972		42	38	27
BLS	BLS	All	1973	1/1/1973	12/31/1973		44	40	28
BLS	BLS	All	1974	1/1/1974	12/31/1974		49	44	31
BLS	BLS	All	1975	1/1/1975	12/31/1975		54	49	34
BLS	BLS	All	1976	1/1/1976	12/31/1976		57	52	36
BLS	BLS	All	1977	1/1/1977	12/31/1977		61	56	38
BLS	BLS	All	1978	1/1/1978	12/31/1978		65	60	40
BLS	BLS	All	1979	1/1/1979	12/31/1979		73	67	45
BLS	BLS	All	1980	1/1/1980	12/31/1980		82	75	50
BLS	BLS	All	1981	1/1/1981	12/31/1981		91	83	55
BLS	BLS	All	1982	1/1/1982	12/31/1982		97	89	59
BLS	BLS	All	1983	1/1/1983	12/31/1983		100	92	61
BLS	BLS	All	1984	1/1/1984	12/31/1984		104	96	63
BLS	BLS	All	1985	1/1/1985	12/31/1985		108	100	65
BLS	BLS	All	1986	1/1/1986	12/31/1986		110	102	66
BLS	BLS	All	1987	1/1/1987	12/31/1987		114	104	69
BLS	BLS	All	1988	1/1/1988	12/31/1988		118	104	72
BLS	BLS	All	1989	1/1/1989	12/31/1989		124	106	76
BLS	BLS	All	1990	1/1/1990	12/31/1990		131	108	80

AUS Consultants
Bureau of Labor Statistics Indexes

Index	Table	Region	Year	Begin Date	End Date	CPI	1	2 Communic Equipment pcu3342	3 Technical Labor ecu11122l linked CIU20154
Earliest Year							1913	1986	1985
Index	Table	Region					1	2	3
BLS	BLS	All	1991	1/1/1991	12/31/1991		136	109	84
BLS	BLS	All	1992	1/1/1992	12/31/1992		140	110	88
BLS	BLS	All	1993	1/1/1993	12/31/1993		145	112	92
BLS	BLS	All	1994	1/1/1994	12/31/1994		148	113	95
BLS	BLS	All	1995	1/1/1995	12/31/1995		152	114	97
BLS	BLS	All	1996	1/1/1996	12/31/1996		157	115	100
BLS	BLS	All	1997	1/1/1997	12/31/1997		161	116	102
BLS	BLS	All	1998	1/1/1998	12/31/1998		163	115	106
BLS	BLS	All	1999	1/1/1999	12/31/1999		167	113	109
BLS	BLS	All	2000	1/1/2000	12/31/2000		172	110	114
BLS	BLS	All	2001	1/1/2001	12/31/2001		177	109	119
BLS	BLS	All	2002	1/1/2002	12/31/2002		180	105	123
BLS	BLS	All	2003	1/1/2003	12/31/2003		184	102	127
BLS	BLS	All	2004	1/1/2004	12/31/2004		189	98	132
BLS	BLS	All	2005	1/1/2005	12/31/2005		195	97	135
BLS	BLS	All	2006	1/1/2006	12/31/2006		202	97	139
BLS	BLS	All	2007	1/1/2007	12/31/2007		207	96	146
BLS	BLS	All	2008	1/1/2008	12/31/2008		215	97	152
BLS	BLS	All	2009	1/1/2009	12/31/2009		215	97	155
BLS	BLS	All	2010	1/1/2010	12/31/2010		218	97	157
BLS	BLS	All	2011	1/1/2011	12/31/2011		225	96	161
BLS	BLS	All	2012	1/1/2012	12/31/2012		230	96	164
BLS	BLS	All	2013	1/1/2013	12/31/2013		233	95	167
BLS	BLS	All	2014	1/1/2014	12/31/2014		237	96	170
BLS	BLS	All	2015	1/1/2015	12/31/2015		237	96	173
BLS	BLS	All	2016	1/1/2016	12/31/2016		240	95	176
BLS	BLS	All	2017	1/1/2017	12/31/2017		245.1	94	179
BLS	BLS	All	2018	1/1/2018	12/31/2018		251.1	93	183
BLS	BLS	All	2019	1/1/2019	12/31/2019		255.7	93	187
BLS	BLS	All	2020	1/1/2020	12/31/2020		258.8	94	191
BLS	BLS	All	2021	1/1/2021	12/31/2021		261.6	94	192

Index	Table	Region	Year	Begin Date	End Date	1 Switch Gear PCU3353 13335313 30%	2 Relays PCU3353 14335314 30%	3 Battery Systems PCU3359 12335912 40%	4 Power Systems Calculation Composite	5 Alarm Systems PCU33429 03342901	6 Motors & Generators PCU33531 2335312	7 Emergency Generators Means Ref 26 32 13.13 2600
Earliest Year						1987	1987	1987	1987	1987	1987	1987
Index	Table	Region				1	2	3	4	5	6	7
POW	POW	All	1987	1/1/1987	12/31/1987	103.6	103.9	125.0	112.3	100.1	110.8	83.4
POW	POW	All	1988	1/1/1988	12/31/1988	106.7	106.6	126.7	114.7	101.6	116.4	83.7
POW	POW	All	1989	1/1/1989	12/31/1989	113.5	110.9	133.5	120.7	104.3	123.3	83.9
POW	POW	All	1990	1/1/1990	12/31/1990	118.5	115.4	137.6	125.2	103.4	127.5	84.1
POW	POW	All	1991	1/1/1991	12/31/1991	121.8	120.5	142.7	129.8	101.9	129.7	84.3
POW	POW	All	1992	1/1/1992	12/31/1992	123.6	123.3	146.1	132.5	102.2	131.5	84.8
POW	POW	All	1993	1/1/1993	12/31/1993	125.9	126.9	149.3	135.6	103.2	133.5	85.0
POW	POW	All	1994	1/1/1994	12/31/1994	128.7	128.3	151.2	137.6	104.2	134.2	90.6
POW	POW	All	1995	1/1/1995	12/31/1995	132.4	130.7	154.5	140.7	106.5	137.5	95.1
POW	POW	All	1996	1/1/1996	12/31/1996	133.6	133.6	157.5	143.2	108.3	139.1	95.3
POW	POW	All	1997	1/1/1997	12/31/1997	135.0	137.8	158.3	145.2	109.4	138.6	99.1
POW	POW	All	1998	1/1/1998	12/31/1998	138.2	140.4	164.2	149.3	111.3	139.8	99.6
POW	POW	All	1999	1/1/1999	12/31/1999	141.0	142.8	165.5	151.3	109.4	139.9	99.8
POW	POW	All	2000	1/1/2000	12/31/2000	143.3	144.4	169.9	154.3	108.4	140.4	100.0
POW	POW	All	2001	1/1/2001	12/31/2001	147.6	148.2	178.2	160.0	109.0	141.6	102.9
POW	POW	All	2002	1/1/2002	12/31/2002	149.8	150.0	179.4	161.7	110.4	142.0	103.4
POW	POW	All	2003	1/1/2003	12/31/2003	151.1	152.3	165.1	157.1	110.8	142.4	103.8
POW	POW	All	2004	1/1/2004	12/31/2004	153.7	155.2	165.1	158.7	109.8	145.8	104.3
POW	POW	All	2005	1/1/2005	12/31/2005	160.4	160.0	166.9	162.9	110.6	154.4	104.7
POW	POW	All	2006	1/1/2006	12/31/2006	167.5	167.6	175.6	170.8	113.1	161.8	104.9
POW	POW	All	2007	1/1/2007	12/31/2007	179.4	173.0	182.5	178.7	113.8	169.6	111.0
POW	POW	All	2008	1/1/2008	12/31/2008	187.5	179.3	189.4	185.8	116.0	177.7	123.0
POW	POW	All	2009	1/1/2009	12/31/2009	193.1	184.7	193.4	190.7	116.8	181.8	126.4
POW	POW	All	2010	1/1/2010	12/31/2010	195.1	190.3	191.8	192.3	117.8	185.4	130.9
POW	POW	All	2011	1/1/2011	12/31/2011	198.2	194.5	192.8	194.9	118.4	196.5	130.9
POW	POW	All	2012	1/1/2012	12/31/2012	199.0	196.4	197.1	197.5	119.9	201.1	139.8
POW	POW	All	2013	1/1/2013	12/31/2013	201.5	200.1	198.4	199.8	121.5	203.2	121.9
POW	POW	All	2014	1/1/2014	12/31/2014	200.3	202.7	198.9	200.5	122.2	206.1	106.5
POW	POW	All	2015	1/1/2015	12/31/2015	199.3	205.7	198.4	200.9	123.2	206.4	111.9
POW	POW	All	2016	1/1/2016	12/31/2016	199.6	206.9	196.6	200.6	123.9	204.6	111.9
POW	POW	All	2017	1/1/2017	12/31/2017	200.4	209.8	203.9	204.6	124.6	206.5	111.9
POW	POW	All	2018	1/1/2018	12/31/2018	204.7	211.8	215.5	211.2	123.9	211.9	119.7
POW	POW	All	2019	1/1/2019	12/31/2019	211.6	215.1	218.3	215.3	124.3	215.6	119.7
POW	POW	All	2020	1/1/2020	12/31/2020	219.1	218.5	218.8	218.8	125.5	216.2	119.7

Power Index Summary

DEPRECIATION AND FUNCTIONAL OBSOLESCENCE

An important step in the appraisal of property using the cost approach is the determination of the depreciation or condition of the property. Depreciation in this appraisal was segregated into normal (mostly physical) depreciation and functional obsolescence. The normal depreciation was determined based on the age of the property and its normal service life; while functional obsolescence was based on the impact on the property's remaining life caused by factors such as changing technology, service requirements, and competition.

Depreciation - The depreciation was determined based on the property's age and it normal service life using the following formula:

$$\text{Condition} = \frac{\text{Remaining Life}}{\text{Age + Remaining Life}}$$

or

$$\text{Depreciation} = \frac{\text{Age}}{\text{Age + Remaining Life}}$$

Where: Remaining Life = f(Age, Survival Characteristic, Normal Service life)

Functional Obsolescence - The obsolescence inherent in the property was determined using the above-described normal service life in comparison to the property's service life is adjusted for functional factors. The obsolescence was quantified base on the difference between the property's normal service life and its functional service life. The following formula was used to calculate the obsolescence:

$$\text{Obsolescence} = \frac{\text{Normal Service Life - Functional Service Life}}{\text{Normal Service Life}}$$

Service Lives - (normal versus functional) - The service life of property is that period of time in which it provides the service to which it was designed and placed into service. In most industrial properties there is a difference between a property's normal or physical life and its functional life. A piece of equipment may physically last for an extended

period; however, as that property ages changing technology, improvements or enhancement in similar equipment, functional and or service requirements change resulting in decreased utility of the existing equipment, and therefore decrease in value to it owner, this additional deterioration over that defined by the equipment's normal life is functional obsolescence.

Wastewater Depreciation Service Life Experience in Pennsylvania

The service lives used in the depreciation and functional obsolescence calculations were developed based on the property and its use, AUS Consultants' experience in developing depreciation studies for the water and wastewater industries and depreciation studies filed with recent PAWC and Aqua America rate cases. With each of their rate case filings PAWC and Aqua America have filed depreciation studies in support of their depreciation service lives and associated depreciation expenses contained within their revenue requirements. The depreciation studies were prepared by Gannett Fleming Rate Consultants a recognized firm in the depreciation consulting area. AUS Consultants has reviewed the studies which are summarized in the following table:

Summary of PAWC & Aqua Depreciation Studies Prepared for Rate Case

Account	Account Description	Iowa Curves			Service Life			Remaining Life		
		PAWC 12/31/2016	PAWC 12/31/2019	Aqua 3/31/2018	PAWC 12/31/2016	PAWC 12/31/2019	Aqua 3/31/2018	PAWC 12/31/2016	PAWC 12/31/2019	Aqua 3/31/2018
					years	years		years	years	
354.20	STRUCTURES AND IMPROVEMENTS - COLLECTION	R3	R3	S0.5	45	45	55	39.1	33.3	35.3
354.30	STRUCTURES AND IMPROVEMENTS - SPP	R2.5	S0	S1.0	50	55	60	45.2	32.6	44.6
354.40	STRUCTURES AND IMPROVEMENTS - TDP	R2	S0	R2.0	65	55	50	56.6	31.7	28.9
354.70	STRUCTURES AND IMPROVEMENTS - GENERAL	S1	S1	R3.0	35	35	50	33.3	23.2	17.3
355.00	POWER GENERATION EQUIPMENT	R2.5	S0.5		35	35		29.7	19.3	
360.10	COLLECTION SEWERS - FORCE MAINS	S2	R3	R2.5	70	75	75	53.1	52.5	52.0
361.10	COLLECTION SEWERS - GRAVITY MAINS	R2.5	R2.5	R2.5	70	80	75	56.9	54.8	50.3
361.20	MANHOLES	S1.5	S2.5		50	50		41.3	32.2	
363.00	SERVICES	R3	R3	R4.0	38	47	70	22.9	30.2	54.3
364.00	FLOW MEASURING DEVICES	L3	L2.5		20	15		13.3	5.1	
365.00	FLOW MEASURING INSTALLATIONS	S1.5	S2		30	25		23.1	10.8	
370.00	RECEIVING WELLS	R3	R3		50	50		42.7	33.7	
371.00	PUMPING EQUIPMENT	SO	S0.5	L0.5	40	30	25	35.5	18.2	13.2
380.00	TREATMENT EQUIPMENT	5-R2	S1.5	S0.0	45	35	40	37.1	20.1	21.5
381.00	PLANT SEWERS	R3	R3	R1.5	50	50	40	43.1	32.7	9.9
382.00	OUTFALL SEWER LINES	R3	R3	R2.5	50	50	40	37.8	28.3	7.0
389.10	OTHER PLANT AND MISCELLANEOUS EQUIPMENT - INTANGIBLES	52.5	S2.5		20	20		13.6	11.3	
389.60	OTHER PLANT AND MISCELLANEOUS EQUIPMENT - CPS	SQ	SQ	L3.0	20	5	20	12.3	3.5	11.3
390.00	OFFICE FURNITURE AND EQUIPMENT	L4	SQ	SQ	15	20	20	9.5	10.1	
391.00	TRANSPORTATION EQUIPMENT	SQ	L4		25	14		19,9	9.8	
392.00	STORES EQUIPMENT	SQ	SQ		20	25		16.4	17.2	
393.00	TOOLS, SHOP AND GARAGE EQUIPMENT	SQ	SQ	SQ	15	20	20	11,3	15.4	
394.00	LABORATORY EQUIPMENT	L2.5	SQ	SQ	16	15	25	8.7	10.4	
395.00	POWER OPERATED EQUIPMENT	SQ	R2		15	22		10.3	13.2	
396.00	COMMUNICATION EQUIPMENT	SQ	SQ		15	15		9.6	6.9	
397.00	MISCELLANEOUS EQUIPMENT		SQ			15			12.8	
398.00	OTHER TANGIBLE PLANT		SQ			25			21.5	
	TOTAL DEPRECIABLE PLANT									
	NONDEPRECIABLE PLANT									

AUS Consultants believe this increase in service lives is attributable to the widespread use of relining older mains instead of replacing mains which are in need of repair. The practice of relining mains with a cured in place plastic liner not only repairs specific main but has the affect of extending the life of the original main by the length of time which the relining can be expected to last. Most relining vendors warranty their product and procedure for 50 years. Thus, in essence the original mains' service life will be extended by 50 plus years at the date the relining occurred. For those mains associated with relining their installation date was established at the date of their relining and their depreciation parameters were established the same as the depreciation parameters of the relining, i.e., R2.5 – 60 years.

The following table presents the depreciation parameters (Iowa-type survivor curve and service life) used in the cost approach in calculating the deprecation of the property:

Willistown Wastewater Collection System
Wastewater Collection System and Treatment
Investor-Owned Utility
January 20, 2021

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

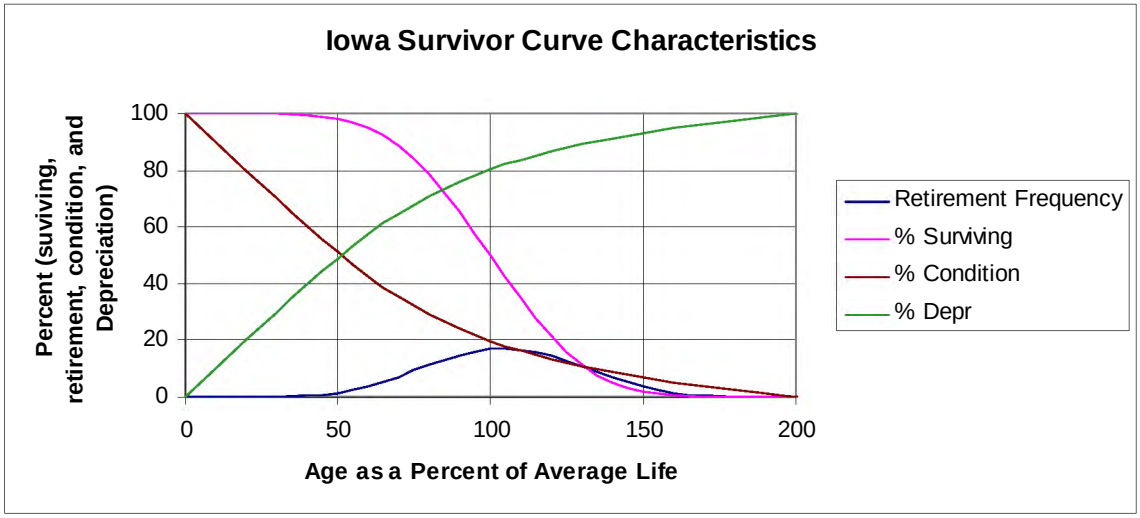
(1)	(2)	(4)		(5)	(6)	
		(4a)	(4b)		(6a)	(6b)
Account Number	Description	Iowa Survivor / Retirement Curve	Normal Service Life	Economic Obsolescence	Tax Depreciation	
			years	% of CORLD	Table	Life
353.20	Land & Land Rights - Collection System	ZNonDep	0.00	0.00%	Non-Depr	0.00
353.30	Land & Land Rights - Pumping	ZNonDep	0.00	0.00%	Non-Depr	0.00
353.40	Land & Land Rights - Treatment	ZNonDep	0.00	0.00%	Non-Depr	0.00
354.30	Stuctures & Improvements - Pumping	R4.0	55.00	0.00%	MACRS	25.00
354.40	Stuctures & Improvements - Treatment	R4.0	55.00	0.00%	MACRS	25.00
355.30	Generating Equipment - Pumping	R3.0	35.00	0.00%	MACRS	25.00
360.21	Collection Sewers - Force - Mains	R3.0	75.00	0.00%	MACRS	25.00
361.21	Collection Sewers - Gravity - Mains	R2.5	80.00	0.00%	MACRS	25.00
361.22	Collection Sewers - Gravity - Mains Relining	R2.5	60.00	0.00%	MACRS	25.00
361.23	Collection Sewers - Gravity - Manholes	R2.5	80.00	0.00%	MACRS	25.00
363.20	Service Laterals	R3.0	70.00	0.00%	MACRS	25.00
364.30	Flow Measuring Devices - Pumping	S2.0	25.00	0.00%	MACRS	25.00
390.70	Office Furniture and Equipment	R3.0	15.00	0.00%	MACRS	15.00

As the above table demonstrates the depreciation lives selected for the AUS Consultants appraisal are consistent with the industry depreciation studies' finding for

wastewater plant. However due to the age of some of the property the extend of the depreciation was limited to 85% of the assets original cost and its replacement cost new.

Iowa Survivor Curves

The Iowa Survivor Curves recommended in the McKeesport appraisal are used to determine the remaining life of the property, and therefore its condition, recognizing the properties' service life and age. The Iowa Survivor Curves allows the appraiser to recognize the property being studied (mains, treatment and pumping plant equipment etc placed in a particular year, say1985) is part of a larger group of property, i.e., all the property i.e., mains, treatment and pumping plant equipment, etc. As such, the service lives which we refer to in our appraisal are an average service lives for the group, i.e., the average life of all mains, treatment and pumping plant equipment, etc. The Iowa Survivor curve allows the appraiser to calculate the remaining life, and therefore condition, of a subset of the group (the mains placed in 1985) based on the groups': (1) Iowa Survivor Curve, (2) Service Life and the (3) age of property at the appraisal date. An Iowa Survivor Curves depicts how property from a group survives and retires about that groups' average life.

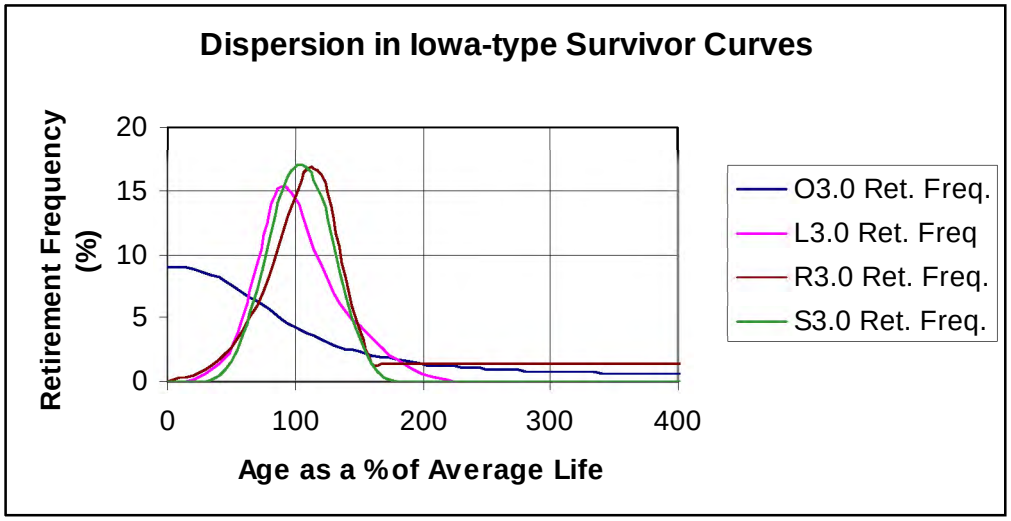


The above figure depicts a typical Iowa-type survivor curve, an S3.0 Iowa-type survivor curve. In this case the survivor curve has been generalized to a service life of 100% of the property's average life, in this generalized form the survivor curve statistics can be utilized with any individual service life in the age-life service life and depreciation calculations. There are four characteristics displayed in the above chart depicting the manner in which property survives and retires about the group's average life, those characteristics are: the retirement frequency (blue), the percent surviving (red), the percent condition (brown) and the percent depreciated (green). The retirement frequency represents the retirement of individual property items about the group's average service life. As can be seen the retirements are distributes about the group's average life with some items retiring before the average life and some items retiring at or after the group's service life. The group's survivor curve is developed from subtracting the retirements as they occur as the property ages. The depreciation curve depicts how much of the property group's life has been consumed; while the condition curve depict

how much of the property group's life remains. The condition and depreciation curves are complementary in that condition equals 100% minus depreciation and vice versa.

The theory of Iowa Survivor Curves was presented in the 1920s and 30s by Robley Winfrey based on research at Iowa State University (then the Iowa Engineering Experiment Station). Winfrey's research was first published in Bulletin 103 - Life Characteristics of Physical Property and Bulletin 125 - Statistical Analysis of Industrial Property Retirements. (Incidentally, both publications are out of print, I have a copy of Bulletin 125 but not Bulletin 103, I'm still trying to get a copy of that piece of depreciation literature.). Bulletin 125 was updated in 1967 by Professor Harold Cowles of Iowa State University's Department of Industrial Engineering. In conducting his research, Winfrey collected data on industrial property survival and retirement from various sources and analyzed that data as a function of property's age at retirement and ultimately the property groups' service life when all the property in the group was fully retired.

Winfrey discovered the industrial property's survival and retirement fits three basic patterns with relationship to the property's average life:



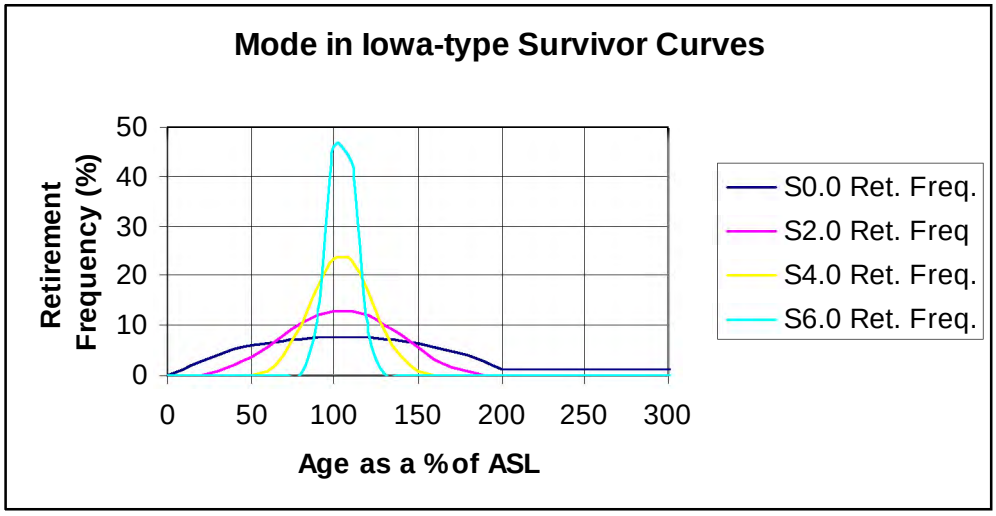
Symmetrically moded (S-type Iowa Survivor Curves) (green) – The S-type Iowa Survivor Curve is one wherein the property's retirements are symmetrically distributed about the mode. Mode in statistics is defined as the highest frequency, in this case retirement frequency. Thus an S-type Iowa curve is like a normal curve; however, its shape is not identical to a normal distribution function.

Right moded (R-type Iowa Curves) (brown) – the R-type Iowa curve has its mode skewed to the right of the property's average life; therefore, the retirements tend to be distributed later in the property's life and there are less retirements earlier in the property's life.

Left moded (L-type Iowa Curve) (red) – The L-type Iowa curve has its mode skewed to the left of the property's average life; therefore, the retirements tend to be distributed earlier in the property's life and there are less retirements later in the property's life.

In the utility industry, the plant, i.e., mains, treatment and pumping plant equipment tends to have a R-type survival/retirement dispersion as it is designed to provide service over extended periods, requiring little maintenance, and it designers have significant experience in designing and placing such property.

In conjunction with the above-described R-, S-, and L-type survival/retirement patterns, Winfrey determine that there were several patterns of the manner in which the retirements' peakedness occur around the average life. In this case, Winfrey described the peakedness of the property retirements with peakedness enumerations of 0, 1, 2, 3, 4, 5, and 6. The low peakedness numbers 0 and 1 represent low levels of retirements being distributed over the property entire life, while high peakedness numbers, 5 and 6 represent retirement patterns where the majority or all the retirement occur tightly grouped around the property's average life. Peakedness numbers 2, 3, and 4 are middle of the road, so to speak, in terms of peakedness.



Origin moded (O-type) survivor curve (blue) – Harold Cowles in his 1967 update of Bulletin 125 introduced the O-type survivor curve with the mode of the curve at the origin or at age equal to zero (0) years. This class of Iowa curves was over looked by Winfrey possibly because it made little intuitive sense that industrial retirement of property would have their maximum retirement frequency at age equal to zero. However, Cowles felt for completeness they should be included. O-type survivor curves do reflect the survival pattern of intangible assets.

Iowa-type survivor curves are parametric, as opposed to formalistic, in that they were derived from empirical survival/retirement data which Winfrey collected. There are Iowa curve equations are presented in Bulletin 125; however, in most cases users reference standardized Iowa Survivor Curve tables. The Iowa-type survivor curves used in this appraisal have been generalized to a service life of 100% of the property's average life. By generalizing the service life to 100% of average life these tables can be used to generate survival and retirement statistics for property of any service life.

It should be apparent that Iowa-types survivor curves are valid for any type property as the curves only depict how that property survives and retires about the average life of a group of similar property.

Generalized Iowa-type Survivor Curves

As was discussed earlier, most users of the Iowa-type survivor curves use standardized tables of Iowa curves. The most usable form of these standardized tables are tables which have been generalized to a standard life of 100% of the property's average life. Based on these generalized tables the user can determine the property's remaining life by knowing the Iowa-type survivor curve (mode and peakedness characteristics), the property's (group's) service life, and the specific property's (for which the remaining life is desired) age. The following table reflects how the remaining life, as well as its condition, is determined:

Year	Study Date	Age	Iowa Curve	Service Life	Age % of ASL	Iowa Lookup	Iowa Condition	Remaining Life	Total Life	Condition
				ASL						
		years		years	%			years	years	%
Input		Calc	Input	Input	Calc	Calc	lookup	Calc	Calc	Calc
1970	2006	35.5	R3.0	25	142	R3.0142	0.066388	1.7	37.2	4.47%
1980	2006	25.5	R3.0	25	102	R3.0102	0.192543	4.8	30.3	15.88%
1990	2006	15.5	R3.0	25	62	R3.0062	0.442050	11.1	26.6	41.62%
2000	2006	5.5	R3.0	25	22	R3.0022	0.787294	19.7	25.2	78.16%
2004	2006	1.5	R3.0	25	6	R3.0006	0.941117	23.5	25.0	94.01%
2005	2006	0.5	R3.0	25	2	R3.0002	0.980320	24.5	25.0	98.00%

The above table was developed with reference to the standardized Iowa Survivor curves contained and represent a R3.0 25 year Iowa curve and life table. The standardized Iowa Curves are located in tab database. In order to reference the proper line of the Iowa Curve data the user looks up that data by reference to the property's age as percent of the service life (age % of ASL column) and the Iowa Survivor curve (Iowa Curve column), combining these two criteria the Iowa Lookup column will get the user to the proper Iowa Curve data.

In the above calculation the Iowa-type survivor curve is R3, the service life of the group is 25 years, and its age is defined by property's accounting records which specifies the investment in property by account (A group in service life terms) and by the year of installation of that property. The age is dependent upon the appraisal year (study date) and the year of placement. It is customary to assume that the property placed in any particular placement year was placed continuously during that year and therefore its age is best represented as if that investment was placed in the middle of the year, i.e., July 1; hence, the adoption of the "mid-year" convention where all property is treated as if placed the mid-year.

Service Life and Survival/retirement pattern

The service life and survival/retirement pattern are determined by an analysis of historical survival and retirement experience of the company's property. This historical experience must be adjusted for factor which are known to be impacting the property's

service life but may not exhibited their effect on the property's retirement. Here it is important that a distinction is made between industrial property's physical service life and its functional service life. While physically a type of property may be deployed and remain in use for many years, over those years factors of changing technology, consumers demand and patterns, and even regulation, lessen the property functional life when compared to its physical life. In an industry such as the communications industry, function obsolescence is the primary driver of depreciation.

The following table details the impact of the above-described lives on the condition calculations:

Year	Study Date	Age	Iowa Curve	Service Life	Age % of ASL	Iowa Lookup	Iowa Condition	Remaining Life	Total Life	Condition
				ASL						
		years		years	%			years	years	%
Input		Calc	Input	Input	Calc	Calc	lookup	Calc	Calc	Calc
1970	2006	35.5	R3.0	30	118	R3.0118	0.131771	4.0	39.5	10.02%
1979	2006	26.5	R3.0	30	88	R3.0088	0.264919	7.9	34.4	23.07%
1981	2006	24.5	R3.0	25	98	R3.0098	0.211333	5.3	29.8	17.74%
1989	2006	16.5	R3.0	25	66	R3.0066	0.411848	10.3	26.8	38.42%
1990	2006	15.5	R3.0	20	78	R3.0078	0.327281	6.5	22.0	29.69%
2000	2006	5.5	R3.0	20	28	R3.0028	0.731331	14.6	20.1	72.67%
2004	2006	1.5	R3.0	20	8	R3.0008	0.921605	18.4	19.9	92.47%
2005	2006	0.5	R3.0	20	3	R3.0003	0.970499	19.4	19.9	97.49%

Statistical Analyses of Industrial Property Retirements

by

Robley Winfrey

BULLETIN 125
REVISED

ENGINEERING RESEARCH INSTITUTE
IOWA STATE UNIVERSITY • AMES, IOWA

IOWA CURVES

Iowa-type survivor curves are based on a set of empirical data collected (mainly in the 1930s) for the purpose of statistically predicting future service expectancy (remaining service) for physical properties.

The techniques used and methods applied are exactly analogous to those used by the insurance industry for the purpose of predicting human mortality (life expectancy) when determining appropriate insurance premium rates. The only distinction to be made is that the life insurance companies are investigating the life or longevity characteristics of human beings and the studies which developed the Iowa-type survivor curves were developed to predict the longevity or service life experience for physical, inanimate objects. The seminal statistical analyses for industrial property were conducted under the auspices of the Iowa Research Station now known as Iowa State University and were published in Statistical Analyses of Industrial Property Retirements, Bulletin 125, Engineering Research Institute, Iowa State University.

From the preface to the revised 1967 edition of Bulletin 125:

> "With the original publication of Bulletin 125 by the Iowa Engineering Experiment Station in 1935 (now known as the Engineering Research Institute), a significant contribution was made to the practice of industrial property life estimation. This was in the form, first, of a single volume, readily available, which presented in considerable detail the procedures for statiatically analyzing historical property retirement data. Secondly, but no less significant, was the presentation of a set of 18 generalized density functions descriptive of industrial property retirement dispersion, mathematically described in terms of the Pearson frequency curve family, but with parameters established empirically from the analysis of a wide range of actual retirement experience.
>
> These curves, the cumulative form of which are commonly referred to as the Iowa-type Survivor Curves, have been used extensively since their introduction and, at the present time, the set is accepted as the standard of induatrial property retirement dispersion. Because of the very simple mnemonic coding system which suggests the varying statistical characteristice involved, the Iowa Curves have also become widely used and recognized in the identification or classification of retirement dispersions, even for patterns derived in terms of analytical techniques not using the Curves."

The tables which follow this discussion are the ones used to estimate the remaining life of investment at particular age for an account with a particular service life.

Statistical Analyses of Industrial Property Retirements

by Robley Winfrey

(Revised April, 1967 by Harold A. Cowles, Professor, Department of Industrial Engineering)

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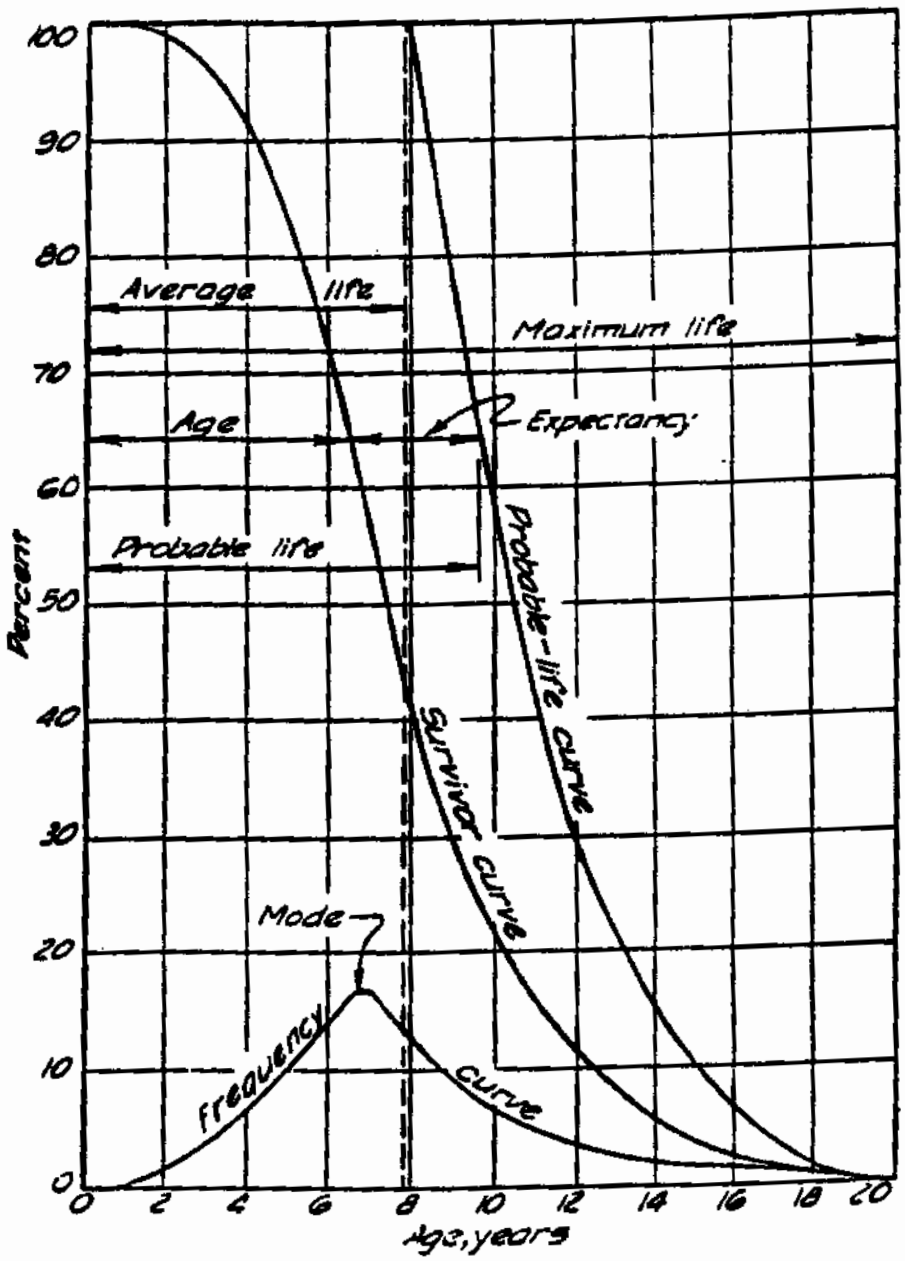


FIG. 1.—A typical survivor curve and its derived curves.

8. The *service life* of a unit is that period of time (or service) extending from the date of its installation to the date of its retirement from service. While the service life of physical property is usually expressed in years it may also be expressed in terms of units of production (screws, wheels, cars, pounds, miles, car-miles), time units of less than a year (months, hours, minutes), or combinations of physical units or services and time (lamp-hours, ton-years).

9. The *probable service life* of an individual unit is that period of time extending from its date of installation to the forecasted date when it probably will be retired from service.

10. The *expectancy* of life of an individual unit is that period of time extending from the observation age (usually the present) to the forecasted date when the unit probably will be retired from service. Age plus expectancy always equals probable life.

11. The *average service life of* a group of individual units is the quotient obtained by dividing the sum of the service lives of all the units by the number of units. The average service life (in years) is equal to the area under the survivor curve in percent-years (or unit-years) divided by 100 percent (or the total number of units).

12. The *probable average service life* of a group of individual units is the average of the probable service lives of the units of the group.

13. The *expectancy* of life of a group of individual units is that period of time extending from the observation age (usually the present) to the average of the forecasted dates when the units probably will be retired. The observation age plus the expectancy always equals the probable average service life.

> Note: Service life and average service life are always known quantities since they represent completed service life; probable service life and probable average service life always must be estimated since they are forecasts of uncompleted service.

14. *Maximum life* or *maximum age* is the age of the last unit of a given group to be retired from service; it is also the age at which the survivor curve has a zero ordinate, or zero percent surviving.

15. Property units which are taken out of service for any reason whatsoever are called *retirements*. Retirements may include original units (units of the initial installation) as well as "second-generation" units, that is, replacements (or renewals) which were installed to take the place of the original units as they were removed.

16. *Replacements* are the units put in service to replace retirements.

17. *Renewals* are replacements "in kind" which have exactly the same life characteristics as the retirements.

18. *Installations* are new units placed in service, not as replacement units, but as additions to the property.

19. All renewals, replacements, and installations are *placements*.

20. *Survivor curves* show the number of units of a given group

which are surviving in service at given ages. The ordinates to the curve give at any particular age the percentage (or the actual number) of the original number which are yet surviving in service. The abscissa is measured in years or other suitable service unit. The *original survivor curve* is the curve drawn through the points calculated from the original data without adjustment. Since this original survivor curve is generally irregular it is smoothed to produce a *smoothed survivor curve*, sometimes referred to as an *adjusted curve*.

Survivor curves have in some publications been referred to as *mortality curves*. However, the term *survivor curve* is used in this report because the curves referred to show the *percent surviving*, not the *percent retired*, and because the term *mortality* suggests human beings and not inanimate objects.

21. A *stub survivor curve* is an incomplete survivor curve; that is, one which does not extend to zero percent surviving because of a lack of retirement data on the longer-lived units.

22. A *probable-life curve* shows the probable average life of the survivors at any age from zero to maximum life.

23. If the percent surviving is read at the beginning of each successive age-interval and the differences in these successive readings plotted at ages corresponding to the midpoints of the intervals, the resulting points form a *frequency curve*, or *distribution curve*. Since the ordinates indicate the percentage of the units retired during each interval, the curve shows in what manner the retirements are distributed over the period from zero age to maximum life.

24. The point on the frequency curve having the highest ordinate is called the *mode*. The year in which the mode occurs is called the *modal year*.

25. A *maximum-life cycle* is a period of time corresponding in length to the maximum life of the units. An industrial property may continue to be operated through several maximum-life cycles of some of the units of which it is composed.

26. An *average-life cycle* is a period of time corresponding in length to the *average* life.

27. If a property is continued in service for a long time and maintained with a constant number of like units of substantially the same potential average life, it will reach a *normal condition* or *stabilized condition*, after which the average age of the units in service and the annual renewals will be constant year after year.

28. *Normal renewals* are the annual renewals after the property group has reached a stabilized condition. Normal renewals, in percent of the original number of units, are equal to 100 percent divided by the average life.

29. *Generalized curves* are those whose ordinates are expressed in percent of the total number of units and whose abscissas (age) are expressed in percent of average life.

30. *Type curves* are those theoretical curves derived by the methods described in this report from a study of actual retirements. They depict typical survivor and frequency curves for industrial property. Actual survivor curves are compared with type survivor curves in the process of determining probable average lives.

MORTALITY TABLES AND CURVES OF HUMAN BEINGS

By a study of population and deaths, life insurance companies have arrived at life tables for human beings of different nationalities. From these life tables the normal death rate and life expectancy for people at different ages can be determined as a basis for life insurance premiums and reserves. Life tables can be prepared from the vital statistics for any desired number of years in combination with census returns. By means of mathematical formulas a life table is adjusted to remove any slight irregularities that may exist in the original data.

Table 1 is the United States life table for white males, based upon deaths for the 10 years from 1901 to 1910. Unlike industrial property units whose average lives are continually being affected by many forces, the human average life and distribution of deaths according to age change very little over several generations. The life curve, however, varies considerably for different races as is illustrated in Fig. 2. The deaths at different ages are shown for the United States by the frequency curves in Fig. 3.

This reference to the United States life tables is made to show the similarity between the life characteristics of human beings and industrial properties. The essential differences are three. First, human beings experience a heavy infant mortality which results in a bi-modal frequency curve, one mode occurring between ages 0 and 1, and the other between ages 75 and 76. Second, the mode at the age-interval 75–76 occurs at a much greater percentage of average life than is usually found with physical property employed in industry. Third, the curves for industrial equipment vary in shape over wide limits while human mortality curves vary relatively little. The Makehamized curve in Fig. 3 is one that has been smoothed. (It does not represent the same group of lives as the lower curves of the figure.)

ANALYZING RETIREMENT DATA

The foregoing section discussed the life tables for humans and the accompanying curves. Similar analyses can be made of the behavior of the physical equipment employed in industry when sufficient information is available. The processes employed for analyzing the retirements of industrial property are not so easily handled as are those employed for mortality data of human beings, nor are the results usually as uniform because of the small number of units observed and the more numerous, less uniform causes of retirement of industrial

CHART NO. 9

SURVIVOR, PROBABLE LIFE AND FREQUENCY CURVES
FOR THE RIGHT-MODAL IOWA TYPE CURVES

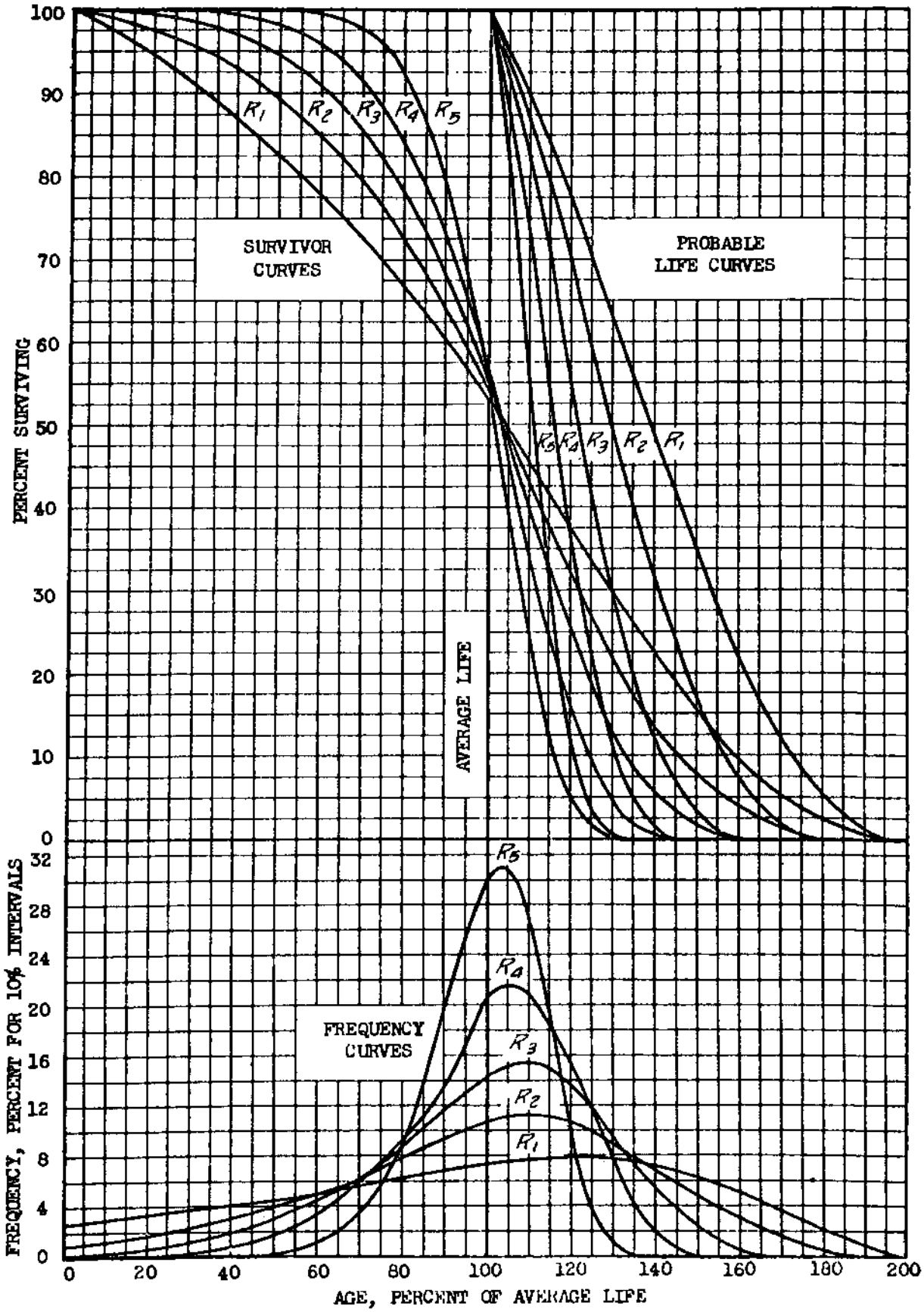


CHART NO. 8

SURVIVOR, PROBABLE LIFE AND FREQUENCY CURVES
FOR THE SYMMETRICAL IOWA TYPE CURVES

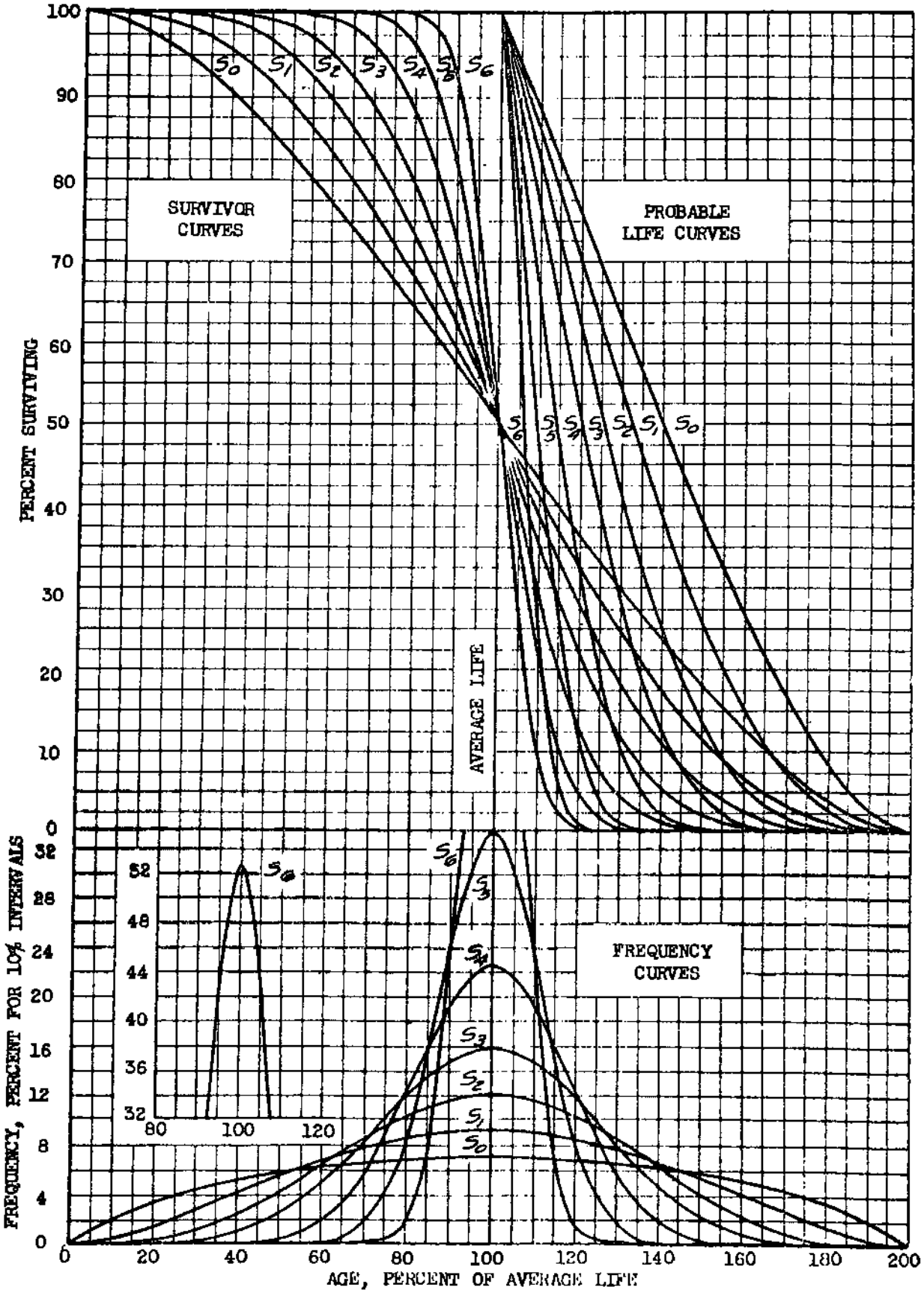


CHART NO. 7

SURVIVOR, PROBABLE LIFE AND FREQUENCY CURVES
FOR THE LEFT-MODAL IOWA TYPE CURVES

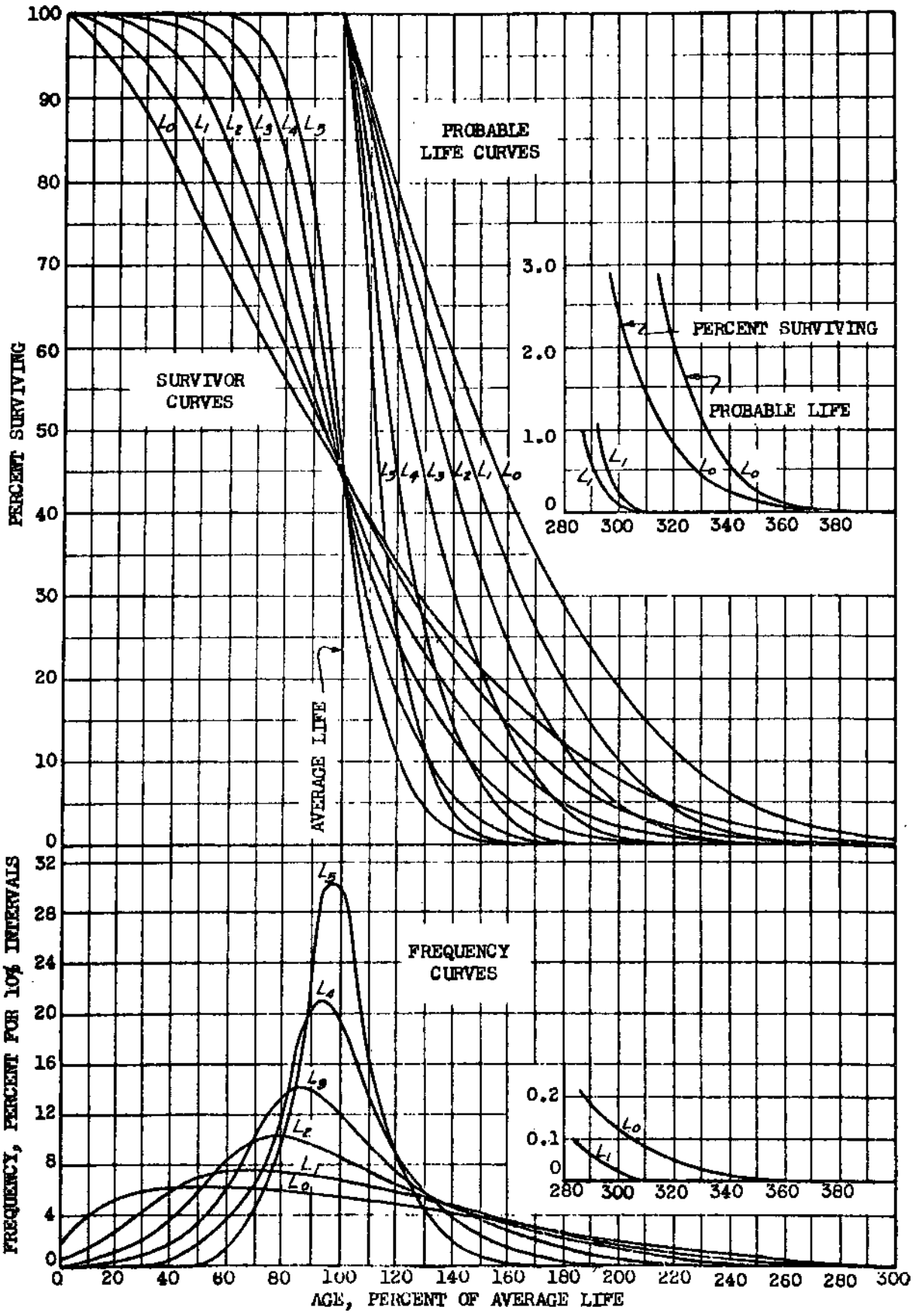
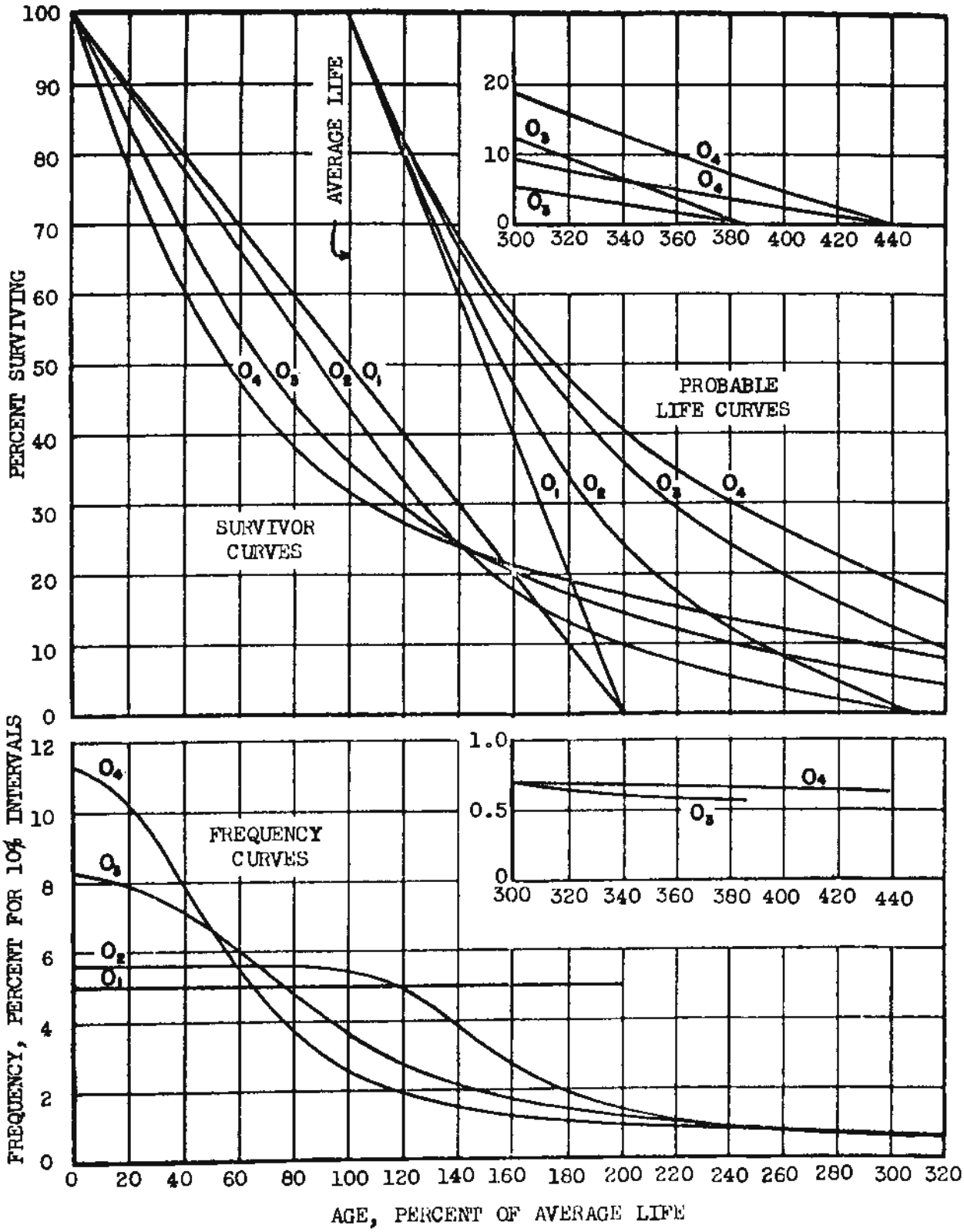


CHART NO. 10

SURVIVOR, PROBABLE LIFE AND FREQUENCY CURVES
FOR THE ORIGIN-MODAL TYPE CURVES



Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R2.0000	R2.0	0	0.0948315	100.0000000	100.0000000	0.0000000
R2.0001	R2.0	1	0.0981016	99.9051685	99.0944462	0.9055538
R2.0002	R2.0	2	0.1014623	99.8070669	98.1913567	1.8086433
R2.0003	R2.0	3	0.1049099	99.7056046	97.2907686	2.7092314
R2.0004	R2.0	4	0.1084509	99.6006947	96.3927202	3.6072798
R2.0005	R2.0	5	0.1120825	99.4922438	95.4972458	4.5027542
R2.0006	R2.0	6	0.1158104	99.3801613	94.6043863	5.3956137
R2.0007	R2.0	7	0.1196318	99.2643509	93.7141762	6.2858238
R2.0008	R2.0	8	0.1235532	99.1447191	92.8266525	7.1733475
R2.0009	R2.0	9	0.1275731	99.0211659	91.9418526	8.0581474
R2.0010	R2.0	10	0.1316938	98.8935928	91.0598126	8.9401874
R2.0011	R2.0	11	0.1359167	98.7618990	90.1805687	9.8194313
R2.0012	R2.0	12	0.1402454	98.6259823	89.3041592	10.6958408
R2.0013	R2.0	13	0.1446791	98.4857369	88.4306173	11.5693827
R2.0014	R2.0	14	0.1492214	98.3410578	87.5599813	12.4400187
R2.0015	R2.0	15	0.1538735	98.1918364	86.6922846	13.3077154
R2.0016	R2.0	16	0.1586370	98.0379629	85.8275662	14.1724338
R2.0017	R2.0	17	0.1635142	97.8793259	84.9658604	15.0341396
R2.0018	R2.0	18	0.1685056	97.7158117	84.1072016	15.8927984
R2.0019	R2.0	19	0.1736164	97.5473061	83.2516279	16.7483721
R2.0020	R2.0	20	0.1788426	97.3736897	82.3991718	17.6008282
R2.0021	R2.0	21	0.1841926	97.1946471	81.5498714	18.4501286
R2.0022	R2.0	22	0.1896649	97.0106545	80.7037592	19.2962408
R2.0023	R2.0	23	0.1952619	96.8209896	79.8608723	20.1391277
R2.0024	R2.0	24	0.2009860	96.6257277	79.0212450	20.9787550
R2.0025	R2.0	25	0.2068376	96.4247417	78.1849127	21.8150873
R2.0026	R2.0	26	0.2128210	96.2179041	77.3519096	22.6480904
R2.0027	R2.0	27	0.2189369	96.0050831	76.5222740	23.4777260
R2.0028	R2.0	28	0.2251892	95.7861462	75.8960373	24.3039627
R2.0029	R2.0	29	0.2315780	95.5609570	74.8732357	25.1267643
R2.0030	R2.0	30	0.2381039	95.3293810	74.0539045	25.9460955
R2.0031	R2.0	31	0.2447710	95.0912771	73.2380800	26.7619200
R2.0032	R2.0	32	0.2515831	94.8465061	72.4257956	27.5742044
R2.0033	R2.0	33	0.2585392	94.5949230	71.6170883	28.3829117
R2.0034	R2.0	34	0.2656450	94.3363838	70.8119927	29.1880073
R2.0035	R2.0	35	0.2728977	94.0707388	70.0105457	29.9894543
R2.0036	R2.0	36	0.2803049	93.7978411	69.2127819	30.7872181
R2.0037	R2.0	37	0.2878657	93.5175362	68.4187384	31.5812616
R2.0038	R2.0	38	0.2955808	93.2296705	67.6284504	32.3715496
R2.0039	R2.0	39	0.3034544	92.9340897	66.8419552	33.1580448
R2.0040	R2.0	40	0.3114920	92.6306353	66.0592899	33.9407101
R2.0041	R2.0	41	0.3196878	92.3191433	65.2808571	34.7191429
R2.0042	R2.0	42	0.3280507	91.9994555	64.5055971	35.4944029
R2.0043	R2.0	43	0.3365783	91.6714048	63.7346439	36.2653561
R2.0044	R2.0	44	0.3452769	91.3348265	62.9676700	37.0323300

Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R2.0045	R2.0	45	0.3541450	90.9895496	62.2047148	37.7952852
R2.0046	R2.0	46	0.3631840	90.6354046	61.4458170	38.5541830
R2.0047	R2.0	47	0.3723984	90.2722206	60.6910148	39.3089852
R2.0048	R2.0	48	0.3817892	89.8998222	59.9403491	40.0596509
R2.0049	R2.0	49	0.3913574	89.5180330	59.1938582	40.8061418
R2.0050	R2.0	50	0.4011030	89.1266756	58.4515839	41.5484161
R2.0051	R2.0	51	0.4110289	88.7255726	57.7135668	42.2864332
R2.0052	R2.0	52	0.4211368	88.3145437	56.9798470	43.0201530
R2.0053	R2.0	53	0.4314281	87.8934069	56.2504678	43.7495322
R2.0054	R2.0	54	0.4419002	87.4619808	55.5254688	44.4745312
R2.0055	R2.0	55	0.4525547	87.0200806	54.8048959	45.1951041
R2.0056	R2.0	56	0.4633961	86.5675259	54.0887899	45.9112101
R2.0057	R2.0	57	0.4744196	86.1041298	53.3771148	46.6228852
R2.0058	R2.0	58	0.4856272	85.6297102	52.6701531	47.3298469
R2.0059	R2.0	59	0.4970178	85.1440830	51.9677110	48.0322890
R2.0060	R2.0	60	0.5085907	84.6470652	51.2699108	48.7300892
R2.0061	R2.0	61	0.5203457	84.1384745	50.5767999	49.4232001
R2.0062	R2.0	62	0.5322781	83.6181288	49.8884211	50.1115789
R2.0063	R2.0	63	0.5443878	83.0858507	49.2042208	50.7957792
R2.0064	R2.0	64	0.5566711	82.5414629	48.5260449	51.4739551
R2.0065	R2.0	65	0.5691252	81.9847918	47.8521390	52.1476610
R2.0066	R2.0	66	0.5817490	81.4156666	47.1831479	52.8168521
R2.0067	R2.0	67	0.5945339	80.8339176	46.5191188	53.4808812
R2.0068	R2.0	68	0.6074762	80.2393837	45.8600979	54.1399021
R2.0069	R2.0	69	0.6205731	79.6319075	45.2061300	54.7938700
R2.0070	R2.0	70	0.6338167	79.0113344	44.5572619	55.4427381
R2.0071	R2.0	71	0.6471968	78.3775177	43.9135399	56.0864601
R2.0072	R2.0	72	0.6607103	77.7303209	43.2750101	56.7249899
R2.0073	R2.0	73	0.6743469	77.0696106	42.6417151	57.3582849
R2.0074	R2.0	74	0.6880913	76.3952637	42.0137038	57.9882962
R2.0075	R2.0	75	0.7019453	75.7071724	41.3910160	58.6089840
R2.0076	R2.0	76	0.7158861	75.0052271	40.7736988	59.2263012
R2.0077	R2.0	77	0.7299071	74.2893410	40.1617951	59.8382049
R2.0078	R2.0	78	0.7439918	73.5594339	39.5553460	60.4446540
R2.0079	R2.0	79	0.7581263	72.8154421	38.9543939	61.0456061
R2.0080	R2.0	80	0.7722978	72.0573158	38.3589792	61.6410208
R2.0081	R2.0	81	0.7864914	71.2850180	37.7691412	62.2308588
R2.0082	R2.0	82	0.8006802	70.4985266	37.1849198	62.8150802
R2.0083	R2.0	83	0.8148537	69.6978464	36.6083528	63.3936472
R2.0084	R2.0	84	0.8289880	68.8829927	36.0334740	63.9665260
R2.0085	R2.0	85	0.8430577	68.0540047	35.4663181	64.5336819
R2.0086	R2.0	86	0.8570489	67.2109470	34.9049168	65.0950832
R2.0087	R2.0	87	0.8709355	66.3538981	34.3493028	65.6506972
R2.0088	R2.0	88	0.8846855	65.4829626	33.7995038	66.2004962
R2.0089	R2.0	89	0.8982801	64.5982771	33.2555461	66.7444539

Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R2.0090	R2.0	90	0.9116889	63.6999970	32.7174568	67.2825432
R2.0091	R2.0	91	0.9248881	62.7883081	32.1852560	67.8147440
R2.0092	R2.0	92	0.9378390	61.8634200	31.6589661	68.3410339
R2.0093	R2.0	93	0.9505158	60.9255810	31.1386020	68.8613980
R2.0094	R2.0	94	0.9628930	59.9750652	30.6241779	69.3758221
R2.0095	R2.0	95	0.9749274	59.0121722	30.1157100	69.8842900
R2.0096	R2.0	96	0.9865956	58.0372448	29.6132040	70.3867960
R2.0097	R2.0	97	0.9978571	57.0506492	29.1166680	70.8833320
R2.0098	R2.0	98	1.0086742	56.0527921	28.6261051	71.3738949
R2.0099	R2.0	99	1.0190200	55.0441179	26.1415110	71.8584890
R2.0100	R2.0	100	1.0286558	54.0250979	27.6628840	72.3371160
R2.0101	R2.0	101	1.0381442	52.9962421	27.1902180	72.8097820
R2.0102	R2.0	102	1.0468449	51.9580979	26.7234991	73.2765009
R2.0103	R2.0	103	1.0549312	50.9112530	26.2627111	73.7372889
R2.0104	R2.0	104	1.0623607	49.8563218	25.8078351	74.1921649
R2.0105	R2.0	105	1.0691033	46.7939611	25.3588469	74.6411531
R2.0106	R2.0	106	1.0751200	47.7248578	24.9157200	75.0842800
R2.0107	R2.0	107	1.0803718	46.6497378	24.4784200	75.5215800
R2.0108	R2.0	108	1.0848422	45.5693660	24.0469079	75.9530921
R2.0109	R2.0	109	1.0884819	44.4845238	23.6211450	76.3788550
R2.0110	R2.0	110	1.0912700	43.3960419	23.2010810	76.7989190
R2.0111	R2.0	111	1.0931697	42.3047719	22.7866659	77.2133341
R2.0112	R2.0	112	1.0941701	41.2116022	22.3778369	77.6221631
R2.0113	R2.0	113	1.0942240	40.1174321	21.9745369	78.0254631
R2.0114	R2.0	114	1.0933342	39.0232081	21.5766909	78.4233091
R2.0115	R2.0	115	1.0914621	37.9298739	21.1842289	78.8157711
R2.0116	R2.0	116	1.0885978	36.8384118	20.7970691	79.2029309
R2.0117	R2.0	117	1.0847301	35.7498140	20.4151239	79.5848761
R2.0118	R2.0	118	1.0798369	34.6650839	20.0383019	79.9616981
R2.0119	R2.0	119	1.0739369	33.5852470	19.6665001	80.3334999
R2.0120	R2.0	120	1.0669980	32.5113101	19.2996221	80.7003779
R2.0121	R2.0	121	1.0590372	31.4443121	18.9375479	81.0624521
R2.0122	R2.0	122	1.0501070	30.3852749	18.5801630	81.4198370
R2.0123	R2.0	123	1.0400660	29.3351679	18.2273769	81.7726231
R2.0124	R2.0	124	1.0290709	28.2951019	17.8789959	82.1210041
R2.0125	R2.0	125	1.0170991	27.2660310	17.5349121	82.4650879
R2.0126	R2.0	126	1.0041568	26.2489319	17.1949849	82.8050151
R2.0127	R2.0	127	0.9902881	25.2447751	16.8590529	83.1409471
R2.0128	R2.0	126	0.9755079	24.2544670	16.5269830	83.4730170
R2.0129	R2.0	129	0.9598532	23.2789791	16.1985951	83.8014049
R2.0130	R2.0	130	0.9433670	22.3191259	15.8737270	84.1262730
R2.0131	R2.0	131	0.9260879	21.3757589	15.5522090	84.4477910
R2.0132	R2.0	132	0.9080550	20.4496710	15.2338660	84.7661340
R2.0133	R2.0	133	0.8893190	19.5416160	14.9185150	85.0814850
R2.0134	R2.0	134	0.8699369	18.8522970	14.6059730	85.3940270

Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R2.0135	R2.0	135	0.8499541	17.7823601	14.2960570	85.7039430
R2.0136	R2.0	136	0.8294290	16.9324060	13.9885750	86.0114250
R2.0137	R2.0	137	0.8084200	16.1029770	13.6833420	86.3166580
R2.0138	R2.0	138	0.7869870	15.2945570	13.3801709	86.6198291
R2.0139	R2.0	139	0.7651829	14.5075700	13.0788760	86.9211240
R2.0140	R2.0	140	0.7430681	13.7423871	12.7792740	87.2207260
R2.0141	R2.0	141	0.7207061	12.9993190	12.4811831	87.5188169
R2.0142	R2.0	142	0.6981599	12.2786109	12.1844341	87.8155659
R2.0143	R2.0	143	0.6754730	11.5804510	11.8888620	88.1111380
R2.0144	R2.0	144	0.6527110	10.9049780	11.5943070	88.4056930
R2.0145	R2.0	145	0.6299220	10.2522670	11.3006270	88.6993730
R2.0146	R2.0	146	0.6071579	9.6223450	11.0076849	88.9923151
R2.0147	R2.0	147	0.5844650	9.0151870	10.7153600	89.2846400
R2.0148	R2.0	148	0.5618890	8.4307220	10.4235460	89.5764540
R2.0149	R2.0	149	0.5394630	7.8688330	10.1321560	89.8678440
R2.0150	R2.0	150	0.5172310	7.3293700	9.8411110	90.1588891
R2.0151	R2.0	151	0.4952170	6.8121390	9.5503610	90.4496390
R2.0152	R2.0	152	0.4734520	6.3169220	9.2598670	90.7401331
R2.0153	R2.0	153	0.4519570	5.8434700	8.9696111	91.0303890
R2.0154	R2.0	154	0.4307510	5.3915130	8.6795980	91.3204020
R2.0155	R2.0	155	0.4098480	4.9607620	8.3898460	91.6101540
R2.0156	R2.0	156	0.3892590	4.5509140	8.1003940	91.8996060
R2.0157	R2.0	157	0.3689940	4.1616550	7.8112940	92.1887060
R2.0158	R2.0	158	0.3490550	3.7926610	7.5226200	92.4773800
R2.0159	R2.0	159	0.3294490	3.4436060	7.2344580	92.7655420
R2.0160	R2.0	160	0.3101780	3.1141570	6.9468990	93.0531010
R2.0161	R2.0	161	0.2912410	2.8039790	6.6600590	93.3399410
R2.0162	R2.0	162	0.2726440	2.5127360	6.3740460	93.6259540
R2.0163	R2.0	163	0.2543900	2.2400940	6.0889820	93.9110180
R2.0164	R2.0	164	0.2364840	1.9857040	5.8049920	94.1950080
R2.0165	R2.0	165	0.2189350	1.7492200	5.5221940	94.4778080
R2.0166	R2.0	166	0.2017570	1.5302850	5.2407130	94.7592870
R2.0167	R2.0	167	0.1849660	1.3285280	4.9606590	95.0393410
R2.0168	R2.0	168	0.1685830	1.1435620	4.6821490	95.3178510
R2.0169	R2.0	169	0.1526310	0.9749790	4.4052860	95.5947140
R2.0170	R2.0	170	0.1371620	0.8223480	4.1301220	95.8698760
R2.0171	R2.0	171	0.1221950	0.6851860	3.8568020	96.1431980
R2.0172	R2.0	172	0.1077830	0.5629910	3.5853840	96.4146180
R2.0173	R2.0	173	0.0939780	0.4552080	3.3159460	96.6840540
R2.0174	R2.0	174	0.0808330	0.3612300	3.0485230	96.9514770
R2.0175	R2.0	175	0.0684150	0.2803970	2.7832120	97.2167880
R2.0176	R2.0	176	0.0567860	0.2119820	2.5201260	97.4798740
R2.0177	R2.0	177	0.0460210	0.1551960	2.2592980	97.7407020
R2.0178	R2.0	178	0.0361913	0.1091750	2.0008840	97.9991160
R2.0179	R2.0	179	0.0273739	0.0729837	1.7451020	98.2548980

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Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve
as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R2.5000	R2.5	0	0.0551548	100.0000000	100.0000000	0.0000000
R2.5001	R2.5	1	0.0574713	99.9448452	99.0549097	0.9450903
R2.5002	R2.5	2	0.0598783	99.8873739	98.1116142	1.8883858
R2.5003	R2.5	3	0.0623808	99.8274956	97.1701632	2.8298368
R2.5004	R2.5	4	0.0649805	99.7651148	96.2306089	3.7693911
R2.5005	R2.5	5	0.0676823	99.7001343	95.2930031	4.7069969
R2.5006	R2.5	6	0.0704880	99.6324520	94.3573971	5.6426029
R2.5007	R2.5	7	0.0734014	99.5619640	93.4238472	6.5761528
R2.5008	R2.5	8	0.0764256	99.4885626	92.4924040	7.5075960
R2.5009	R2.5	9	0.0795669	99.4121370	91.5631256	8.4368744
R2.5010	R2.5	10	0.0828257	99.3325701	90.6360693	9.3639307
R2.5011	R2.5	11	0.0862064	99.2497444	89.7112904	10.2887096
R2.5012	R2.5	12	0.0897122	99.1635380	88.7888441	11.2111559
R2.5013	R2.5	13	0.0933485	99.0738258	87.8687897	12.1312103
R2.5014	R2.5	14	0.0971183	98.9804773	86.9511881	13.0488119
R2.5015	R2.5	15	0.1010247	98.8833590	86.0360956	13.9639044
R2.5016	R2.5	16	0.1050710	98.7823343	85.1235743	14.8764257
R2.5017	R2.5	17	0.1092635	98.6772633	84.2136803	15.7863197
R2.5018	R2.5	18	0.1136026	98.5679998	83.3064766	16.6935234
R2.5019	R2.5	19	0.1180954	98.4543972	82.4020252	17.5979748
R2.5020	R2.5	20	0.1227426	98.3363018	81.5003834	18.4996166
R2.5021	R2.5	21	0.1275521	98.2135592	80.6016140	19.3983860
R2.5022	R2.5	22	0.1325226	98.0860071	79.7057791	20.2942209
R2.5023	R2.5	23	0.1376619	97.9534845	78.8129368	21.1870632
R2.5024	R2.5	24	0.1429729	97.8158226	77.9231520	22.0768480
R2.5025	R2.5	25	0.1484576	97.6728497	77.0364828	22.9635172
R2.5026	R2.5	26	0.1541233	97.5243921	76.1529923	23.8470077
R2.5027	R2.5	27	0.1599703	97.3702688	75.2727404	24.7272596
R2.5028	R2.5	28	0.1660032	97.2102985	74.3957863	25.6042137
R2.5029	R2.5	29	0.1722278	97.0442953	73.5221920	26.4778080
R2.5030	R2.5	30	0.1786452	96.8720675	72.6520176	27.3479824
R2.5031	R2.5	31	0.1852608	96.6934223	71.7853222	28.2146778
R2.5032	R2.5	32	0.1920747	96.5081615	70.9221630	29.0778370
R2.5033	R2.5	33	0.1990958	96.3160868	70.0626001	29.9373999
R2.5034	R2.5	34	0.2063245	96.1169910	69.2066917	30.7933083
R2.5035	R2.5	35	0.2137642	95.9106665	68.3544951	31.6455049
R2.5036	R2.5	36	0.2214194	95.6969023	67.5060663	32.4939337
R2.5037	R2.5	37	0.2292928	95.4754829	66.6614609	33.3385391
R2.5038	R2.5	38	0.2373877	95.2461901	65.8207359	34.1792641
R2.5039	R2.5	39	0.2457084	95.0088024	64.9839459	35.0160541
R2.5040	R2.5	40	0.2542592	94.7630940	64.1511440	35.8488560
R2.5041	R2.5	41	0.2630376	94.5088348	63.3223858	36.6776142
R2.5042	R2.5	42	0.2720566	94.2457972	62.4977222	37.5022778
R2.5043	R2.5	43	0.2813111	93.9737406	61.6772060	38.3227940
R2.5044	R2.5	44	0.2908077	93.6924295	60.8608909	39.1391091

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Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve
as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R2.5045	R2.5	45	0.3005543	93.4016218	60.0488248	39.9511752
R2.5046	R2.5	46	0.3105459	93.1010675	59.2410641	40.7589359
R2.5047	R2.5	47	0.3207922	92.7905216	58.4376559	41.5623441
R2.5048	R2.5	48	0.3312959	92.4697294	57.6386509	42.3613491
R2.5049	R2.5	49	0.3420601	92.1384335	56.8441010	43.1558990
R2.5050	R2.5	50	0.3530903	91.7963734	56.0540552	43.9459448
R2.5051	R2.5	51	0.3643885	91.4432831	55.2685661	44.7314339
R2.5052	R2.5	52	0.3759584	91.0788946	54.4876838	45.5123162
R2.5053	R2.5	53	0.3878079	90.7029362	53.7114601	46.2885399
R2.5054	R2.5	54	0.3999405	90.3151283	52.9399471	47.0600529
R2.5055	R2.5	55	0.4123592	89.9151878	52.1731982	47.8268018
R2.5056	R2.5	56	0.4250708	89.5028286	51.4112682	48.5887318
R2.5057	R2.5	57	0.4380798	89.0777578	50.6542120	49.3457880
R2.5058	R2.5	58	0.4513912	88.6396780	49.9020872	50.0979128
R2.5059	R2.5	59	0.4650126	88.1882868	49.1549511	50.8450489
R2.5060	R2.5	60	0.4789476	87.7232742	48.4128661	51.5871339
R2.5061	R2.5	61	0.4932022	87.2443266	47.6758952	52.3241048
R2.5062	R2.5	62	0.5077830	86.7511244	46.9441018	53.0558982
R2.5063	R2.5	63	0.5226945	86.2433414	46.2175550	53.7824450
R2.5064	R2.5	64	0.5379439	85.7206469	45.4963250	54.5036750
R2.5065	R2.5	65	0.5535354	85.1827030	44.7804852	55.2195148
R2.5066	R2.5	66	0.5694743	84.6291676	44.0701108	55.9298892
R2.5067	R2.5	67	0.5857687	84.0596933	43.3652830	56.6347170
R2.5068	R2.5	68	0.6024160	83.4739246	42.6660848	57.3339152
R2.5069	R2.5	69	0.6194267	82.8715086	41.9726019	58.0273981
R2.5070	R2.5	70	0.6368008	82.2520819	41.2849250	58.7150750
R2.5071	R2.5	71	0.6545391	81.6152811	40.6031480	59.3968520
R2.5072	R2.5	72	0.6726418	80.9607420	39.9273682	60.0726318
R2.5073	R2.5	73	0.6911087	80.2881002	39.2576852	60.7423148
R2.5074	R2.5	74	0.7099390	79.5969915	38.5942020	61.4057980
R2.5075	R2.5	75	0.7291259	78.8870525	37.9370279	62.0629721
R2.5076	R2.5	76	0.7486620	78.1579266	37.2862740	62.7137260
R2.5077	R2.5	77	0.7685376	77.4092646	36.6420512	63.3579488
R2.5078	R2.5	78	0.7887430	76.6407270	36.0044770	63.9955230
R2.5079	R2.5	79	0.8092565	75.8519840	35.3736682	64.6263318
R2.5080	R2.5	80	0.8300667	75.0427275	34.7497439	65.2502561
R2.5081	R2.5	81	0.8511477	74.2126608	34.1328259	65.8671741
R2.5082	R2.5	82	0.8724718	73.3615131	33.5230379	66.4769621
R2.5083	R2.5	83	0.8940096	72.4890413	32.9204998	67.0795002
R2.5084	R2.5	84	0.9157238	71.5950317	32.3253360	67.6746640
R2.5085	R2.5	85	0.9375753	70.6793079	31.7376659	68.2623341
R2.5086	R2.5	86	0.9595194	69.7417326	31.1576109	68.8423891
R2.5087	R2.5	87	0.9815073	68.7822132	30.5852881	69.4147119
R2.5088	R2.5	88	1.0034790	67.8007059	30.0208130	69.9791870
R2.5089	R2.5	89	1.0253773	66.7972269	29.4642980	70.5357020

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Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve
as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R2.5090	R2.5	90	1.0471344	65.7718496	28.9158480	71.0841520
R2.5091	R2.5	91	1.0686831	64.7247152	28.3755679	71.6244321
R2.5092	R2.5	92	1.0899420	63.6560321	27.8435540	72.1564460
R2.5093	R2.5	93	1.1108289	62.5660901	27.3198969	72.6801031
R2.5094	R2.5	94	1.1312651	61.4552612	26.8046770	73.1953230
R2.5095	R2.5	95	1.1511522	60.3239961	26.2979729	73.7020271
R2.5096	R2.5	96	1.1704039	59.1728439	25.7998481	74.2001519
R2.5097	R2.5	97	1.1889191	58.0024400	25.3103621	74.6896379
R2.5098	R2.5	98	1.2065949	56.8135209	24.8295610	75.1704390
R2.5099	R2.5	99	1.2233358	55.6069260	24.3574791	75.6425209
R2.5100	R2.5	100	1.2390403	54.3835902	23.8941431	76.1058569
R2.5101	R2.5	101	1.2536021	53.1445499	23.4395671	76.5604329
R2.5102	R2.5	102	1.2669158	51.8909478	22.9937501	77.0062499
R2.5103	R2.5	103	1.2788939	50.6240320	22.5566781	77.4433219
R2.5104	R2.5	104	1.2894273	49.3451381	22.1283281	77.8716719
R2.5105	R2.5	105	1.2984328	48.0557108	21.7086580	78.2913420
R2.5106	R2.5	106	1.3058210	46.7572780	21.2976141	78.7023859
R2.5107	R2.5	107	1.3115058	45.4514570	20.8951299	79.1048701
R2.5108	R2.5	108	1.3154220	44.1399512	20.5011189	79.4988811
R2.5109	R2.5	109	1.3175020	42.8245292	20.1154850	79.8845150
R2.5110	R2.5	110	1.3176890	41.5070272	19.7381129	80.2618871
R2.5111	R2.5	111	1.3159404	40.1893382	19.3688741	80.6311259
R2.5112	R2.5	112	1.3122248	38.8733978	19.0076220	80.9923780
R2.5113	R2.5	113	1.3065191	37.5611730	18.6541979	81.3458021
R2.5114	R2.5	114	1.2988228	36.2546539	18.3084259	81.6915741
R2.5115	R2.5	115	1.2891360	34.9558311	17.9701180	82.0298820
R2.5116	R2.5	116	1.2774830	33.6666951	17.6390679	82.3609321
R2.5117	R2.5	117	1.2638931	32.3892121	17.3150611	82.6849389
R2.5118	R2.5	118	1.2484150	31.1253190	16.9978631	83.0021369
R2.5119	R2.5	119	1.2311139	29.8769040	16.6872311	83.3127689
R2.5120	R2.5	120	1.2120590	28.6457901	16.3829119	83.6170881
R2.5121	R2.5	121	1.1913381	27.4337311	16.0846400	83.9153600
R2.5122	R2.5	122	1.1690731	26.2423930	15.7921439	84.2078561
R2.5123	R2.5	123	1.1452968	25.0733199	15.5051580	84.4948420
R2.5124	R2.5	124	1.1201971	23.9280231	15.2233681	84.7766319
R2.5125	R2.5	125	1.0938761	22.8078260	14.9465010	85.0534990
R2.5126	R2.5	126	1.0664589	21.7139499	14.6742671	85.3257329
R2.5127	R2.5	127	1.0380819	20.6474910	14.4063790	85.5936210
R2.5128	R2.5	128	1.0088780	19.6094091	14.1425540	85.8574460
R2.5129	R2.5	129	0.9789822	18.6005311	13.8825150	86.1174850
R2.5130	R2.5	130	0.9485328	17.6215489	13.6259940	86.3740060
R2.5131	R2.5	131	0.9176611	16.6730161	13.3727360	86.6272640
R2.5132	R2.5	132	0.8864870	15.7553550	13.1224999	86.8775001
R2.5133	R2.5	133	0.8551400	14.8688680	12.8750581	87.1249419
R2.5134	R2.5	134	0.8237340	14.0137280	12.6302040	87.3697960

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Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve
as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R2.5135	R2.5	135	0.7923711	13.1899940	12.3877521	87.6122479
R2.5136	R2.5	136	0.7611500	12.3976229	12.1475360	87.8524640
R2.5137	R2.5	137	0.7301579	11.6364729	11.9094091	88.0905909
R2.5138	R2.5	138	0.6994760	10.9063150	11.6732490	88.3267510
R2.5139	R2.5	139	0.6691670	10.2068390	11.4389530	88.5610470
R2.5140	R2.5	140	0.6392890	9.5376720	11.2064340	88.7935660
R2.5141	R2.5	141	0.6098980	8.8983830	10.9756200	89.0243800
R2.5142	R2.5	142	0.5810320	8.2884851	10.7464550	89.2535450
R2.5143	R2.5	143	0.5527210	7.7074530	10.5188921	89.4811079
R2.5144	R2.5	144	0.5249980	7.1547320	10.2928760	89.7071240
R2.5145	R2.5	145	0.4978830	6.6297340	10.0683579	89.9316421
R2.5146	R2.5	146	0.4713970	6.1318510	9.8452730	90.1547270
R2.5147	R2.5	147	0.4455530	5.6604540	9.6235380	90.3764620
R2.5148	R2.5	148	0.4203759	5.2149010	9.4030380	90.5969620
R2.5149	R2.5	149	0.3958700	4.7945250	9.1836420	90.8163580
R2.5150	R2.5	150	0.3720580	4.3986550	8.9651520	91.0348480
R2.5151	R2.5	151	0.3489550	4.0265970	8.7473331	91.2526670
R2.5152	R2.5	152	0.3265810	3.6776420	8.5298860	91.4701140
R2.5153	R2.5	153	0.3049580	3.3510610	8.3124470	91.6875531
R2.5154	R2.5	154	0.2841100	3.0461030	8.0945830	91.9054170
R2.5155	R2.5	155	0.2640620	2.7619930	7.8757930	92.1242070
R2.5156	R2.5	156	0.2448380	2.4979310	7.6555050	92.3444950
R2.5157	R2.5	157	0.2264680	2.2530930	7.4330760	92.5669240
R2.5158	R2.5	158	0.2089740	2.0266250	7.2078220	92.7921780
R2.5159	R2.5	159	0.1923820	1.8176510	6.9790150	93.0209850
R2.5160	R2.5	160	0.1767130	1.6252690	6.7459320	93.2540680
R2.5161	R2.5	161	0.1619790	1.4485560	6.5078890	93.4921110
R2.5162	R2.5	162	0.1481900	1.2865770	6.2642780	93.7357220
R2.5163	R2.5	163	0.1353470	1.1383870	6.0146450	93.9853550
R2.5164	R2.5	164	0.1234370	1.0030400	5.7587730	94.2412270
R2.5165	R2.5	165	0.1124400	0.8796030	5.4967510	94.5032490
R2.5166	R2.5	166	0.1023100	0.7671630	5.2291050	94.7708950
R2.5167	R2.5	167	0.0929890	0.6648530	4.9568360	95.0431640
R2.5168	R2.5	168	0.0843740	0.5718640	4.6815480	95.3184520
R2.5169	R2.5	169	0.0763160	0.4874900	4.4052840	95.5947160
R2.5170	R2.5	170	0.0685810	0.4111740	4.1301250	95.8698750
R2.5171	R2.5	171	0.0610970	0.3425930	3.8568110	96.1431890
R2.5172	R2.5	172	0.0538920	0.2814960	3.5853870	96.4146130
R2.5173	R2.5	173	0.0469890	0.2276040	3.3159430	96.6840570
R2.5174	R2.5	174	0.0404160	0.1806150	3.0485420	96.9514580
R2.5175	R2.5	175	0.0342080	0.1401990	2.7832260	97.2167740
R2.5176	R2.5	176	0.0283930	0.1059910	2.5201240	97.4798760
R2.5177	R2.5	177	0.0230100	0.0775980	2.2592850	97.7407150
R2.5178	R2.5	178	0.0181160	0.0545880	2.0008610	97.9991390
R2.5179	R2.5	179	0.0136670	0.0364720	1.7451220	98.2548780

database

Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve
as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R2.5180	R2.5	180	0.0098240	0.0228050	1.4924140	98.5075860
R2.5181	R2.5	181	0.0065460	0.0129810	1.2434710	98.7565290
R2.5182	R2.5	182	0.0038930	0.0064350	0.9997670	99.0002330
R2.5183	R2.5	183	0.0019010	0.0025420	0.7651460	99.2348540
R2.5184	R2.5	184	0.0006080	0.0006410	0.5514820	99.4485180
R2.5185	R2.5	185	0.0000330	0.0000330	0.5000000	99.5000000
R2.5186	R2.5	186	0.0000000	0.0000000	0.0000000	100.0000000

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Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve
as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R3.0000	R3.0	0	0.0154791	100.0000000	100.0000000	0.0000000
R3.0001	R3.0	1	0.0168400	99.9845209	99.0154038	0.9845962
R3.0002	R3.0	2	0.0182953	99.9676809	98.0319996	1.9680004
R3.0003	R3.0	3	0.0198507	99.9493856	97.0498524	2.9501476
R3.0004	R3.0	4	0.0215111	99.9295349	96.0690317	3.9309683
R3.0005	R3.0	5	0.0232811	99.9080238	95.0896082	4.9103918
R3.0006	R3.0	6	0.0251655	99.8847427	94.1116552	5.8883448
R3.0007	R3.0	7	0.0271702	99.8595772	93.1352463	8.8647537
R3.0008	R3.0	8	0.0292997	99.8324070	92.1604576	7.8395424
R3.0009	R3.0	9	0.0315600	99.8031073	91.1873674	8.8128326
R3.0010	R3.0	10	0.0339584	99.7715473	90.2160540	9.7839460
R3.0011	R3.0	11	0.0364952	99.7375889	89.2465992	10.7534008
R3.0012	R3.0	12	0.0391798	99.7010937	88.2790852	11.7209148
R3.0013	R3.0	13	0.0420189	99.6619139	87.3135939	12.6864061
R3.0014	R3.0	14	0.0450144	99.6198950	86.3502102	13.6497898
R3.0015	R3.0	15	0.0481756	99.5748806	85.3890209	14.6109791
R3.0016	R3.0	16	0.0515060	99.5267048	84.4301109	15.5698891
R3.0017	R3.0	17	0.0550118	99.4751988	83.4735660	16.5264320
R3.0018	R3.0	18	0.0586998	99.4201870	82.5194798	17.4805202
R3.0019	R3.0	19	0.0625744	99.3614874	81.5679340	18.4320660
R3.0020	R3.0	20	0.0666428	99.2989130	80.6190205	19.3809795
R3.0021	R3.0	21	0.0709104	99.2322702	79.6728288	20.3271732
R3.0022	R3.0	22	0.0753794	99.1613598	78.7294428	21.2705574
R3.0023	R3.0	23	0.0800638	99.0859804	77.7889566	22.2110434
R3.0024	R3.0	24	0.0849600	99.0059166	76.8514568	23.1485434
R3.0025	R3.0	25	0.0900774	98.9209566	75.9170332	24.0829668
R3.0026	R3.0	26	0.0954256	98.8308792	74.9857712	25.0142288
R3.0027	R3.0	27	0.1010027	98.7354536	74.0577602	25.9422398
R3.0028	R3.0	28	0.1068191	98.6344509	73.1330643	26.8669157
R3.0029	R3.0	29	0.1128788	98.5276318	72.2118292	27.7881708
R3.0030	R3.0	30	0.1191874	98.4147530	71.2940807	28.7059193
R3.0031	R3.0	31	0.1257477	98.2955658	70.3799210	29.6200790
R3.0032	R3.0	32	0.1325683	98.1698179	69.4694319	30.5305681
R3.0033	R3.0	33	0.1396523	98.0372496	68.5628938	31.4373084
R3.0034	R3.0	34	0.1470041	97.8975973	67.6597862	32.3402138
R3.0035	R3.0	35	0.1546307	97.7505932	66.7607861	33.2392139
R3.0036	R3.0	36	0.1625337	97.5959625	65.8657694	34.1342306
R3.0037	R3.0	37	0.1707211	97.4334288	64.9748087	35.0251913
R3.0038	R3.0	38	0.1791944	97.2627077	64.0879793	35.9120207
R3.0039	R3.0	39	0.1879616	97.0835133	63.2053480	36.7946520
R3.0040	R3.0	40	0.1970244	96.8955517	62.3269858	37.6730142
R3.0041	R3.0	41	0.2063894	96.6985273	61.4529600	38.5470400
R3.0042	R3.0	42	0.2160606	96.4921379	60.5633340	39.4166660
R3.0043	R3.0	43	0.2260437	96.2760773	59.7181711	40.2818289
R3.0044	R3.0	44	0.2363405	96.0500336	58.8575339	41.1424661

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Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R3.0045	R3.0	45	0.2469616	95.8136931	58.0014839	41.9985161
R3.0046	R3.0	46	0.2579089	95.5667315	57.1500778	42.8499222
R3.0047	R3.0	47	0.2691869	95.3088226	56.3033738	43.6966262
R3.0048	R3.0	48	0.2808028	95.0396357	55.4614301	44.5385699
R3.0049	R3.0	49	0.2927637	94.7588329	54.6243000	45.3757000
R3.0050	R3.0	50	0.3050775	94.4660692	53.7920389	46.2079611
R3.0051	R3.0	51	0.3177452	94.1609917	52.9847021	47.0352979
R3.0052	R3.0	52	0.3307829	93.8432465	52.1423440	47.8576560
R3.0053	R3.0	53	0.3441897	93.5124636	51.3250179	48.6749821
R3.0054	R3.0	54	0.3579797	93.1682739	50.5127802	49.4872198
R3.0055	R3.0	55	0.3721629	92.8102942	49.7056861	50.2943139
R3.0056	R3.0	56	0.3867464	92.4381313	48.9037910	51.0962090
R3.0057	R3.0	57	0.4017400	92.0513849	48.1071558	51.8928442
R3.0058	R3.0	58	0.4171553	91.6496449	47.3158379	52.6841621
R3.0059	R3.0	59	0.4330063	91.2324696	46.5299010	53.4700990
R3.0060	R3.0	60	0.4493046	90.7994833	45.7494102	54.2505898
R3.0061	R3.0	61	0.4660597	90.3501787	44.9744310	55.0255690
R3.0062	R3.0	62	0.4832878	89.8841190	44.2050362	55.7949638
R3.0063	R3.0	63	0.5010013	89.4008312	43.4412990	56.5587010
R3.0064	R3.0	64	0.5192156	88.8998299	42.6832981	57.3167019
R3.0065	R3.0	65	0.5379458	88.3808143	41.9311161	58.0688839
R3.0066	R3.0	66	0.5572013	87.8426685	41.1848378	58.8151622
R3.0067	R3.0	67	0.5770016	87.2854672	40.4445572	59.5554428
R3.0068	R3.0	68	0.5973559	86.7084656	39.7103682	60.2896318
R3.0069	R3.0	69	0.6182804	86.1111097	38.9823709	61.0176291
R3.0070	R3.0	70	0.6397857	85.4928293	38.2608740	61.7393260
R3.0071	R3.0	71	0.6618805	84.8530436	37.5453868	62.4546132
R3.0072	R3.0	72	0.6845751	84.1911631	36.8368242	63.1633758
R3.0073	R3.0	73	0.7078876	83.5065880	36.1345072	63.8654928
R3.0074	R3.0	74	0.7317888	82.7987204	35.4391561	64.5608439
R3.0075	R3.0	75	0.7563066	82.0689338	34.7507062	65.2492938
R3.0076	R3.0	76	0.7814388	81.3108270	34.0692878	65.9307122
R3.0077	R3.0	77	0.8071690	80.5291882	33.3950372	66.6049628
R3.0078	R3.0	78	0.8334932	79.7220192	32.7280932	67.2719068
R3.0079	R3.0	79	0.8603878	78.8885280	32.0685968	67.9314032
R3.0080	R3.0	80	0.8878355	78.0281382	31.4166920	68.5833080
R3.0081	R3.0	81	0.9158049	77.1403027	30.7725229	69.2274771
R3.0082	R3.0	82	0.9442618	76.2244978	30.1362350	69.8637650
R3.0083	R3.0	83	0.9731655	75.2802362	29.5079711	70.4920289
R3.0084	R3.0	84	1.0024595	74.3070707	28.8878751	71.1121249
R3.0085	R3.0	85	1.0320921	73.3046112	28.2760870	71.7239130
R3.0086	R3.0	86	1.0619917	72.2725191	27.6727450	72.3272550
R3.0087	R3.0	87	1.0920782	71.2105274	27.0779829	72.9220171
R3.0088	R3.0	88	1.1222725	70.1184492	26.4919291	73.5080709
R3.0089	R3.0	89	1.1524744	68.9961767	25.9147060	74.0852940

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Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve
as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R3.0090	R3.0	90	1.1825809	67.8437023	25.3464310	74.6535690
R3.0091	R3.0	91	1.2124787	66.6611214	24.7672109	75.2127891
R3.0092	R3.0	92	1.2420444	65.4486427	24.2371471	75.7628529
R3.0093	R3.0	93	1.2711425	64.2065983	23.6963310	76.3036690
R3.0094	R3.0	94	1.2996359	62.9354558	23.1648400	76.8351600
R3.0095	R3.0	95	1.3273778	61.6358199	22.6427441	77.3572559
R3.0096	R3.0	96	1.3542113	60.3084421	22.1301019	77.8698981
R3.0097	R3.0	97	1.3799820	58.9542308	21.6269579	78.3730421
R3.0098	R3.0	98	1.4045148	57.5742488	21.1333439	78.8686561
R3.0099	R3.0	99	1.4276528	56.1697340	20.6492770	79.3507230
R3.0100	R3.0	100	1.4492231	54.7420812	20.1747630	79.8252370
R3.0101	R3.0	101	1.4690599	53.2928581	19.7097900	80.2902100
R3.0102	R3.0	102	1.4869881	51.8237982	19.2543340	80.7456660
R3.0103	R3.0	103	1.5028572	50.3368101	18.8083510	81.1916490
R3.0104	R3.0	104	1.5164928	48.8339529	18.3717880	81.8282120
R3.0105	R3.0	105	1.5277629	47.3174601	17.9445670	82.0554330
R3.0106	R3.0	106	1.5365224	45.7896972	17.5286011	82.4733989
R3.0107	R3.0	107	1.5428388	44.2531748	17.1177840	82.8822160
R3.0108	R3.0	108	1.5460029	42.7105360	16.7179930	83.2820070
R3.0109	R3.0	109	1.5465211	41.1645331	16.3270889	83.6729131
R3.0110	R3.0	110	1.5441080	39.6180120	15.9449101	84.0550899
R3.0111	R3.0	111	1.5387101	38.0739040	15.5712870	84.4287130
R3.0112	R3.0	112	1.5302810	36.5351939	15.2060260	84.7939740
R3.0113	R3.0	113	1.5188141	35.0049129	14.8489180	85.1510820
R3.0114	R3.0	114	1.5043109	33.4860988	14.4997360	85.5002640
R3.0115	R3.0	115	1.4868099	31.9817879	14.1582340	85.8417680
R3.0116	R3.0	116	1.4683680	30.4949780	13.8241530	86.1758470
R3.0117	R3.0	117	1.4430571	29.0286100	13.4972171	86.5027829
R3.0116	R3.0	118	1.4169929	27.5855529	13.1771280	86.8228720
R3.0119	R3.0	119	1.3882911	26.1685600	12.8635780	87.1364220
R3.0120	R3.0	120	1.3571188	24.7602689	12.5562360	87.4437640
R3.0121	R3.0	121	1.3236401	23.4231501	12.2547650	87.7452350
R3.0122	R3.0	122	1.2880390	22.0995100	11.9568110	88.0411890
R3.0123	R3.0	123	1.2505269	20.8114710	11.6680059	88.3319941
R3.0124	R3.0	124	1.2113230	19.5609441	11.3819740	88.6180260
R3.0125	R3.0	125	1.1706541	18.3496211	11.1003320	88.8996680
R3.0126	R3.0	126	1.1287601	17.1789670	10.8226880	89.1773120
R3.0127	R3.0	127	1.0858789	16.0502069	10.5486490	89.4513510
R3.0128	R3.0	128	1.0422470	14.9643300	10.2778220	89.7221780
R3.0129	R3.0	129	0.9981119	13.9220830	10.0098190	89.9901810
R3.0130	R3.0	130	0.9538992	12.9239711	9.7442570	90.2557430
R3.0131	R3.0	131	0.9092329	11.9702719	9.4807680	90.5192320
R3.0132	R3.0	132	0.8649200	11.0610390	9.2190000	90.7810000
R3.0133	R3.0	133	0.8209611	10.1961190	8.9586190	91.0413810
R3.0134	R3.0	134	0.7775309	9.3751580	8.6993200	91.3006800

Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve
as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R3.0135	R3.0	135	0.7347881	8.5976270	8.4408310	91.5591891
R3.0136	R3.0	136	0.8928700	7.8828390	8.1829081	91.8170919
R3.0137	R3.0	137	0.6518970	7.1699690	7.9253460	92.0746540
R3.0138	R3.0	138	0.8119650	6.5180720	7.6679810	92.3320190
R3.0139	R3.0	139	0.5731500	5.9061070	7.4106960	92.5893040
R3.0140	R3.0	140	0.5355110	5.3329570	7.1534120	92.8465880
R3.0141	R3.0	141	0.4990880	4.7974460	6.8960930	93.1039070
R3.0142	R3.0	142	0.4639030	4.2983580	6.6387510	93.3612490
R3.0143	R3.0	143	0.4299690	3.8344550	6.3814340	93.6185660
R3.0144	R3.0	144	0.3972850	3.4044860	6.1242290	93.8757710
R3.0145	R3.0	145	0.3658450	3.0072010	5.8672540	94.1327460
R3.0146	R3.0	146	0.3356360	2.6413560	5.6106530	94.3893470
R3.0147	R3.0	147	0.3066410	2.3057200	5.3545910	94.6454090
R3.0148	R3.0	148	0.2788620	1.9990790	5.0992460	94.9007540
R3.0149	R3.0	149	0.2522770	1.7202170	4.8448220	95.1551780
R3.0150	R3.0	150	0.2268850	1.4679400	4.5915160	95.4084840
R3.0151	R3.0	151	0.2026930	1.2410550	4.3395140	95.6604860
R3.0152	R3.0	152	0.1797100	1.0383620	4.0890000	95.9110000
R3.0153	R3.0	153	0.1579600	0.8586520	3.8401530	96.1598470
R3.0154	R3.0	154	0.1374690	0.7006920	3.5931400	96.4068600
R3.0155	R3.0	155	0.1182750	0.5632230	3.3480970	96.6519030
R3.0156	R3.0	156	0.1004170	0.4449460	3.1051630	96.8948370
R3.0157	R3.0	157	0.0839420	0.3445310	2.8644800	97.1355200
R3.0158	R3.0	158	0.0688930	0.2605890	2.8261500	97.3738500
R3.0159	R3.0	159	0.0553160	0.1916960	2.3902580	97.6097420
R3.0180	R3.0	160	0.0432485	0.1363800	2.1569580	97.8430420
R3.0161	R3.0	161	0.0327163	0.0931315	1.9263620	98.0736380
R3.0162	R3.0	162	0.0237359	0.0604152	1.6987790	98.3012210
R3.0163	R3.0	163	0.0163033	0.0366793	1.4745100	98.5254900
R3.0164	R3.0	164	0.0103913	0.0203760	1.2542690	98.7457310
R3.0165	R3.0	165	0.0059434	0.0099847	1.0392430	98.9607570
R3.0166	R3.0	166	0.0028646	0.0040413	0.8322900	99.1677100
R3.0167	R3.0	167	0.0010104	0.0011767	0.6413070	99.3586930
R3.0168	R3.0	168	0.0001662	0.0001662	0.4999820	99.5000180
R3.0169	R3.0	169	0.0000000	0.0000000	0.0000000	100.0000000

Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R4.0000	R4.0	0	0.0008278	100.0000000	100.0000000	0.0000000
R4.0001	R4.0	1	0.0009632	99.9991722	99.0013161	0.9986839
R4.0002	R4.0	2	0.0011139	99.9982090	98.0022631	1.9977369
R4.0003	R4.0	3	0.0012894	99.9970951	97.0033197	2.9966803
R4.0004	R4.0	4	0.0014858	99.9958057	96.0045939	3.9954061
R4.0005	R4.0	5	0.0017109	99.9943199	95.0060129	4.9939871
R4.0006	R4.0	6	0.0019645	99.9926090	94.0076304	5.9923696
R4.0007	R4.0	7	0.0022536	99.9906445	93.0094681	6.9905319
R4.0008	R4.0	8	0.0025768	99.9883909	92.0115519	7.9884481
R4.0009	R4.0	9	0.0029430	99.9858141	91.0139113	8.9860887
R4.0010	R4.0	10	0.0033541	99.9828711	90.0165749	9.9834251
R4.0011	R4.0	11	0.0038157	99.9795170	89.0195789	10.9804211
R4.0012	R4.0	12	0.0043325	99.9757013	88.0229569	11.9770431
R4.0013	R4.0	13	0.0049095	99.9713688	87.0267496	12.9732504
R4.0014	R4.0	14	0.0055561	99.9664593	86.0310001	13.9689999
R4.0015	R4.0	15	0.0062743	99.9609032	85.0357533	14.9642467
R4.0016	R4.0	16	0.0070753	99.9546289	84.0410605	15.9589395
R4.0017	R4.0	17	0.0079612	99.9475536	83.0469732	16.9530268
R4.0018	R4.0	18	0.0089484	99.9395924	82.0535498	17.9464502
R4.0019	R4.0	19	0.0100383	99.9306440	81.0608521	18.9391479
R4.0020	R4.0	20	0.0112429	99.9206057	80.0689449	19.9310551
R4.0021	R4.0	21	0.0125732	99.9093828	79.0778990	20.9221010
R4.0022	R4.0	22	0.0140372	99.8967896	78.0877886	21.9122114
R4.0023	R4.0	23	0.0156517	99.8827524	77.0986939	22.9013061
R4.0024	R4.0	24	0.0174217	99.8671007	76.1106977	23.8893023
R4.0025	R4.0	25	0.0193634	99.8496790	75.1238899	24.8761101
R4.0026	R4.0	26	0.0214911	99.8303156	74.1383648	25.8616352
R4.0027	R4.0	27	0.0238161	99.8088245	73.1542206	26.8457794
R4.0028	R4.0	28	0.0283678	99.7850084	72.1715622	27.8284378
R4.0029	R4.0	29	0.0291262	99.7586508	71.1904984	28.8095016
R4.0030	R4.0	30	0.0321426	99.7295246	70.2111445	29.7888555
R4.0031	R4.0	31	0.0354223	99.6973820	69.2336187	30.7663813
R4.0032	R4.0	32	0.0389815	99.6619597	68.2580481	31.7419519
R4.0033	R4.0	33	0.0428438	99.6229782	67.2845621	32.7154379
R4.0034	R4.0	34	0.0470247	99.5801344	66.3132954	33.6867046
R4.0035	R4.0	35	0.0515423	99.5331097	65.3443880	34.6556120
R4.0036	R4.0	36	0.0564251	99.4815674	64.3779860	35.6220140
R4.0037	R4.0	37	0.0616894	99.4251423	63.4142370	36.5857630
R4.0038	R4.0	38	0.0673580	99.3634529	62.4532971	37.5467029
R4.0039	R4.0	39	0.0734539	99.2960949	61.4953232	38.5046768
R4.0040	R4.0	40	0.0800018	99.2226410	60.5404782	39.4595218
R4.0041	R4.0	41	0.0870268	99.1426392	59.5889268	40.4110732
R4.0042	R4.0	42	0.0945492	99.0556126	58.6408401	41.3591599
R4.0043	R4.0	43	0.1025982	98.9610634	57.6963892	42.3036108
R4.0044	R4.0	44	0.1111975	98.8584852	56.7557492	43.2442508

Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R4.0045	R4.0	45	0.1203727	98.7472877	55.8190970	44.1809030
R4.0046	R4.0	46	0.1301480	98.6268950	54.8866129	45.1133871
R4.0047	R4.0	47	0.1405508	98.4967470	53.9584770	46.0415230
R4.0048	R4.0	48	0.1518085	98.3561964	53.0348692	46.9651308
R4.0049	R4.0	49	0.1633424	98.2045879	52.1159720	47.8840280
R4.0050	R4.0	50	0.1757803	98.0412455	51.2019682	48.7980318
R4.0051	R4.0	51	0.1889468	97.8654652	50.2930360	49.7069640
R4.0052	R4.0	52	0.2028656	97.6765184	49.3893561	50.6106439
R4.0053	R4.0	53	0.2175588	97.4738528	48.4911060	51.5088940
R4.0054	R4.0	54	0.2328536	97.2560940	47.5984602	52.4015398
R4.0055	R4.0	55	0.2497578	97.0234404	46.7115922	53.2884078
R4.0056	R4.0	56	0.2665119	96.7738826	45.8306670	54.1693330
R4.0057	R4.0	57	0.2845173	96.5071707	44.9558511	55.0441489
R4.0058	R4.0	58	0.3034000	96.2226534	44.0873008	55.9126992
R4.0059	R4.0	59	0.3231707	95.9192534	43.2251711	56.7748289
R4.0060	R4.0	60	0.3438418	95.5960827	42.3696070	57.6303930
R4.0061	R4.0	61	0.3654260	95.2522411	41.5207481	58.4792519
R4.0062	R4.0	62	0.3879290	94.8868151	40.6787262	59.3212738
R4.0063	R4.0	63	0.4113550	94.4988861	39.8436651	60.1563349
R4.0064	R4.0	64	0.4357090	94.0875311	39.0156770	60.9843230
R4.0065	R4.0	65	0.4609852	93.6518221	38.1948690	61.8051310
R4.0066	R4.0	66	0.4871807	93.1908369	37.3813329	62.6186671
R4.0067	R4.0	67	0.5142860	92.7036562	36.5751538	63.4248462
R4.0068	R4.0	68	0.5422850	92.1893702	35.7764020	64.2235980
R4.0069	R4.0	69	0.5711651	91.6470852	34.9851360	65.0148640
R4.0070	R4.0	70	0.6009006	91.0759201	34.2014031	65.7985969
R4.0071	R4.0	71	0.6314631	90.4750195	33.4252348	66.5747652
R4.0072	R4.0	72	0.6628237	89.8435564	32.6568491	67.3433509
R4.0073	R4.0	73	0.6949434	89.1807327	31.8956490	68.1043510
R4.0074	R4.0	74	0.7277765	86.4857893	31.1422219	68.8577781
R4.0075	R4.0	75	0.7612782	87.7580128	30.3963370	69.6036630
R4.0076	R4.0	76	0.7953930	86.9967346	29.6579499	70.3420501
R4.0077	R4.0	77	0.8300562	86.2013416	28.9269941	71.0730059
R4.0078	R4.0	78	0.8652038	85.3712854	28.2033880	71.7966120
R4.0079	R4.0	79	0.9007826	84.5060616	27.4870250	72.5129750
R4.0080	R4.0	80	0.9366550	83.6053190	26.7777820	73.2222180
R4.0081	R4.0	81	0.9727898	82.6686640	26.0755160	73.9244840
R4.0082	R4.0	82	1.0092020	81.6958742	25.3800550	74.6199450
R4.0083	R4.0	83	1.0464849	80.6868722	24.6912470	75.3087530
R4.0084	R4.0	84	1.0855894	79.6401873	24.0091240	75.9908760
R4.0085	R4.0	85	1.1274805	78.5545979	23.3340089	76.6659911
R4.0086	R4.0	86	1.1729546	77.4271174	22.6665139	77.3334861
R4.0087	R4.0	87	1.2225552	76.2541628	22.0074830	77.9925170
R4.0088	R4.0	88	1.2765531	75.0316076	21.3579230	78.6420770
R4.0089	R4.0	89	1.3349047	73.7550545	20.7189319	79.2810681

Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R4.0090	R4.0	90	1.3973417	72.4201498	20.0916240	79.9083760
R4.0091	R4.0	91	1.4632540	71.0228081	19.4770801	80.5229199
R4.0092	R4.0	92	1.5318708	69.5595541	18.8762820	81.1237180
R4.0093	R4.0	93	1.6022349	68.0276833	18.2900851	81.7099149
R4.0094	R4.0	94	1.6732702	66.4254484	17.7191961	82.2808039
R4.0095	R4.0	95	1.7437983	64.7521782	17.1641600	82.8358400
R4.0096	R4.0	96	1.8126111	63.0083799	16.6253510	83.3746490
R4.0097	R4.0	97	1.8785019	61.1957688	16.1029799	83.8970201
R4.0098	R4.0	98	1.9403057	59.3172669	15.5971090	84.4028910
R4.0099	R4.0	99	1.9969244	57.3769612	15.1076440	84.8923560
R4.0100	R4.0	100	2.0473556	55.3800368	14.6343750	85.3656250
R4.0101	R4.0	101	2.0907240	53.3328812	14.1769710	85.8230290
R4.0102	R4.0	102	2.1262794	51.2419572	13.7350060	86.2649940
R4.0103	R4.0	103	2.1534547	49.1156778	13.3079650	86.6920350
R4.0104	R4.0	104	2.1718040	46.9622231	12.8952750	87.1047250
R4.0105	R4.0	105	2.1810722	44.7904191	12.4962990	87.5037010
R4.0106	R4.0	106	2.1811419	42.6093469	12.1103610	87.8896390
R4.0107	R4.0	107	2.1720638	40.4282050	11.7367520	88.2632480
R4.0108	R4.0	108	2.1540241	38.2561412	11.3747400	88.6252600
R4.0109	R4.0	109	2.1273389	36.1021171	11.0235781	88.9764219
R4.0110	R4.0	110	2.0924511	33.9747782	10.6825140	89.3174860
R4.0111	R4.0	111	2.0498882	31.8823271	10.3507971	89.6492029
R4.0112	R4.0	112	2.0002858	29.8324389	10.0276790	89.9723210
R4.0113	R4.0	113	1.9443300	27.8321531	9.7124300	90.2875700
R4.0114	R4.0	114	1.8827472	25.8878231	9.4043380	90.5956620
R4.0115	R4.0	115	1.8162958	24.0050759	9.1027160	90.8972840
R4.0116	R4.0	116	1.7457612	22.1887801	8.8069040	91.1930960
R4.0117	R4.0	117	1.6718969	20.4430189	8.5162840	91.4837160
R4.0118	R4.0	118	1.5954540	18.7711220	8.2302750	91.7697250
R4.0119	R4.0	119	1.5171400	17.1756680	7.9483430	92.0516570
R4.0120	R4.0	120	1.4376240	15.6585280	7.6700060	92.3299940
R4.0121	R4.0	121	1.3575180	14.2209040	7.3948390	92.6051810
R4.0122	R4.0	122	1.2773730	12.8633860	7.1224760	92.8775240
R4.0123	R4.0	123	1.1976880	11.5860130	6.8528120	93.1473880
R4.0124	R4.0	124	1.1188790	10.3883250	6.5850130	93.4149870
R4.0125	R4.0	125	1.0413181	9.2694460	6.3195140	93.6804860
R4.0126	R4.0	126	0.9653040	8.2281280	6.0560060	93.9439940
R4.0127	R4.0	127	0.8910890	7.2628240	5.7944580	94.2055420
R4.0128	R4.0	128	0.8188760	6.3717350	5.5348880	94.4651120
R4.0129	R4.0	129	0.7488360	5.5528590	5.2773810	94.7226190
R4.0130	R4.0	130	0.6811100	4.8040230	5.0220640	94.9779360
R4.0131	R4.0	131	0.6158200	4.1229130	4.7691140	95.2308860
R4.0132	R4.0	132	0.5530780	3.5070930	4.5187400	95.4812600
R4.0133	R4.0	133	0.4930080	2.9540150	4.2715210	95.7284790
R4.0134	R4.0	134	0.4357350	2.4610070	4.0273490	95.9726510

Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
R4.0135	R4.0	135	0.3814000	2.0252720	3.7864600	96.2135400
R4.0136	R4.0	136	0.3301680	1.6438720	3.5490210	96.4509790
R4.0137	R4.0	137	0.2822160	1.3137040	3.3315155	66.6848450
R4.0138	R4.0	138	0.2377380	1.0314880	3.0849780	96.9150220
R4.0139	R4.0	139	0.1969280	0.7937500	2.8585810	97.1414190
R4.0140	R4.0	140	0.1599700	0.5968220	2.6360510	97.3639490
R4.0141	R4.0	141	0.1270220	0.4368520	2.4174760	97.5825240
R4.0142	R4.0	142	0.0981870	0.3098300	2.2029340	97.7970660
R4.0143	R4.0	143	0.0734960	0.2116430	1.9925030	98.0074970
R4.0144	R4.0	144	0.0529003	0.1381470	1.7862840	98.2137160
R4.0145	R4.0	145	0.0362607	0.0852487	1.5844010	98.4155990
R4.0146	R4.0	146	0.0233463	0.0489860	1.3870900	98.6129100
R4.0147	R4.0	147	0.0138307	0.0256397	1.1948260	98.8051740
R4.0148	R4.0	148	0.0072946	0.0118090	1.0086400	98.9913600
R4.0149	R4.0	149	0.0032339	0.0045142	0.8306070	99.1693930
R4.0150	R4.0	150	0.0010741	0.0012803	0.6657290	99.3342710
R4.0151	R4.0	151	0.0002001	0.0002061	0.5292780	99.4707220
R4.0152	R4.0	152	0.0000060	0.0000060	0.5000830	99.4999170
R4.0153	R4.0	153	0.0000000	0.0000000	0.0000000	100.0000000

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Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve
as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
S3.0000	S3.0	0	0.0000000	100.0000000	100.0000000	0.0000000
S3.0001	S3.0	1	0.0000000	100.0000000	99.0000000	1.0000000
S3.0002	S3.0	2	0.0000000	100.0000000	98.0000000	2.0000000
S3.0003	S3.0	3	0.0000000	100.0000000	97.0000000	3.0000000
S3.0004	S3.0	4	0.0000000	100.0000000	96.0000000	4.0000000
S3.0005	S3.0	5	0.0000000	100.0000000	95.0000000	5.0000000
S3.0006	S3.0	6	0.0000009	100.0000000	94.0000000	6.0000000
S3.0007	S3.0	7	0.0000029	99.9999991	93.0000010	6.9999990
S3.0008	S3.0	8	0.0000057	99.9999962	92.0000038	7.9999962
S3.0009	S3.0	9	0.0000124	99.9999905	91.0000086	8.9999914
S3.0010	S3.0	10	0.0000229	99.9999781	90.0000200	9.9999800
S3.0011	S3.0	11	0.0000410	99.9999552	89.0000401	10.9999599
S3.0012	S3.0	12	0.0000706	99.9999142	88.0000773	11.9999227
S3.0013	S3.0	13	0.0001154	99.9998436	87.0001392	12.9998608
S3.0014	S3.0	14	0.0001821	99.9997282	86.0002394	13.9997606
S3.0015	S3.0	15	0.0002785	99.9995461	85.0003939	14.9996061
S3.0016	S3.0	16	0.0004120	99.9992676	84.0006294	15.9993706
S3.0017	S3.0	17	0.0005932	99.9988556	83.0009728	16.9990272
S3.0018	S3.0	18	0.0008402	99.9982624	82.0014629	17.9985371
S3.0019	S3.0	19	0.0011616	99.9974222	81.0021467	18.9978533
S3.0020	S3.0	20	0.0015783	99.9962606	80.0030832	19.9969168
S3.0021	S3.0	21	0.0021086	99.9946823	79.0043373	20.9956627
S3.0022	S3.0	22	0.0027761	99.9925737	78.0059929	21.9940071
S3.0023	S3.0	23	0.0036030	99.9897976	77.0081453	22.9918547
S3.0024	S3.0	24	0.0046177	99.9861946	76.0109024	23.9890976
S3.0025	S3.0	25	0.0058498	99.9815769	75.0143890	24.9856110
S3.0026	S3.0	26	0.0073300	99.9757271	74.0187492	25.9812508
S3.0027	S3.0	27	0.0090951	99.9683971	73.0241404	26.9758596
S3.0028	S3.0	28	0.0111771	99.9593020	72.0307388	27.9692612
S3.0029	S3.0	29	0.0136185	99.9481249	71.0387383	28.9612617
S3.0030	S3.0	30	0.0164585	99.9345064	70.0483513	29.9516487
S3.0031	S3.0	31	0.0197382	99.9180479	69.0598068	30.9401932
S3.0032	S3.0	32	0.0235014	99.8983097	68.0733528	31.9266472
S3.0033	S3.0	33	0.0277939	99.8748083	67.0892544	32.9107456
S3.0034	S3.0	34	0.0326624	99.8470144	66.1077900	33.8922100
S3.0035	S3.0	35	0.0381479	99.8143520	65.1292582	34.8707418
S3.0036	S3.0	36	0.0443048	99.7762041	64.1539688	35.8460312
S3.0037	S3.0	37	0.0511732	99.7318993	63.1822462	36.8177538
S3.0038	S3.0	38	0.0588046	99.6807261	62.2144260	37.7855740
S3.0039	S3.0	39	0.0672397	99.6219215	61.2508540	38.7491460
S3.0040	S3.0	40	0.0765267	99.5546818	60.2918859	39.7081141
S3.0041	S3.0	41	0.0867071	99.4781551	59.3378830	40.6621170
S3.0042	S3.0	42	0.0978231	99.3914480	58.3892121	41.6107879
S3.0043	S3.0	43	0.1099110	99.2936249	57.4462428	42.5537572
S3.0044	S3.0	44	0.1230097	99.1837139	56.5093489	43.4906511

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Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve
as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
S3.0045	S3.0	45	0.1371507	99.0607042	55.5788989	44.4211011
S3.0046	S3.0	46	0.1523667	98.9235535	54.6552620	45.3447380
S3.0047	S3.0	47	0.1686792	98.7711868	53.7388029	46.2611971
S3.0048	S3.0	48	0.1861134	98.6025076	52.8298788	47.1701212
S3.0049	S3.0	49	0.2046880	98.4163942	51.9288392	48.0711608
S3.0050	S3.0	50	0.2244149	98.2117062	51.0360251	48.9639749
S3.0051	S3.0	51	0.2453012	97.9872913	50.1517639	49.8482361
S3.0052	S3.0	52	0.2673512	97.7419901	49.2763739	50.7236261
S3.0053	S3.0	53	0.2905626	97.4746389	48.4101572	51.5898428
S3.0054	S3.0	54	0.3149290	97.1840763	47.5534000	52.4466000
S3.0055	S3.0	55	0.3404341	96.8691473	46.7063732	53.2936268
S3.0056	S3.0	56	0.3670616	96.5287132	45.8693328	54.1306672
S3.0057	S3.0	57	0.3947830	96.1616516	45.0425129	54.9574871
S3.0058	S3.0	58	0.4235687	95.7668686	44.2261319	55.7738681
S3.0059	S3.0	59	0.4533825	95.3432999	43.4203882	56.5796118
S3.0060	S3.0	60	0.4841824	94.8899174	42.6254621	57.3745379
S3.0061	S3.0	61	0.5159149	94.4057350	41.8415122	58.1584878
S3.0062	S3.0	62	0.5485287	93.8898201	41.0686789	58.9313211
S3.0063	S3.0	63	0.5819635	93.3412914	40.3070850	59.6929150
S3.0064	S3.0	64	0.6161499	92.7593279	39.5568309	60.4431691
S3.0065	S3.0	65	0.6510201	92.1431780	38.8179989	61.1820011
S3.0066	S3.0	66	0.6864967	91.4921579	38.0906539	61.9093461
S3.0067	S3.0	67	0.7224970	90.8056612	37.3748412	62.6251588
S3.0068	S3.0	68	0.7589350	90.0831642	36.6705899	63.3294101
S3.0069	S3.0	69	0.7957239	89.3242292	35.9779110	64.0220890
S3.0070	S3.0	70	0.8327675	88.5285053	35.2967982	64.7032018
S3.0071	S3.0	71	0.8699665	87.6957378	34.6272311	65.3727689
S3.0072	S3.0	72	0.9072227	86.8257713	33.9691749	66.0308251
S3.0073	S3.0	73	0.9444323	85.9185486	33.3225799	66.6774201
S3.0074	S3.0	74	0.9814892	84.9741163	32.6873822	67.3126178
S3.0075	S3.0	75	1.0182848	83.9926271	32.0635042	67.9364958
S3.0076	S3.0	76	1.0547151	82.9743423	31.4508619	68.5491381
S3.0077	S3.0	77	1.0906649	81.9196272	30.8493540	69.1506460
S3.0078	S3.0	78	1.1260299	80.8289623	30.2588730	69.7411270
S3.0079	S3.0	79	1.1606951	79.7029324	29.6793010	70.3206990
S3.0080	S3.0	80	1.1945553	78.5422373	29.1105120	70.8894880
S3.0081	S3.0	81	1.2275000	77.3476820	28.5523710	71.4476290
S3.0082	S3.0	82	1.2594261	76.1201820	28.0047390	71.9952610
S3.0083	S3.0	83	1.2902269	74.8607559	27.4674680	72.5325320
S3.0084	S3.0	84	1.3198013	73.5705290	26.9404030	73.0595970
S3.0085	S3.0	85	1.3480530	72.2507277	26.4233890	73.5766110
S3.0086	S3.0	86	1.3748846	70.9026747	25.9162619	74.0837381
S3.0087	S3.0	87	1.4002104	69.5277901	25.4188600	74.5811400
S3.0088	S3.0	88	1.4239378	68.1275797	24.9310110	75.0689890
S3.0089	S3.0	89	1.4459896	66.7036419	24.4525449	75.5474551

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Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve
as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
S3.0090	S3.0	90	1.4662924	65.2576523	23.9832900	76.0167100
S3.0091	S3.0	91	1.4847698	63.7913599	23.5230711	76.4769289
S3.0092	S3.0	92	1.5013619	62.3065901	23.0717111	76.9282889
S3.0093	S3.0	93	1.5160102	60.8052282	22.6290381	77.3709619
S3.0094	S3.0	94	1.5286632	59.2892180	22.1948710	77.8051290
S3.0095	S3.0	95	1.5392757	57.7605548	21.7690370	78.2309630
S3.0096	S3.0	96	1.5478119	56.2212791	21.3513601	78.6486399
S3.0097	S3.0	97	1.5542393	54.6734672	20.9416640	79.0583360
S3.0098	S3.0	98	1.5585370	53.1192279	20.5397761	79.4602239
S3.0099	S3.0	99	1.5606909	51.5606909	20.1455231	79.8544769
S3.0100	S3.0	100	1.5606909	50.0000000	19.7587349	80.2412651
S3.0101	S3.0	101	1.5585370	48.4393091	19.3792419	80.6207581
S3.0102	S3.0	102	1.5542393	46.8807721	19.0068769	80.9931231
S3.0103	S3.0	103	1.5478119	45.3265328	18.6414750	81.3585250
S3.0104	S3.0	104	1.5392757	43.7787209	18.2828729	81.7171271
S3.0105	S3.0	105	1.5286631	42.2394452	17.9309101	82.0690899
S3.0106	S3.0	106	1.5160103	40.7107821	17.5854299	82.4145701
S3.0107	S3.0	107	1.5013619	39.1947718	17.2462750	82.7537250
S3.0108	S3.0	108	1.4847698	37.6934099	16.9132950	83.0867050
S3.0109	S3.0	109	1.4662919	36.2086401	16.5863359	83.4136641
S3.0110	S3.0	110	1.4459901	34.7423482	16.2652550	83.7347450
S3.0111	S3.0	111	1.4239380	33.2963581	15.9499090	84.0500910
S3.0112	S3.0	112	1.4002102	31.8724201	15.6401500	84.3598500
S3.0113	S3.0	113	1.3748848	30.4722099	15.3358450	84.6641550
S3.0114	S3.0	114	1.3480530	29.0973251	15.0368600	84.9631400
S3.0115	S3.0	115	1.3198011	27.7492721	14.7430561	85.2569439
S3.0116	S3.0	116	1.2902269	26.4294710	14.4543080	85.5456920
S3.0117	S3.0	117	1.2594261	25.1392441	14.1704850	85.8295150
S3.0118	S3.0	118	1.2275000	23.8798180	13.8914710	86.1085290
S3.0119	S3.0	119	1.1945550	22.6523180	13.6171401	86.3828599
S3.0120	S3.0	120	1.1606951	21.4577630	13.3473700	86.6526300
S3.0121	S3.0	121	1.1260300	20.2970679	13.0820510	86.9179490
S3.0122	S3.0	122	1.0906648	19.1710379	12.8210681	87.1789319
S3.0123	S3.0	123	1.0547152	18.0803731	12.5643160	87.4356840
S3.0124	S3.0	124	1.0182848	17.0256579	12.3116800	87.6883200
S3.0125	S3.0	125	0.9814891	16.0073731	12.0630680	87.9369320
S3.0126	S3.0	126	0.9444329	15.0258840	11.8183630	88.1816370
S3.0127	S3.0	127	0.9072221	14.0814511	11.5774790	88.4225210
S3.0128	S3.0	128	0.8699670	13.1742290	11.3403140	88.6596860
S3.0129	S3.0	129	0.8327670	12.3042620	11.1067700	88.8932300
S3.0130	S3.0	130	0.7957240	11.4714950	10.8767610	89.1232390
S3.0131	S3.0	131	0.7589350	10.6757710	10.6501980	89.3498020
S3.0132	S3.0	132	0.7224970	9.9168360	10.4270001	89.5729999
S3.0133	S3.0	133	0.6864971	9.1943390	10.2070690	89.7929310
S3.0134	S3.0	134	0.6510199	8.5078420	9.9903250	90.0096750

database

S:\Depreciation\Iowacurves.xls

Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve
as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
S3.0135	S3.0	135	0.6161500	7.8568220	9.7766990	90.2233011
S3.0136	S3.0	136	0.5819630	7.2406720	9.5661089	90.4338911
S3.0137	S3.0	137	0.5485290	6.6587090	9.3584729	90.6415271
S3.0138	S3.0	138	0.5159150	6.1101800	9.1537210	90.8462790
S3.0139	S3.0	139	0.4841820	5.5942650	8.9517880	91.0482121
S3.0140	S3.0	140	0.4533830	5.1100830	8.7525981	91.2474020
S3.0141	S3.0	141	0.4235690	4.6567000	8.5560840	91.4439160
S3.0142	S3.0	142	0.3947830	4.2331310	8.3621800	91.6378200
S3.0143	S3.0	143	0.3670610	3.8383480	8.1708230	91.8291770
S3.0144	S3.0	144	0.3404340	3.4712870	7.9819520	92.0180480
S3.0145	S3.0	145	0.3149290	3.1308530	7.7955040	92.2044960
S3.0146	S3.0	146	0.2905630	2.8159240	7.6114220	92.3885780
S3.0147	S3.0	147	0.2673510	2.5253610	7.4296480	92.5703520
S3.0148	S3.0	148	0.2453010	2.2580100	7.2501270	92.7498730
S3.0149	S3.0	149	0.2244150	2.0127090	7.0728060	92.9271940
S3.0150	S3.0	150	0.2046880	1.7882940	6.8976320	93.1023680
S3.0151	S3.0	151	0.1861140	1.5836060	6.7245530	93.2754470
S3.0152	S3.0	152	0.1686790	1.3974920	6.5535220	93.4464780
S3.0153	S3.0	153	0.1523660	1.2288130	6.3844900	93.6155100
S3.0154	S3.0	154	0.1371510	1.0764470	6.2174110	93.7825890
S3.0155	S3.0	155	0.1230100	0.9392960	6.0522380	93.9477620
S3.0156	S3.0	156	0.1099110	0.8162860	5.8889290	94.1110710
S3.0157	S3.0	157	0.0978230	0.7063750	5.7274410	94.2725590
S3.0158	S3.0	158	0.0867070	0.6085520	5.5677320	94.4322680
S3.0159	S3.0	159	0.0765270	0.5218450	5.4097620	94.5902380
S3.0160	S3.0	160	0.0672400	0.4453180	5.2534920	94.7465080
S3.0161	S3.0	161	0.0588040	0.3780780	5.0988860	94.9011140
S3.0162	S3.0	162	0.0511730	0.3192740	4.9459060	95.0540940
S3.0163	S3.0	163	0.0443050	0.2681010	4.7945200	95.2054800
S3.0164	S3.0	164	0.0381480	0.2237960	4.6446910	95.3553090
S3.0165	S3.0	165	0.0326620	0.1856480	4.4963870	95.5036130
S3.0166	S3.0	166	0.0277940	0.1529860	4.3495800	95.6504200
S3.0167	S3.0	167	0.0235020	0.1251920	4.2042330	95.7957670
S3.0168	S3.0	168	0.0197375	0.1016900	4.0603190	95.9396810
S3.0169	S3.0	169	0.0164582	0.0819525	3.9178100	96.0821900
S3.0170	S3.0	170	0.0136189	0.0654943	3.7766790	96.2233210
S3.0171	S3.0	171	0.0111777	0.0518754	3.6369070	96.3630930
S3.0172	S3.0	172	0.0090944	0.0406977	3.4984640	96.5015360
S3.0173	S3.0	173	0.0073307	0.0316033	3.3613300	96.6386700
S3.0174	S3.0	174	0.0058498	0.0242726	3.2254840	96.7745160
S3.0175	S3.0	175	0.0046178	0.0184228	3.0909090	96.9090910
S3.0176	S3.0	176	0.0036030	0.0138050	2.9575850	97.0424150
S3.0177	S3.0	177	0.0027755	0.0102020	2.8255000	97.1745000
S3.0178	S3.0	178	0.0021089	0.0074265	2.6946400	97.3053600
S3.0179	S3.0	179	0.0015783	0.0053176	2.5649990	97.4350010

database

Iowa-type Retirement - Survival Tables

Percent Retired, Surviving, Condition, and Depreciation Reserve
as a function of Age as a Percent of Average Service Life

1	2	3	4	5	6	7
Lookup	Curve	Age %	% Ret	% Surv	% Cond	% Depr Resv
S3.0180	S3.0	180	0.0011617	0.0037393	2.4365660	97.5634340
S3.0181	S3.0	181	0.0008396	0.0025776	2.3093440	97.6906560
S3.0182	S3.0	182	0.0005946	0.0017381	2.1833410	97.8166590
S3.0183	S3.0	183	0.0004116	0.0011435	2.0585660	97.9414340
S3.0184	S3.0	184	0.0002778	0.0007319	1.9350420	98.0649580
S3.0185	S3.0	185	0.0001821	0.0004541	1.8128020	98.1871980
S3.0186	S3.0	186	0.0001156	0.0002720	1.6918880	98.3081120
S3.0187	S3.0	187	0.0000706	0.0001564	1.5723710	98.4276290
S3.0188	S3.0	188	0.0000413	0.0000858	1.4543500	98.5456500
S3.0189	S3.0	189	0.0000229	0.0000446	1.3379620	98.6620380
S3.0190	S3.0	190	0.0000119	0.0000217	1.2234140	98.7765860
S3.0191	S3.0	191	0.0000058	0.0000097	1.1110030	98.8889970
S3.0192	S3.0	192	0.0000025	0.0000040	1.0011880	98.9988120
S3.0193	S3.0	193	0.0000010	0.0000014	0.8946340	99.1053660
S3.0194	S3.0	194	0.0000003	0.0000004	0.7925260	99.2074740
S3.0195	S3.0	195	0.0000001	0.0000001	0.6968450	99.3031550
S3.0196	S3.0	196	0.0000000	0.0000000	0.6112800	99.3887200
S3.0197	S3.0	197	0.0000000	0.0000000	0.5431250	99.4568750
S3.0198	S3.0	198	0.0000000	0.0000000	0.5056800	99.4943200
S3.0199	S3.0	199	0.0000000	0.0000000	0.5000000	99.5000000
S3.0200	S3.0	200	0.0000000	0.0000000	0.0000000	100.0000000

VOLUME 11

PENNSYLVANIA-AMERICAN WATER COMPANY

2020 GENERAL BASE RATE CASE
R-2020-3019369 (WATER)
R-2020-3019371 (WASTEWATER)

EXHIBIT NO. 11-C, 11-D
DEPRECIATION STUDY

WATER OPERATIONS EXCLUDING STEELTON
AS OF DECEMBER 31, 2021, 2022

EXHIBIT NO. 11-C - DEPRECIATION STUDY

WATER OPERATIONS EXCLUDING STEELTON

AS OF DECEMBER 31, 2021

Exhibit No. 11-C
Witness: J. J. Spanos

PENNSYLVANIA-AMERICAN WATER COMPANY

MECHANICSBURG, PENNSYLVANIA

WATER OPERATIONS EXCLUDING STEELTON

2021 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION ACCRUALS
RELATED TO WATER PLANT
AS OF DECEMBER 31, 2021

Prepared by:

Excellence Delivered ***As Promised***

Exhibit No. 11-C
Witness: J. J. Spanos

PENNSYLVANIA-AMERICAN WATER COMPANY

Mechanicsburg, Pennsylvania

WATER OPERATIONS EXCLUDING STEELTON

2021 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION ACCRUALS
RELATED TO WATER PLANT
AS OF DECEMBER 31, 2021

GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC

Camp Hill, Pennsylvania

Gannett Fleming

Excellence Delivered ***As Promised***

April 22, 2020

Pennsylvania-American Water Company
852 Wesley Drive
Mechanicsburg, PA 17055

Attention: Ashley E. Everette
Director, Rates and Regulatory

Ladies and Gentlemen:

Pursuant to your request, we have determined the annual depreciation accruals applicable to water plant as of December 31, 2021. The results of our study at December 31, 2020 are presented in our report titled "2020 Depreciation Study - Calculated Annual Depreciation Accruals Related to Water Plant as of December 31, 2020". The same methods, procedures and estimates are used in both studies.

Summaries of the original cost, annual accruals, book depreciation reserve and amortization of net salvage are presented in Tables 1 through 5, beginning on page I-3 of the attached report.

Respectfully submitted,

GANNETT FLEMING VALUATION
AND RATE CONSULTANTS, LLC

John J. Spanos

JOHN J. SPANOS
President

JJS:mle

066548.100

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www.gfvrc.com

TABLE OF CONTENTS

PART I. RESULTS OF STUDY I-1
Description of Summary Tabulations I-2
Description of Detailed Tabulations I-2

Table 1. Development of Net Original Cost as of December 31, 2021 ..... I-3

Table 2. Summary of Estimated Survivor Curves, Original Cost, Book Reserve and Calculated Annual Depreciation Accruals Related to Water Plant as of December 31, 2021 ..... I-5

Table 3. Bringforward to December 31, 2021, of the Book Reserve as of December 31, 2020 ..... I-9

Table 4. Calculation of Depreciation Accruals for the Twelve Months Ended December 31, 2021 ..... I-11

Table 5. Amortization of Experienced and Estimated Net Salvage I-13

PART II. DETAILED DEPRECIATION CALCULATIONS II-1
Cumulative Depreciated Original Cost II-2
Net Utility Plant in Service II-7

PART III. EXPERIENCED AND ESTIMATED NET SALVAGE III-1

PART I. RESULTS OF STUDY

PENNSYLVANIA-AMERICAN WATER COMPANY

WATER OPERATIONS EXCLUDING STEELTON

DEPRECIATION STUDY

RESULTS OF STUDY

DESCRIPTION OF SUMMARY TABULATIONS

Tables 1 through 5 presented on pages 3 through 13 summarize the results of the depreciation study as of December 31, 2021. Table 1 sets forth the development of the net original cost by account as of December 31, 2021. Table 2 sets forth, by depreciable group, the estimated survivor curve, original cost, book depreciation reserve as of December 31, 2021, future book accruals, calculated annual accrual amount and rate, and composite remaining life for plant in service. Table 3 presents the bringforward of the book reserve to December 31, 2021. Table 4 sets forth the calculation of the depreciation accruals for the twelve months ended December 31, 2021. Table 5 presents the annual amortization of experienced and estimated net salvage based on the period 2017 through 2021.

DESCRIPTION OF DETAILED TABULATIONS

The supporting data for the depreciation calculations are presented in account sequence in the section beginning on page II-8. The original cost, calculated accrued depreciation, allocated book reserve, future accruals, remaining life and annual accrual are shown for each vintage of each account or subaccount. The amounts of regular retirements, gross salvage and cost of removal are set forth by account for the years 2017 through 2021, beginning on pages III-2 through III-6.

PENNSYLVANIA-AMERICAN WATER COMPANY
WATER OPERATIONS EXCLUDING STEELTON

TABLE 1. DEVELOPMENT OF NET ORIGINAL COST AS OF DECEMBER 31, 2021

	DEPRCIABLE GROUP	ORIGINAL COST AS OF DECEMBER 31, 2021		CUSTOMER ADVANCES		CONTRIBUTIONS IN AID OF CONSTRUCTION		EXCLUDED PROPERTY		NET ORIGINAL COST AS OF DECMEBER 31, 2021
	(1)	(2)	-	(3)	-	(4)	-	(5)	=	(6)
INTANGIBLE PLANT										
301.00	ORGANIZATION	766,405.12								766,405.12
302.00	FRANCHISES AND CONSENTS	2,404,599.20								2,404,599.20
303.00	MISCELLANEOUS INTANGIBLE PLANT	1,453,020.77								1,453,020.77
	TOTAL INTANGIBLE PLANT	**4,624,025.09**		**0.00**		**0.00**		**0.00**		**4,624,025.09**
NONDEPRECIABLE PLANT										
303.20	POWER AND PUMPING LAND	4,315,318.23								4,315,318.23
303.30	PURIFICATION LAND	15,412.25								15,412.25
303.40	TRANSMISSION AND DISTRIBUTION LAND AND RIGHTS OF WAY	3,724,070.21				215,927.20				3,508,143.01
303.50	DISTRIBUTION RESERVOIRS AND STANDPIPE LAND	2,001,789.51								2,001,789.51
303.51	TRANSMISSION AND DISTRIBUTION - LAND	1,762,423.06								1,762,423.06
303.52	TRANSMISSION AND DISTRIBUTION - RIGHTS OF WAY	5,288,947.81								5,288,947.81
303.61	OFFICE LAND	5,260,832.58								5,260,832.58
	TOTAL NONDEPRECIABLE PLANT	**22,368,793.65**		**0.00**		**215,927.20**		**0.00**		**22,152,866.45**
DEPRECIABLE PLANT										
303.14	WATER RIGHTS - HIBERNIA	1,942,822.51								1,942,822.51
303.35	WASTE HANDLING AND TREATMENT LAND	155,025.17								155,025.17
303.99	COMPREHENSIVE PLANNING STUDIES	9,710,061.35								9,710,061.35
304.15	OTHER WATER SOURCE STRUCTURES	44,248,707.65								44,248,707.65
304.20	POWER AND PUMPING STRUCTURES	121,818,280.30				1,289,607.60		41,310.00		120,487,362.70
304.30	PURIFICATION BUILDINGS	289,983,841.49				169,605.01		230,375.00		289,583,861.48
304.36	WASTE HANDLING AND TREATMENT STRUCTURES	11,668,886.83								11,668,886.83
304.38	WASTE HANDLING AND TREATMENT STRUCTURES PAINTING	65,958.42								65,958.42
304.39	PURIFICATION BUILDINGS - TANK PAINTING	119,362.95								119,362.95
304.61	OFFICE BUILDINGS	44,005,306.44				60,000.00		12,834.00		43,932,472.44
304.62	STORES, SHOP AND GARAGE BUILDINGS	55,111,889.86				576.00				55,111,313.86
304.63	MISCELLANEOUS STRUCTURES AND IMPROVEMENTS	4,132,815.74								4,132,815.74
305.00	COLLECTING AND IMPOUNDING RESERVOIRS	135,672,663.72				3,575.00				135,669,088.72
306.00	LAKE, RIVER AND OTHER INTAKES	18,257,338.08				41,551.00				18,215,787.08
307.00	WELLS AND SPRINGS	10,694,793.00				71,610.27				10,623,182.73
310.00	POWER GENERATION EQUIPMENT	19,954,396.50				118,273.00		26,561.00		19,809,562.50
311.20	PUMPING EQUIPMENT - ELECTRIC PUMPING EQUIPMENT	25,829,705.97				1,954,569.05		116,716.00		23,758,420.92
311.50	PUMPING EQUIPMENT - OTHER	2,389,457.83								2,389,457.83
311.52	PUMPING EQUIPMENT - SOURCE OF SUPPLY	14,212,241.21								14,212,241.21
311.53	PUMPING EQUIPMENT - WATER TREATMENT	46,865,937.19								46,865,937.19
311.54	PUMPING EQUIPMENT - TRANSMISSION AND DISTRIBUTION	6,787,710.63								6,787,710.63
320.10	PURIFICATION SYSTEM - LARGE STRUCTURES	278,019,906.37				27,162.27		627,852.00		277,364,892.10
320.18	PURIFICATION SYSTEM - LARGE STRUCTURES PAINT	103,245.73								103,245.73
320.19	PURIFICATION SYSTEM - LARGE STRUCTURES PAINT	3,522,542.77								3,522,542.77
320.20	PURIFICATION SYSTEM - CHEMICAL TREATMENT	84,745,690.42				42,367.00				84,703,323.42
320.29	PURIFICATION SYSTEM - CHEM. TREATMENT PAINT	8,167.87								8,167.87
320.30	GRANULAR ACTIVATED CARBON	8,601,165.21								8,601,165.21
320.37	WASTE HANDLING AND TREATMENT - EQUIPMENT	14,969,798.93								14,969,798.93
330.00	DISTRIBUTION RESERVOIRS AND STANDPIPES	117,655,216.74				2,905,114.51				114,750,102.23

PENNSYLVANIA-AMERICAN WATER COMPANY
WATER OPERATIONS EXCLUDING STEELTON

TABLE 1. DEVELOPMENT OF NET ORIGINAL COST AS OF DECEMBER 31, 2021

	DEPRCIABLE GROUP	ORIGINAL COST AS OF DECEMBER 31, 2021		CUSTOMER ADVANCES		CONTRIBUTIONS IN AID OF CONSTRUCTION		EXCLUDED PROPERTY		NET ORIGINAL COST AS OF DECMEBER 31, 2021
	(1)	(2)	-	(3)	-	(4)	-	(5)	=	(6)
330.10	ELEVATED TANKS AND STANDPIPES	14,100,477.17								14,100,477.17
330.20	GROUND LEVEL FACILITIES	18,929,725.89								18,929,725.89
330.30	BELOW GRADE FACILITIES	818,672.56								818,672.56
330.40	CLEARWELL	12,806,094.73								12,806,094.73
330.58	DISTRIBUTION RESERVOIRS AND STANDPIPES - PAINTING	2,211,111.35								2,211,111.35
330.59	DISTRIBUTION RESERVOIRS AND STANDPIPES - PAINTING	34,570,376.62								34,570,376.62
331.00	MAINS AND ACCESSORIES	3,064,685,925.46		63,514,361.86		200,747,868.78		502,366.00		2,799,921,328.82
333.00	SERVICES	649,550,756.85		5,782,801.70		11,851,183.63				631,916,771.52
334.00	METERS AND METER INSTALLATIONS	207,962,808.09				1,707,754.19				206,255,053.90
335.00	FIRE HYDRANTS	127,625,861.91		71,848.81		4,768,402.44				122,785,610.66
340.10	OFFICE FURNITURE AND EQUIPMENT - FURNITURE	7,475,864.68								7,475,864.68
340.20	OFFICE FURNITURE AND EQUIPMENT - COMPUTERS AND PERIPHERAL EQUIPMENT	24,511,435.46								24,511,435.46
340.30	OFFICE FURNITURE AND EQUIPMENT - COMPUTER SOFTWARE	45,994,769.94								45,994,769.94
340.31	OFFICE FURNITURE AND EQUIPMENT - COMPUTER SOFTWARE - BUSINESS TRANSFORMATION	62,990,459.09								62,990,459.09
340.50	OFFICE FURNITURE AND EQUIPMENT - OTHER OFFICE EQUIPMENT	7,644.67				354.00				7,290.67
341.00	TRANSPORTATION EQUIPMENT - NOT CLASSIFIED	349.00								349.00
341.10	TRANSPORTATION EQUIPMENT - LIGHT DUTY TRUCKS	28,802,310.96								28,802,310.96
341.20	TRANSPORTATION EQUIPMENT - EQUIPMENT	23,205,811.64								23,205,811.64
341.30	TRANSPORTATION EQUIPMENT - AUTOS	3,874,730.49								3,874,730.49
341.40	TRANSPORTATION EQUIPMENT - OTHER	10,439,225.68								10,439,225.68
342.00	STORES EQUIPMENT	448,033.65								448,033.65
343.00	TOOLS AND WORK EQUIPMENT	32,097,198.82				61.00				32,097,137.82
344.00	LABORATORY EQUIPMENT	2,606,821.35								2,606,821.35
345.00	POWER OPERATED EQUIPMENT	2,405,805.64								2,405,805.64
346.00	COMMUNICATOIN EQUIPMENT - EQUIPMENT	3,459,420.00								3,459,420.00
346.10	COMMUNICATOIN EQUIPMENT - NON-TELEPHONE	6,770,729.39								6,770,729.39
346.19	COMMUNICATOIN EQUIPMENT - REMOTE CONTROL AND INSTRUMENTATION	2,790,901.75								2,790,901.75
346.20	COMMUNICATOIN EQUIPMENT - TELEPHONE	188,390.60								188,390.60
347.00	MISCELLANEOUS EQUIPMENT	11,608,430.21				4,085.00				11,604,345.21
348.00	OTHER TANGIBLE EQUIPMENT	793,796.73								793,796.73
	TOTAL DEPRECIABLE PLANT	**5,774,986,877.26**		**69,369,012.37**		**225,763,719.75**		**1,558,014.00**		**5,478,296,131.14**
	TOTAL UTILITY PLANT IN SERVICE	**5,801,979,696.00**		**69,369,012.37**		**225,979,646.95**		**1,558,014.00**		**5,505,073,022.68**

PENNSYLVANIA-AMERICAN WATER COMPANY
WATER OPERATIONS EXCLUDING STEELTON

TABLE 2. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO UTILITY PLANT AS OF DECEMBER 31, 2021

	DEPRECIABLE GROUP		SURVIVOR CURVE		NET ORIGINAL COST AS OF DECEMBER 31, 2021	BOOK RESERVE	FUTURE ACCRUALS	ANNUAL ACCRUAL AMOUNT	ANNUAL ACCRUAL RATE, PERCENT	COMPOSITE REMAINING LIFE
	(1)		(2)		(3)	(4)	(5)	(6)	(7)	(8)
INTANGIBLE PLANT										
301.00	ORGANIZATION		NONDEPR.		766,405.12					
302.00	FRANCHISES AND CONSENTS		NONDEPR.		2,404,599.20					
303.00	MISCELLANEOUS INTANGIBLE PLANT		NONDEPR.		1,453,020.77					
	TOTAL INTANGIBLE PLANT				**4,624,025.09**					
NONDEPRECIABLE PLANT										
303.20	POWER AND PUMPING LAND		NONDEPR.		4,315,318.23					
303.30	PURIFICATION LAND		NONDEPR.		15,412.25					
303.40	TRANSMISSION AND DISTRIBUTION LAND AND RIGHTS OF WAY		NONDEPR.		3,508,143.01					
303.50	DISTRIBUTION RESERVOIRS AND STANDPIPES LAND		NONDEPR.		2,001,789.51					
303.51	TRANSMISSION AND DISTRIBUTION - LAND		NONDEPR.		1,762,423.06					
303.52	TRANSMISSION AND DISTRIBUTION - RIGHTS OF WAY		NONDEPR.		5,288,947.81					
303.61	OFFICE LAND		NONDEPR.		5,260,832.58					
	TOTAL NONDEPRECIABLE PLANT				**22,152,866.45**					
DEPRECIABLE PLANT										
303.14	WATER RIGHTS - HIBERNIA		25-SQ		1,942,822.51	1,942,823	0	0	-	-
303.35	WASTE HANDLING AND TREATMENT LAND	*	100-R2		155,025.17	150,407	4,618	4,618	2.98	1.0
303.99	COMPREHENSIVE PLANNING STUDIES		5-SQ		9,710,061.35	7,494,569	2,215,492	751,049	7.73	2.9
304.15	OTHER WATER SOURCE STRUCTURES		60-R1.5		44,248,707.65	8,283,077	35,965,631	970,351	2.19	37.1
304.20	POWER AND PUMING STRUCTURES									
	LARGE STRUCTURES	*	70-R2.5		69,567,251.92	9,280,689	60,286,563	1,787,063	2.57	33.7
	OTHER STRUCTURES		55-R3		50,920,110.78	9,270,044	41,650,067	1,298,796	2.55	32.1
	TOTAL ACCOUNT 304.2				120,487,362.70	18,550,733	101,936,630	3,085,859	2.56	33.0
304.30	PURIFICATION BUILDINGS									
	LARGE STRUCTURES	*	60-R2.5		248,267,049.87	78,898,085	169,368,965	5,619,625	2.26	30.1
	OTHER STRUCTURES		60-R3		41,316,811.61	12,978,751	28,338,061	730,378	1.77	38.8
	TOTAL ACCOUNT 304.3				289,583,861.48	91,876,836	197,707,026	6,350,003	2.19	31.1
304.36	WASTE HANDLING AND TREATMENT STRUCTURES	*	60-S2.5		11,668,886.83	6,315,009	5,353,878	309,282	2.65	17.3
304.38	WASTE HANDLING AND TREATMENT STRUCTURES PAINTING		10-SQ		65,958.42	57,775	8,183	2,338	3.54	3.5
304.39	PURIFICATION BUILDINGS - TANK PAINTING		10-SQ		119,362.95	107,705	11,658	3,331	2.79	3.5
304.61	OFFICE BUILDINGS									
	LARGE STRUCTURES	*	50-R1.5		31,024,747.89	5,523,525	25,501,224	970,539	3.13	26.3
	OTHER STRUCTURES		50-R3		12,907,724.55	3,482,369	9,425,356	295,081	2.29	31.9
	TOTAL ACCOUNT 304.61				43,932,472.44	9,005,894	34,926,580	1,265,620	2.88	27.6

PENNSYLVANIA-AMERICAN WATER COMPANY
WATER OPERATIONS EXCLUDING STEELTON

TABLE 2. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO UTILITY PLANT AS OF DECEMBER 31, 2021

	DEPRECIABLE GROUP	SURVIVOR CURVE		NET ORIGINAL COST AS OF DECEMBER 31, 2021	BOOK RESERVE	FUTURE ACCRUALS	ANNUAL ACCRUAL AMOUNT	ANNUAL ACCRUAL RATE, PERCENT	COMPOSITE REMAINING LIFE
	(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)
304.62	STORES, SHOP AND GARAGE BUILDINGS								
	LARGE STRUCTURES	55-S0.5	*	48,973,108.70	11,428,586	37,544,523	1,323,667	2.70	28.4
	OTHER STRUCTURES	45-R3		6,138,205.16	3,952,462	2,185,743	82,351	1.34	26.5
	TOTAL ACCOUNT 304.62			55,111,313.86	15,381,048	39,730,266	1,406,018	2.55	28.3
304.63	MISCELLANEOUS STRUCTURES AND IMPROVEMENTS	35-S0.5		4,132,815.74	2,198,599	1,934,217	86,804	2.10	22.3
	TOTAL ACCOUNT 304			569,350,742.07	151,776,676	417,574,069	13,479,606	2.37	31.0
305.00	COLLECTING AND IMPOUNDING RESERVOIRS								
	LARGE RESERVOIRS	125-R2	*	128,044,777.60	18,481,585	109,563,192	1,809,335	1.41	60.6
	OTHER RESERVOIRS	75-R3		7,624,311.12	2,729,327	4,894,984	215,147	2.82	22.8
	TOTAL ACCOUNT 305			135,669,088.72	21,210,912	114,458,176	2,024,482	1.49	56.5
306.00	LAKE, RIVER AND OTHER INTAKES								
	LARGE INTAKES	55-S1	*	14,029,064.70	4,448,923	9,580,142	336,818	2.40	28.4
	OTHER INTAKES	50-S0.5		4,186,722.38	1,524,770	2,661,952	110,315	2.63	24.1
	TOTAL ACCOUNT 306			18,215,787.08	5,973,693	12,242,094	447,133	2.45	27.4
307.00	WELLS AND SPRINGS	55-S0		10,623,182.73	3,343,133	7,280,050	246,499	2.32	29.5
310.00	POWER GENERATION EQUIPMENT	43-S1		19,809,562.50	5,157,558	14,652,004	541,291	2.73	27.1
	PUMPING EQUIPMENT								
311.20	ELECTRIC	42-S0		23,758,420.92	4,483,984	19,274,437	769,961	3.24	25.0
311.50	OTHER	42-S0		2,389,457.83	559,308	1,830,150	74,670	3.12	24.5
311.52	SOURCE OF SUPPLY	42-S0		14,212,241.21	2,191,102	12,021,139	477,564	3.36	25.2
311.53	WATER TREATMENT	42-S0		46,865,937.19	18,885,547	27,980,390	1,331,345	2.84	21.0
311.54	TRANSMISSION AND DISTRIBUTION	42-S0		6,787,710.63	2,125,816	4,661,895	197,458	2.91	23.6
	TOTAL ACCOUNT 311			94,013,767.78	28,245,757	65,768,011	2,850,998	3.03	23.1
	PURIFICATION SYSTEM								
320.10	LARGE STRUCTURES								
	LARGE STRUCTURES	60-S0.5	*	255,675,564.06	73,452,571	182,222,993	7,332,914	2.87	24.9
	OTHER STRUCTURES	55-R3		21,689,328.04	3,259,936	18,429,392	451,433	2.08	40.8
	TOTAL ACCOUNT 320.1			277,364,892.10	76,712,507	200,652,385	7,784,347	2.81	25.8
320.18	LARGE STRUCTURES PAINT	10-SQ		103,245.73	103,246	0	0	-	-
320.19	LARGE STRUCTURES PAINT	10-SQ		3,522,542.77	3,513,661	8,882	2,537	0.07	3.5
320.20	CHEMICAL TREATMENT	36-R0.5		84,703,323.42	32,767,124	51,936,199	2,724,881	3.22	19.1
320.29	CHEMICAL TREATMENT PAINT	FULLY ACCRUED		8,167.87	8,168	0	0	-	-
320.30	GRANULAR ACTIVATED CARBON	7-L2		8,601,165.21	6,864,049	1,737,116	577,102	6.71	3.0
320.37	WASTE HANDLING AND TREATMENT - EQUIPMENT	30-R3		14,969,798.93	10,336,097	4,633,702	255,895	1.71	18.1
	TOTAL ACCOUNT 320			389,273,136.03	130,304,852	258,968,284	11,344,762	2.91	22.8

PENNSYLVANIA-AMERICAN WATER COMPANY
WATER OPERATIONS EXCLUDING STEELTON

TABLE 2. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO UTILITY PLANT AS OF DECEMBER 31, 2021

	DEPRECIABLE GROUP	SURVIVOR CURVE	NET ORIGINAL COST AS OF DECEMBER 31, 2021	BOOK RESERVE	FUTURE ACCRUALS	ANNUAL ACCRUAL AMOUNT	ANNUAL ACCRUAL RATE, PERCENT	COMPOSITE REMAINING LIFE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
330.00	DISTRIBUTION RESERVOIRS AND STANDPIPES	65-S0.5	114,750,102.23	37,604,850	77,145,252	2,040,752	1.78	37.8
330.10	ELEVATED TANKS AND STANDPIPES	65-S0.5	14,100,477.17	1,396,944	12,703,533	302,304	2.14	42.0
330.20	GROUND LEVEL FACILITIES	65-S0.5	18,929,725.89	1,478,786	17,450,940	411,613	2.17	42.4
330.30	BELOW GRADE FACILITIES	65-S0.5	818,672.56	134,722	683,951	16,514	2.02	41.4
330.40	CLEARWELL	65-S0.5	12,806,094.73	2,241,101	10,564,994	256,016	2.00	41.3
330.58	DISTRIBUTION RESERVOIRS AND STANDPIPES - PAINTING	10-SQ	2,211,111.35	2,124,822	86,289	24,654	1.12	3.5
330.59	DISTRIBUTION RESERVOIRS AND STANDPIPES - PAINTING	10-SQ	34,570,376.62	22,983,972	11,586,405	2,403,686	6.95	4.8
	TOTAL ACCOUNT 330		198,186,560.55	67,965,197	130,221,364	5,455,539	2.75	23.9
331.00	MAINS AND ACCESSORIES	110-R2	2,799,921,328.82	327,632,397	2,472,288,932	33,559,667	1.20	73.7
333.00	SERVICES	70-R2.5	631,916,771.52	153,302,150	478,614,622	10,466,170	1.66	45.7
334.00	METERS AND METER INSTALLATIONS	21-L1	206,255,053.90	85,792,067	120,462,987	10,770,670	5.22	11.2
335.00	FIRE HYDRANTS	75-R2.5	122,785,610.66	21,454,868	101,330,743	1,959,904	1.60	51.7
340.00	OFFICE FURNITURE AND EQUIPMENT							
	FURNITURE	20-SQ	7,475,864.68	1,347,541	6,128,324	386,093	5.16	15.9
	COMPUTERS AND PERIPHERAL EQUIPMENT	5-SQ	24,511,435.46	5,940,437	18,570,998	5,214,238	21.27	3.6
	COMPUTER SOFTWARE	5-SQ	45,994,769.94	21,924,860	24,069,910	8,444,686	18.36	2.9
	COMPUTER SOFTWARE - BUSINESS TRANSFORMATION	10-SQ	62,990,459.09	52,072,253	10,918,206	8,099,503	12.86	1.3
	OTHER OFFICE EQUIPMENT	10-SQ	7,290.67	1,744	5,547	740	10.15	7.5
	TOTAL ACCOUNT 340		140,979,819.84	81,286,835	59,692,985	22,145,260	15.71	2.7
341.00	TRANSPORATION EQUIPMENT							
	NOT CLASSIFIED	7-L3	349.00	349	0	0	-	-
	LIGHT DUTY TRUCKS	7-L3	28,802,310.96	17,540,380	11,261,931	2,978,791	10.34	3.8
	EQUIPMENT	7-L3	23,205,811.64	13,407,514	9,798,298	2,686,946	11.58	3.6
	AUTOS	7-L3	3,874,730.49	2,379,267	1,495,463	347,892	8.98	4.3
	OTHER	7-L3	10,439,225.68	5,565,457	4,873,769	1,261,319	12.08	3.9
	TOTAL ACCOUNT 341		66,322,427.77	38,892,967	27,429,461	7,274,948	10.97	3.8
342.00	STORES EQUIPMENT	20-SQ	448,033.65	97,064	350,970	26,762	5.97	13.1
343.00	TOOLS AND WORK EQUIPMENT	20-SQ	32,097,137.82	7,101,221	24,995,917	1,893,452	5.90	13.2
344.00	LABORATORY EQUIPMENT	20-L0.5	2,606,821.35	1,152,886	1,453,935	152,376	5.85	9.5
345.00	POWER OPERATED EQUIPMENT	19-S0.5	2,405,805.64	1,655,168	750,638	98,401	4.09	7.6
346.00	COMUNICATION EQUIPMENT							
	EQUIPMENT	15-SQ	3,459,420.00	476,123	2,983,297	226,521	6.55	13.2
	NON-TELEPHONE	15-SQ	6,770,729.39	1,148,483	5,622,246	452,423	6.68	12.4
	REMOTE CONTROL AND INSTRUMENTATION	10-SQ	2,790,901.75	1,618,957	1,171,945	256,489	9.19	4.6
	TELEPHONE	10-SQ	188,390.60	121,502	66,889	17,853	9.48	3.7
	TOTAL ACCOUNT 346		13,209,441.74	3,365,065	9,844,377	953,286	7.22	10.3

PENNSYLVANIA-AMERICAN WATER COMPANY
WATER OPERATIONS EXCLUDING STEELTON

TABLE 2. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO UTILITY PLANT AS OF DECEMBER 31, 2021

	DEPRECIABLE GROUP	SURVIVOR CURVE	NET ORIGINAL COST AS OF DECEMBER 31, 2021	BOOK RESERVE	FUTURE ACCRUALS	ANNUAL ACCRUAL AMOUNT	ANNUAL ACCRUAL RATE, PERCENT	COMPOSITE REMAINING LIFE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
347.00	MISCELLANEOUS EQUIPMENT	25-SQ	11,604,345.21	2,121,851	9,482,494	803,731	6.93	11.8
348.00	OTHER TANGIBLE EQUIPMENT	25-SQ	793,796.73	433,683	360,114	31,961	4.03	11.3
	TOTAL DEPRECIABLE PLANT		**5,478,296,131.14**	**1,147,853,799**	**4,330,442,337**	**127,282,565**	**2.32**	
	AMORTIZATION OF NET SALVAGE					**18,150,547**		
	TOTAL UTILITY PLANT IN SERVICE		**5,505,073,022.68**	**1,147,853,799**	**4,330,442,337**	**145,433,112**		

* Life Span Procedure was used. Curve shown is Interim Survivor Curve.

PENNSYLVANIA-AMERICAN WATER COMPANY
WATER OPERATIONS EXCLUDING STEELTON

TABLE 3. BRINGFORWARD TO DECEMBER 31, 2021, OF BOOK RESERVE AS OF DECEMBER 31, 2020

Account	BOOK RESERVE BALANCE AS OF 12/31/2020	+	PROJECTED DEPRECIATION ACCRUALS	-	PROJECTED RETIREMENTS	-	PROJECTED COST OF REMOVAL	+	PROJECTED SALVAGE	+	ACQUISITIONS	=	PROJECTED BOOK RESERVE BALANCE AS OF 12/31/2021
(1)	(2)		(3)		(4)		(5)		(6)		(7)		(8)
303.14	1,942,823		0										1,942,823
303.35	141,137		9,270										150,407
303.99	6,351,030		1,204,524		60,985								7,494,569
304.15	7,899,182		1,048,120		390,721		285,226		11,722				8,283,077
304.20	16,349,816		2,976,022		674,004		121,321		20,220				18,550,733
304.30	88,458,520		6,134,387		2,425,064		315,258		24,251				91,876,836
304.36	5,992,818		322,191										6,315,009
304.38	55,437		2,338										57,775
304.39	104,374		3,331										107,705
304.61	7,849,697		1,216,908		55,698		5,013						9,005,894
304.62	13,999,901		1,402,722		23,709		3,319		5,453				15,381,048
304.63	2,130,689		84,121		14,220		2,844		853				2,198,599
305.00	18,943,519		2,267,393										21,210,912
306.00	5,508,799		464,894										5,973,693
307.00	3,088,287		259,686		4,840								3,343,133
310.00	4,866,142		517,290		179,265		46,609						5,157,558
311.20	3,771,805		1,021,432		264,319		44,934						4,483,984
311.50	481,982		77,326										559,308
311.52	1,945,471		445,658		170,963		29,064						2,191,102
311.53	18,177,110		1,212,264		430,621		73,206						18,885,547
311.54	1,921,773		204,043										2,125,816
320.10	76,059,881		6,303,140		5,000,455		650,059						76,712,507
320.18	103,246		0										103,246
320.19	3,511,123		2,538										3,513,661
320.20	30,554,763		2,678,001		412,071		53,569						32,767,124
320.29	8,168		0										8,168
320.30	5,943,551		920,498										6,864,049
320.37	10,000,742		335,355										10,336,097
330.00	35,124,500		3,507,933		642,239		385,344						37,604,850
330.10	1,540,919		243,438		242,133		145,280						1,396,944
330.20	1,787,324		345,686		408,890		245,334						1,478,786
330.30	117,944		16,778										134,722

PENNSYLVANIA-AMERICAN WATER COMPANY
WATER OPERATIONS EXCLUDING STEELTON

TABLE 3. BRINGFORWARD TO DECEMBER 31, 2021, OF BOOK RESERVE AS OF DECEMBER 31, 2020

Account	BOOK RESERVE BALANCE AS OF 12/31/2020		PROJECTED DEPRECIATION ACCRUALS		PROJECTED RETIREMENTS		PROJECTED COST OF REMOVAL		PROJECTED SALVAGE		ACQUISITIONS		PROJECTED BOOK RESERVE BALANCE AS OF 12/31/2021
(1)	(2)	+	(3)	-	(4)	-	(5)	+	(6)	+	(7)	=	(8)
330.40	1,980,284		260,817										2,241,101
330.58	2,100,168		24,654										2,124,822
330.59	20,863,908		2,449,147		329,083								22,983,972
331.00	302,790,062		45,553,978		10,787,314		9,924,329						327,632,397
333.00	144,244,631		11,456,303		1,654,334		744,450						153,302,150
334.00	74,409,987		12,124,741		663,090		86,202		6,631				85,792,067
335.00	20,020,642		2,278,774		620,991		223,557						21,454,868
340.10	971,125		376,416										1,347,541
340.20	7,343,075		4,532,973		5,935,611								5,940,437
340.30	17,701,446		10,353,824		6,130,410								21,924,860
340.31	41,731,922		10,340,331										52,072,253
340.40	1,004		740										1,744
341.00	349		0										349
341.10	14,623,372		3,145,900		238,429		4,769		14,306				17,540,380
341.20	11,191,984		2,532,823		330,514		6,610		19,831				13,407,514
341.30	2,126,610		307,184		56,799		1,136		3,408				2,379,267
341.40	4,729,807		1,013,708		185,477		3,710		11,129				5,565,457
342.00	68,032		29,032										97,064
343.00	5,263,107		1,838,114										7,101,221
344.00	978,341		174,545										1,152,886
345.00	1,541,860		113,308										1,655,168
346.00	407,979		212,013		143,869								476,123
346.10	797,215		351,268										1,148,483
346.19	1,556,269		283,385		220,697								1,618,957
346.20	608,614		39,337		526,449								121,502
347.00	1,328,449		848,537		55,135								2,121,851
348.00	401,551		32,132										433,683
TOTAL	**1,054,514,266**		**145,901,271**		**39,278,399**		**13,401,143**		**117,804**		**0**		**1,147,853,799**

PENNSYLVANIA-AMERICAN WATER COMPANY
WATER OPERATIONS EXCLUDING STEELTON

TABLE 4. CALCULATION OF DEPRECIATION ACCRUALS FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2021

ACCOUNT (1)	NET ORIGINALCOST AS OF 12/31/2020 (2)	NET ORIGINALCOST AS OF 12/31/2021 (3)	ACCRUAL RATE (4)	AVERAGE ACCRUALS (5)*	AMORTIZATION OF NET SALVAGE (6)	PROJECTED DEPRECIATION ACCRUALS (7)=(5)+(6)
303.14	1,942,822.51	1,942,822.51	0.00	(487)	487	0
303.35	155,025.17	155,025.17	5.98	9,270		9,270
303.99	8,413,546.31	9,710,061.35	13.83	1,203,911	613	1,204,524
304.15	40,603,116.18	44,248,707.65	2.14	906,382	141,738	1,048,120
304.20	110,059,548.11	120,487,362.70	2.56	2,930,331	45,691	2,976,022
304.30	266,957,000.42	289,583,861.48	2.15	5,850,996	283,391	6,134,387
304.36	11,668,886.83	11,668,886.83	2.69	313,454	8,737	322,191
304.38	65,958.42	65,958.42	3.54	2,338		2,338
304.39	119,362.95	119,362.95	2.79	3,331		3,331
304.61	43,412,787.39	43,932,472.44	2.97	1,298,373	(81,465)	1,216,908
304.62	54,890,101.85	55,111,313.86	2.58	1,418,230	(15,508)	1,402,722
304.63	4,000,139.23	4,132,815.74	2.06	83,448	673	84,121
305.00	135,669,088.72	135,669,088.72	1.47	1,996,136	271,257	2,267,393
306.00	18,215,787.08	18,215,787.08	2.51	456,818	8,076	464,894
307.00	9,898,022.81	10,623,182.73	2.34	235,405	24,281	259,686
310.00	18,136,948.65	19,809,562.50	2.71	495,783	21,507	517,290
311.20	21,292,217.56	23,758,420.92	3.28	725,917	295,515	1,021,432
311.50	2,389,457.83	2,389,457.83	3.24	77,326		77,326
311.52	12,617,080.84	14,212,241.21	3.35	445,658		445,658
311.53	42,848,060.38	46,865,937.19	2.80	1,212,264		1,212,264
311.54	6,787,710.63	6,787,710.63	3.01	204,043		204,043
320.10	225,716,944.63	277,364,892.10	2.44	5,905,753	397,387	6,303,140
320.18	103,245.73	103,245.73	0.00	0		0
320.19	3,522,542.77	3,522,542.77	0.07	2,538		2,538
320.20	80,858,527.99	84,703,323.42	3.26	2,678,001		2,678,001
320.29	8,167.87	8,167.87	0.00	0		0
320.30	8,601,165.21	8,601,165.21	9.68	832,282	88,216	920,498
320.37	14,969,798.93	14,969,798.93	1.81	271,256	64,099	335,355
330.00	106,929,232.38	114,750,102.23	1.80	1,970,376	1,537,557	3,507,933
330.10	10,930,110.10	14,100,477.17	2.06	243,438		243,438
330.20	15,192,040.47	18,929,725.89	2.09	345,686		345,686
330.30	818,672.56	818,672.56	2.05	16,778		16,778

PENNSYLVANIA-AMERICAN WATER COMPANY
WATER OPERATIONS EXCLUDING STEELTON

TABLE 4. CALCULATION OF DEPRECIATION ACCRUALS FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2021

ACCOUNT	NET ORIGINALCOST AS OF 12/31/2020	NET ORIGINALCOST AS OF 12/31/2021	ACCRUAL RATE	AVERAGE ACCRUALS	AMORTIZATION OF NET SALVAGE	PROJECTED DEPRECIATION ACCRUALS
(1)	(2)	(3)	(4)	(5)*	(6)	(7)=(5)+(6)
330.40	12,806,094.73	12,806,094.73	2.04	260,817		260,817
330.58	2,211,111.35	2,211,111.35	1.12	24,654		24,654
330.59	29,919,635.20	34,570,376.62	7.86	2,449,147		2,449,147
331.00	2,675,857,649.51	2,799,921,328.82	1.21	32,758,152	12,795,826	45,553,978
333.00	604,695,086.73	631,916,771.52	1.66	10,245,705	1,210,598	11,456,303
334.00	196,137,446.01	206,255,053.90	5.51	11,091,554	1,033,187	12,124,741
335.00	115,429,813.60	122,785,610.66	1.60	1,894,800	383,974	2,278,774
340.10	5,339,828.99	7,475,864.68	5.31	340,079	36,337	376,416
340.20	19,364,761.45	24,511,435.46	21.66	4,532,973		4,532,973
340.30	42,907,597.73	45,994,769.94	21.25	10,353,824		10,353,824
340.31	62,990,459.09	62,990,459.09	16.42	10,340,331		10,340,331
340.50	7,290.67	7,290.67	10.15	740		740
341.00	349.00	349.00	0.00	0		0
341.10	26,577,670.21	28,802,310.96	11.00	3,063,529	82,371	3,145,900
341.20	20,121,976.99	23,205,811.64	11.93	2,532,823		2,532,823
341.30	3,344,774.93	3,874,730.49	8.40	307,184		307,184
341.40	8,708,645.51	10,439,225.68	11.54	1,013,708		1,013,708
342.00	448,033.65	448,033.65	6.04	27,046	1,986	29,032
343.00	29,078,050.31	32,097,137.82	5.99	1,829,220	8,894	1,838,114
344.00	2,606,821.35	2,606,821.35	6.50	169,353	5,192	174,545
345.00	2,405,805.64	2,405,805.64	4.67	112,304	1,004	113,308
346.00	2,539,854.88	3,459,420.00	6.19	188,316	23,697	212,013
346.10	4,581,387.28	6,770,729.39	6.62	351,268		351,268
346.19	3,011,599.18	2,790,901.75	9.44	283,385		283,385
346.20	714,839.66	188,390.60	5.68	39,337		39,337
347.00	11,260,526.60	11,604,345.21	7.24	827,967	20,570	848,537
348.00	793,796.73	793,796.73	4.03	31,976	156	32,132
TOTAL	**5,161,654,025.49**	**5,478,296,131.14**		**127,205,227**	**18,696,044**	**145,901,271**

* Annual Accrual developed based on monthly averages.

PENNSYLVANIA-AMERICAN WATER COMPANY
WATER OPERATIONS EXCLUDING STEELTON

TABLE 5. AMORTIZATION OF EXPERIENCED AND ESTIMATED NET SALVAGE

	2017		2018		2019		PROJECTED 2020		PROJECTED 2021			
ACCOUNT	GROSS SALVAGE	COST OF REMOVAL	GROSS SALVAGE	COST OF REMOVAL	GROSS SALVAGE	COST OF REMOVAL	GROSS SALVAGE	COST OF REMOVAL	GROSS SALVAGE	COST OF REMOVAL	NET SALVAGE	SALVAGE ACCRUAL
(1)	(2) -	(3) +	(4) -	(5) +	(6) -	(7) +	(8) -	(9) +	(10) -	(11) =	(12)*	(13)=(12)/5
303.14				2,459.00							(2,459.00)	(492)
303.20		2,459.00		(2,459.00)							0.00	0
303.99						3,062.78					(3,062.78)	(613)
304.15		68,090.61	1,582.30	180,812.86	27,560.73	387,837.75	1,329.00	32,333.00	11,722.00	285,226.00	(912,106.19)	(182,421)
304.20		38,831.70	13,853.00	39,684.28	31,830.10	147,277.43	4,421.00	26,528.00	20,220.00	121,321.00	(303,318.31)	(60,664)
304.30		36,848.82	14,493.83	1,091,908.37	66,260.61	148,391.82	2,461.00	31,989.00	24,251.00	315,258.00	(1,516,929.57)	(303,386)
304.36				43,138.55		546.00					(43,684.55)	(8,737)
304.61		71,906.49			1,864,549.94	1,304,656.48		9,724.00		5,013.00	473,249.97	94,650
304.62		10,015.90	729.22	6,567.28	192,159.79	54,481.40	9,550.00	5,813.00	5,453.00	3,319.00	127,695.43	25,539
304.63		2,051.43		3,068.49	25,209.50	8,030.27	1,607.00	5,357.00	853.00	2,844.00	6,318.31	1,264
305.00		5,620.91				1,266,548.34					(1,272,169.25)	(254,434)
306.00		16,836.83				17,003.99					(33,840.82)	(6,768)
307.00		618.42		1,391.04		118,341.25					(120,350.71)	(24,070)
310.00		2,903.30		11,634.03		42,462.99		4,760.00		46,609.00	(108,369.32)	(21,674)
311.00	880.05	72,179.55		191,399.40	13,739.63	1,092,490.18		33,004.00		147,204.00	(1,521,657.45)	(304,331)
320.00	3.44	115,579.33	512.50	619,426.48	229.83	924,729.91		225,992.00		703,628.00	(2,588,609.95)	(517,722)
320.30		1,622.00				423,003.27					(424,625.27)	(84,925)
320.37		7,150.00		29,963.00	23.00	90,807.00					(127,897.00)	(25,579)
330.00		645,827.57	162.78	2,820,506.21		2,686,207.69		165,227.00		775,958.00	(7,093,563.69)	(1,418,713)
331.00	107,310.05	7,290,999.85	25,598.82	11,746,655.36	13,124.96	21,381,790.52		12,141,393.00		9,924,329.00	(62,339,133.90)	(12,467,827)
333.00	2,339.38	1,164,164.90	(214.01)	1,300,493.65	9,792.38	1,897,743.49		714,893.00		744,450.00	(5,809,827.29)	(1,161,965)
334.00	98,185.09	960,401.22	115,629.32	913,142.15	93,029.52	2,727,391.38	8,480.00	110,240.00	6,631.00	86,202.00	(4,475,421.82)	(895,084)
335.00	248.83	227,143.79	2,311.49	309,652.61	4,063.03	908,970.88		204,109.00		223,557.00	(1,866,809.93)	(373,362)
340.00		6,364.74	8,779.58	30,861.14	10,745.87	122,477.36					(140,177.79)	(28,036)
341.00		1,430.78	205,163.90	148,702.02	261,902.01	761,298.60	50,503.00	16,835.00	48,674.00	16,225.00	(378,248.49)	(75,650)
342.00				245.80		9,682.12					(9,927.92)	(1,986)
343.00		8,345.37		7,924.48	48,579.17	57,836.24					(25,526.92)	(5,105)
344.00		1,202.11		4,823.99		14,919.23					(20,945.33)	(4,189)
345.00		98.42		860.13	12,288.18	15,876.66					(4,547.03)	(909)
346.00		646.24	132.58	30,002.27		87,193.50					(117,709.43)	(23,542)
347.00		12,915.37		20,027.66	8,306.50	73,665.55					(98,302.08)	(19,660)
348.00				(29.21)		808.08					(778.87)	(156)
TOTAL	208,966.84	10,772,254.65	388,735.31	19,552,862.04	2,683,394.75	36,775,532.16	78,351.00	13,728,197.00	117,804.00	13,401,143.00	(90,752,736.95)	(18,150,547)

ımmation of Columns (2) through (11).

Exhibit No. 11-L
Witness: J. J. Spanos

PENNSYLVANIA-AMERICAN WATER COMPANY

MECHANICSBURG, PENNSYLVANIA

WASTEWATER SSS OPERATIONS EXCLUDING SADSBURY AND EXETER

2022 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WASTEWATER PLANT AS OF DECEMBER 31, 2022

Prepared by:

Gannett Fleming

Excellence Delivered ***As Promised***

Exhibit No. 11-L
Witness: J. J. Spanos

PENNSYLVANIA-AMERICAN WATER COMPANY

Mechanicsburg, Pennsylvania

WASTEWATER SSS OPERATIONS EXCLUDING SADSBURY AND EXETER

2022 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION ACCRUALS
RELATED TO WASTEWATER PLANT
AS OF DECEMBER 31, 2022

GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC

Camp Hill, Pennsylvania

Gannett Fleming

Excellence Delivered ***As Promised***

April 22, 2020

Pennsylvania-American Water Company
852 Wesley Drive
Mechanicsburg, PA 17055

Attention Ashley E. Everette
Director, Rates & Regulatory

Ladies and Gentlemen:

Pursuant to your request, we have determined the annual depreciation accruals applicable to wastewater plant as of December 31, 2022. The results of our study at December 31, 2020 are presented in our report titled "2020 Depreciation Study - Calculated Annual Depreciation Accruals Related to Wastewater Plant as of December 31, 2020". The same methods, procedures and estimates are used in both studies.

Summaries of the original cost, annual accruals, book depreciation reserve and amortization of net salvage are presented in Tables 1 through 5, beginning on page I-3 of the attached report.

Respectfully submitted,

GANNETT FLEMING VALUATION
AND RATE CONSULTANTS, LLC

John J. Spanos

JOHN J. SPANOS
President

JJS:mle

066548.100

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TABLE OF CONTENTS

PART I. RESULTS OF STUDY I-1
Description of Summary Tabulations I-2
Description of Detailed Tabulations I-2

Table 1. Development of Net Original Cost as of December 31, 2022 ..... I-3

Table 2. Summary of Estimated Survivor Curves, Original Cost, Book Reserve and Calculated Annual Depreciation Accruals Related to Wastewater Plant as of December 31, 2022 ..... I-4

Table 3. Bringforward to December 31, 2022, of the Book Reserve as of December 31, 2020 ..... I-5

Table 4. Calculation of Depreciation Accruals for the Twelve Months Ended December 31, 2022 ..... I-6

Table 5. Amortization of Experienced and Estimated Net Salvage I-7

PART II. DETAILED DEPRECIATION CALCULATIONS II-1
Cumulative Depreciated Original Cost II-2
Net Utility Plant in Service II-6

PART III. EXPERIENCED AND ESTIMATED NET SALVAGE III-1

PART I. RESULTS OF STUDY

PENNSYLVANIA-AMERICAN WATER COMPANY

WASTEWATER SSS OPERATIONS EXCLUDING SADSBURY AND EXETER

DEPRECIATION STUDY

PART I. RESULTS OF STUDY

SUMMARY OF RESULTS

Tables 1 through 5 presented on pages I-3 through I-7 summarize the results of the depreciation study as of December 31, 2022. Table 1 sets forth the development of the net original cost by account as of December 31, 2022. Table 2 sets forth, by depreciable group, the estimated survivor curve, original cost, book depreciation reserve as of December 31, 2022, future book accruals, calculated annual accrual amount and rate, and composite remaining life for plant in service. Table 3 presents the bringforward of the book reserve to December 31, 2022. Table 4 sets forth the calculation of the depreciation accruals for the twelve months ended December 31, 2022. Table 5 presents the annual amortization of experienced and estimated net salvage based on the period 2018 through 2022.

DESCRIPTION OF DETAILED TABULATIONS

The supporting data for the depreciation calculations are presented in account sequence in the section beginning on page II-7. The original cost, calculated accrued depreciation, allocated book reserve, future accruals, remaining life and annual accrual are shown for each vintage of each account or subaccount. The amounts of regular retirements, gross salvage and cost of removal are set forth by account for the years 2018 through 2022, beginning on pages III-2 through III-4.

PENNSYLVANIA-AMERICAN WATER COMPANY
WASTEWATER SSS OPERATIONS EXCLUDING SADSBURY AND EXETER

TABLE 1. DEVELOPMENT OF NET ORIGINAL COST AS OF DECEMBER 31, 2022

DEPRCIABLE GROUP	ORIGINAL COST AS OF DECEMBER 31, 2022	- CUSTOMER ADVANCES	- CONTRIBUTIONS IN AID OF CONSTRUCTION	- EXCLUDED PROPERTY	= NET ORIGINAL COST AS OF DECMEBER 31, 2022
(1)	(2)	(3)	(4)	(5)	(6)
DEPRECIABLE PLANT					
354.20 STRUCTURES AND IMPROVEMENTS - COLLECTION	1,372,711.27				1,372,711.27
354.30 STRUCTURES AND IMPROVEMENTS - SPP	17,988,212.97		2,734,528.70		15,253,684.27
354.40 STRUCTURES AND IMPROVEMENTS - TDP	55,042,602.26		1,853,012.73		53,189,589.53
354.70 STRUCTURES AND IMPROVEMENTS - GENERAL	3,153,826.87				3,153,826.87
355.00 POWER GENERATION EQUIPMENT	4,180,589.06		144,517.16		4,036,071.90
360.10 COLLECTION SEWERS - FORCE MAINS	50,575,251.29	157,753.14	11,251,126.61		39,166,371.54
361.10 COLLECTION SEWERS - GRAVITY MAINS	120,095,333.20	133,423.53	13,295,536.11		106,666,373.56
361.20 MANHOLES	17,657,269.96		4,387,312.76		13,269,957.20
363.00 SERVICES	24,656,795.81	70,197.45	3,753,803.46		20,832,794.90
364.00 FLOW MEASURING DEVICES	371,151.65		14,726.81		356,424.84
365.00 FLOW MEASURING INSTALLATIONS	14,938.00				14,938.00
370.00 RECEIVING WELLS	143,419.77				143,419.77
371.00 PUMPING EQUIPMENT	13,374,027.20		66,626.22		13,307,400.98
380.00 TREATMENT EQUIPMENT	67,907,787.21		2,200,080.47		65,707,706.74
381.00 PLANT SEWERS	6,212,540.44		30,192.33		6,182,348.11
382.00 OUTFALL SEWER LINES	604,388.91				604,388.91
389.10 OTHER PLANT AND MISCELLANEOUS EQUIPMENT - INTANGIBLES	582,205.16				582,205.16
389.60 OTHER PLANT AND MISCELLANEOUS EQUIPMENT - CPS	1,707,500.00				1,707,500.00
390.00 OFFICE FURNITURE AND EQUIPMENT	168,706.08				168,706.08
391.00 TRANSPORTATION EQUIPMENT	3,034,840.81				3,034,840.81
392.00 STORES EQUIPMENT	107,351.44				107,351.44
393.00 TOOLS, SHOP AND GARAGE EQUIPMENT	1,505,097.79				1,505,097.79
394.00 LABORATORY EQUIPMENT	729,305.71				729,305.71
395.00 POWER OPERATED EQUIPMENT	917,645.43		10,000.00		907,645.43
396.00 COMMUNICATION EQUIPMENT	1,744,213.66				1,744,213.66
397.00 MISCELLANEOUS EQUIPMENT	661,593.59		29,000.00		632,593.59
398.00 OTHER TANGIBLE PLANT	14,231.50				14,231.50
TOTAL DEPRECIABLE PLANT	**394,523,537.04**	**361,374.12**	**39,770,463.36**	**0.00**	**354,391,699.56**
NONDEPRECIABLE PLANT					
352.10 FRANCHISES	221,139.78				221,139.78
353.20 LAND AND LAND RIGHTS - COLLECTION	1,093,483.20				1,093,483.20
353.30 LAND AND LAND RIGHTS - SPP	85,560.07				85,560.07
353.40 LAND AND LAND RIGHTS - TDP	1,717,020.09		125,000.00		1,592,020.09
TOTAL NONDEPRECIABLE PLANT	**3,117,203.14**	**0.00**	**125,000.00**	**0.00**	**2,992,203.14**
TOTAL UTILITY PLANT	**397,640,740.18**	**361,374.12**	**39,895,463.36**	**0.00**	**357,383,902.70**

PENNSYLVANIA-AMERICAN WATER COMPANY
WASTEWATER SSS OPERATIONS EXCLUDING SADSBURY AND EXETER

TABLE 2. SUMMARY OF ESTIMATED SURVIVOR CURVE, ORIGINAL COST, BOOK RESERVE, AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WASTEWATER PLANT AS OF DECEMBER 31, 2022

	DEPRECIABLE GROUP	SURVIVOR CURVE	ORIGINAL COST AS OF DECEMBER 31, 2022	BOOK RESERVE	FUTURE ACCRUALS	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	COMPOSITE REMAINING LIFE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)=(6)/(3)	(8)
	DEPRECIABLE PLANT							
354.20	STRUCTURES AND IMPROVEMENTS - COLLECTION	45-R3	1,372,711.27	97,323	1,275,388	38,320	2.79	33.3
354.30	STRUCTURES AND IMPROVEMENTS - SPP	55-S0	15,253,684.27	5,449,788	9,803,896	300,957	1.97	32.6
354.40	STRUCTURES AND IMPROVEMENTS - TDP	55-S0	53,189,589.53	13,447,768	39,741,821	1,254,377	2.36	31.7
354.70	STRUCTURES AND IMPROVEMENTS - GENERAL	35-S1	3,153,826.87	1,687,584	1,466,242	63,310	2.01	23.2
355.00	POWER GENERATION EQUIPMENT	35-S0.5	4,036,071.90	2,807,978	1,228,094	63,471	1.57	19.3
360.10	COLLECTION SEWERS - FORCE MAINS	75-R3	39,166,371.54	3,526,886	35,639,485	678,631	1.73	52.5
361.10	COLLECTION SEWERS - GRAVITY MAINS	80-R2.5	106,666,373.56	13,972,547	92,693,827	1,691,826	1.59	54.8
361.20	MANHOLES	50-S2.5	13,269,957.20	2,036,681	11,233,276	348,535	2.63	32.2
363.00	SERVICES	47-R3	20,832,794.90	4,780,861	16,051,934	531,451	2.55	30.2
364.00	FLOW MEASURING DEVICES	15-L2.5	356,424.84	170,648	185,777	36,426	10.22	5.1
365.00	FLOW MEASURING INSTALLATIONS	25-S2	14,938.00	2,513	12,425	1,154	7.73	10.8
370.00	RECEIVING WELLS	50-R3	143,419.77	34,923	108,497	3,219	2.24	33.7
371.00	PUMPING EQUIPMENT	30-S0.5	13,307,400.98	2,331,656	10,975,745	602,548	4.53	18.2
380.00	TREATMENT EQUIPMENT	35-S1.5	65,707,706.74	18,480,154	47,227,552	2,355,132	3.58	20.1
381.00	PLANT SEWERS	50-R3	6,182,348.11	1,591,522	4,590,827	140,418	2.27	32.7
382.00	OUTFALL SEWER LINES	50-R3	604,388.91	244,690	359,698	12,727	2.11	28.3
389.10	OTHER PLANT AND MISCELLANEOUS EQUIPMENT - INTANGIBLES	20-S2.5	582,205.16	231,563	350,642	31,102	5.34	11.3
389.60	OTHER PLANT AND MISCELLANEOUS EQUIPMENT - CPS	5-SQ	1,707,500.00	457,989	1,249,511	357,607	20.94	3.5
390.00	OFFICE FURNITURE AND EQUIPMENT	20-SQ	168,706.08	37,591	131,115	13,043	7.73	10.1
391.00	TRANSPORTATION EQUIPMENT	14-L4	3,034,840.81	718,213	2,316,627	235,403	7.76	9.8
392.00	STORES EQUIPMENT	25-SQ	107,351.44	33,748	73,604	4,273	3.98	17.2
393.00	TOOLS, SHOP AND GARAGE EQUIPMENT	20-SQ	1,505,097.79	299,112	1,205,986	78,428	5.21	15.4
394.00	LABORATORY EQUIPMENT	15-SQ	729,305.71	275,058	454,248	43,556	5.97	10.4
395.00	POWER OPERATED EQUIPMENT	22-R2	907,645.43	389,500	518,146	39,364	4.34	13.2
396.00	COMMUNICATION EQUIPMENT	15-SQ	1,744,213.66	998,400	745,814	107,830	6.18	6.9
397.00	MISCELLANEOUS EQUIPMENT	15-SQ	632,593.59	205,091	427,503	33,372	5.28	12.8
398.00	OTHER TANGIBLE PLANT	25-SQ	14,231.50	2,461	11,771	547	3.84	21.5
	TOTAL DEPRECIABLE PLANT		**354,391,699.56**	**74,312,248**	**280,079,451**	**9,067,027**	**2.56**	**30.9**
	NONDEPRECIABLE PLANT							
352.10	FRANCHISES		221,139.78					
353.20	LAND AND LAND RIGHTS - COLLECTION		1,093,483.20					
353.30	LAND AND LAND RIGHTS - SPP		85,560.07					
353.40	LAND AND LAND RIGHTS - TDP		1,592,020.09					
	TOTAL NONDEPRECIABLE PLANT		**2,992,203.14**					
	AMORTIZATION OF NET SALVAGE					**897,190**		
	TOTAL UTILITY PLANT		**357,383,902.70**	**74,312,248**	**280,079,451**	**9,964,217**		

PENNSYLVANIA-AMERICAN WATER COMPANY
WASTEWATER SSS OPERATIONS EXCLUDING SADSBURY AND EXETER

TABLE 3. BRINGFORWARD TO DECEMBER 31, 2022, OF BOOK RESERVE AS OF DECEMBER 31, 2021

ACCOUNT	PROJECTED BOOK RESERVE BALANCE AS OF 12/31/2021		PROJECTED DEPRECIATION ACCRUALS		PROJECTED RETIREMENTS		PROJECTED COST OF REMOVAL		PROJECTED SALVAGE		ACQUISITIONS		PROJECTED BOOK RESERVE BALANCE AS OF 12/31/2022
(1)	(2)	+	(3)	-	(4)	-	(5)	+	(6)	+	(7)	=	(8)
354.20	49,219		63,092		1,401		13,587						97,323
354.30	5,144,884		325,647		18,356		2,386						5,449,788
354.40	12,232,042		1,272,456		56,167		562						13,447,768
354.70	1,613,097		88,037		3,218		10,331						1,687,584
355.00	2,739,150		68,828										2,807,978
360.10	2,894,314		759,287		62,421		64,294						3,526,886
361.10	12,678,919		1,999,555		480,223		225,705						13,972,547
361.20	1,778,786		417,490		22,832		137,220		457				2,036,681
363.00	4,422,337		604,967		122,608		123,835						4,780,861
364.00	127,900		42,748										170,648
365.00	1,315		1,198										2,513
370.00	31,682		3,241										34,923
371.00	1,690,669		652,922		9,472		2,463						2,331,656
380.00	16,084,154		2,433,983		33,913		4,070						18,480,154
381.00	1,449,946		141,576										1,591,522
382.00	231,500		13,190										244,690
389.10	199,257		32,306										231,563
389.60	106,944		351,045										457,989
390.00	24,328		13,263										37,591
391.00	533,900		218,897		29,813		4,770						718,213
392.00	29,475		4,273										33,748
393.00	227,278		71,834										299,112
394.00	233,029		42,973		859		86						275,058
395.00	361,954		35,148		7,453		149						389,500
396.00	887,391		113,680		2,450		221						998,400
397.00	176,585		28,506										205,090
398.00	1,652		809										2,461
TOTAL	**65,951,706**		**9,800,949**		**851,187**		**589,676**		**457**		**0**		**74,312,248**

PENNSYLVANIA-AMERICAN WATER COMPANY
WASTEWATER SSS OPERATIONS EXCLUDING SADSBURY AND EXETER

TABLE 4. CALCULATION OF DEPRECIATION ACCRUALS FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2022

ACCOUNT	NET ORIGINAL COST AS OF 12/31/2021	NET ORIGINAL COST AS OF 12/31/2022	ACCRUAL RATE	DEPRECIATION ACCRUALS	AMORTIZATION OF NET SALVAGE	PROJECTED DEPRECIATION ACCRUALS
(1)	(2)	(3)	(4)	(5)*	(6)	(7)=(5)+(6)
354.20	1,350,155.77	1,372,711.27	2.84	38,574	24,518	63,092
354.30	14,958,113.65	15,253,684.27	2.01	302,788	22,859	325,647
354.40	52,285,165.25	53,189,589.53	2.41	1,267,886	4,570	1,272,456
354.70	3,102,005.24	3,153,826.87	2.01	62,724	25,313	88,037
355.00	4,036,071.90	4,036,071.90	1.63	65,788	3,040	68,828
360.10	38,161,242.14	39,166,371.54	1.75	673,706	85,581	759,287
361.10	99,296,640.99	106,666,373.56	1.60	1,633,382	366,173	1,999,555
361.20	12,812,001.40	13,269,957.20	2.63	342,146	75,344	417,490
363.00	18,663,546.11	20,832,794.90	2.55	500,757	104,210	604,967
364.00	356,424.84	356,424.84	11.98	42,700	48	42,748
365.00	14,938.00	14,938.00	8.02	1,198		1,198
370.00	143,419.77	143,419.77	2.26	3,241		3,241
371.00	13,154,873.34	13,307,400.98	4.71	619,894	33,028	652,922
380.00	64,581,620.12	65,707,706.74	3.67	2,371,867	62,116	2,433,983
381.00	6,182,348.11	6,182,348.11	2.29	141,576		141,576
382.00	604,388.91	604,388.91	2.13	12,873	317	13,190
389.10	582,205.16	582,205.16	5.48	31,905	401	32,306
389.60	1,655,000.00	1,707,500.00	20.97	351,045		351,045
390.00	168,706.08	168,706.08	7.76	13,092	171	13,263
391.00	2,554,774.18	3,034,840.81	7.83	213,813	5,084	218,897
392.00	107,351.44	107,351.44	3.98	4,273		4,273
393.00	1,199,614.28	1,505,097.79	5.29	71,382	452	71,834
394.00	628,336.51	729,305.71	6.14	41,616	1,357	42,973
395.00	787,628.77	907,645.43	4.17	34,678	470	35,148
396.00	1,669,700.06	1,744,213.66	6.33	107,931	5,749	113,680
397.00	496,492.71	632,593.59	4.84	26,200	2,306	28,506
398.00	14,231.50	14,231.50	3.93	559	250	809
TOTAL	339,566,996.23	354,391,699.56		8,977,592	823,357	9,800,949

* Total accruals shown are based on average monthly balances.

PENNSYLVANIA-AMERICAN WATER COMPANY
WASTEWATER SSS OPERATIONS EXCLUDING SADSBURY AND EXETER

TABLE 5. AMORTIZATION OF EXPERIENCED AND ESTIMATED NET SALVAGE

	2018		2019		PROJECTED 2020		PROJECTED 2021		PROJECTED 2022			
ACCOUNT	GROSS SALVAGE	COST OF REMOVAL	GROSS SALVAGE	COST OF REMOVAL	GROSS SALVAGE	COST OF REMOVAL	GROSS SALVAGE	COST OF REMOVAL	GROSS SALVAGE	COST OF REMOVAL	NET SALVAGE	SALVAGE ACCRUAL
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)*	(13)=(12)/5
354.20		2,367		27,531		29,175		63,211		13,587	(135,871)	(27,174)
354.30		87		61,135		5,124		11,101		2,386	(79,833)	(15,967)
354.40		(18,539)		1,986		1,206		2,613		562	12,172	2,434
354.70		36,100		18,075		22,182		48,060		10,331	(134,747)	(26,949)
355.00		4,539		9,730							(14,269)	(2,854)
360.10		85,350		245,202		41,420		54,123		64,294	(490,390)	(98,078)
361.10		345,943		1,038,559		170,104		222,272		225,705	(2,002,583)	(400,517)
361.20				109,567	440	132,346	452	135,702	457	137,220	(513,485)	(102,697)
363.00		48,455		150,830		130,023		122,465		123,835	(575,608)	(115,122)
364.00				240							(240)	(48)
371.00		(18,885)		141,438		37,534				2,463	(162,550)	(32,510)
380.00		12,304		214,843		11,073		65,469		4,070	(307,759)	(61,552)
382.00		981									(981)	(196)
389.10		(3,678)		5,682							(2,003)	(401)
390.00		94									(94)	(19)
391.00		9,708		6,029		5,013		4,669		4,770	(30,189)	(6,038)
393.00				1,931							(1,931)	(386)
394.00		118		5,593		1,012				86	(6,809)	(1,362)
395.00				2,048		157		146		149	(2,500)	(500)
396.00				1,898		21,079		293		221	(23,491)	(4,698)
397.00		6,019		5,513							(11,532)	(2,306)
398.00				1,251							(1,251)	(250)
TOTAL	**0**	**510,964**	**0**	**2,049,082**	**440**	**607,449**	**452**	**730,122**	**457**	**589,676**	**(4,485,944)**	**(897,190)**

* Column (12) equals the summation of Columns (2) through (11).

Pennsylvania American Water Company

Valley Township, Chester County, Pennsylvania

Water System
Appraisal Work Papers
As of December 17, 2019

PAWC General Rate Cases Depreciation Studies
Water and Wastewater 2017

AUS Consultants
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8555 West Forest Home Avenue
Greenfield, Wisconsin 53228
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J. Weinert's Cell: 414-698-8371
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VOLUME 11

PENNSYLVANIA-AMERICAN WATER COMPANY

2017 GENERAL BASE RATE CASE

R-2017-2595853

EXHIBIT NO. 11-C - DEPRECIATION STUDY

WATER OPERATIONS AS OF

DECEMBER 31, 2018

Exhibit No. 11-C
Witness: J. J. Spanos

PENNSYLVANIA-AMERICAN WATER COMPANY

HERSHEY, PENNSYLVANIA

2018 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION ACCRUALS
RELATED TO WATER PLANT
AS OF DECEMBER 31, 2018

Prepared by:

Excellence Delivered As Promised

Exhibit No. 11-C
Witness: J. J. Spanos

PENNSYLVANIA-AMERICAN WATER COMPANY

Hershey, Pennsylvania

2018 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WATER PLANT AS OF DECEMBER 31, 2018

GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC

Camp Hill, Pennsylvania

Gannett Fleming

*Excellence Delivered **As Promised***

April 21, 2017

Pennsylvania-American Water Company
800 West Hersheypark Drive
Hershey, PA 17033

Attention: Mr. John R. Cox
Manager of Rates and Regulations

Gentlemen:

Pursuant to your request, we have determined the annual depreciation accruals applicable to water plant as of December 31, 2018. The results of our study at December 31, 2013 are presented in our report titled "2017 Depreciation Study - Calculated Annual Depreciation Accruals Related to Water Plant as of December 31, 2017". The same methods, procedures and estimates are used in both studies.

Summaries of the original cost, annual accruals, book depreciation reserve and amortization of net salvage are presented in Tables 1 through 5, beginning on page I-3 of the attached report.

Respectfully submitted,

GANNETT FLEMING VALUATION
AND RATE CONSULTANTS, LLC

John J. Spanos

JOHN J. SPANOS
Sr. Vice President

JJS:mlw

062027.100

Gannett Fleming Valuation and Rate Consultants, LLC
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TABLE OF CONTENTS

PART I. RESULTS OF STUDY I-1
Description of Summary Tabulations I-2
Description of Detailed Tabulations I-2

Table 1. Development of Net Original Cost as of December 31, 2018 ..... I-3

Table 2. Summary of Estimated Survivor Curves, Original Cost, Book Reserve and Calculated Annual Depreciation Accruals Related to Water Plant as of December 31, 2018 ..... I-5

Table 3. Bringforward to December 31, 2018, of the Book Reserve as of December 31, 2017 ..... I-8

Table 4. Calculation of Depreciation Accruals for the Twelve Months Ended December 31, 2018 ..... I-9

Table 5. Amortization of Experienced and Estimated Net Salvage I-10

PART II. DETAILED DEPRECIATION CALCULATIONS II-1
Cumulative Depreciated Original Cost II-2
Net Utility Plant in Service II-6

PART III. EXPERIENCED NET SALVAGE III-1

PART I. RESULTS OF STUDY

PENNSYLVANIA-AMERICAN WATER COMPANY

DEPRECIATION STUDY

RESULTS OF STUDY

DESCRIPTION OF SUMMARY TABULATIONS

Tables 1 through 5 presented on pages 3 through 10 summarize the results of the depreciation study as of December 31, 2018. Table 1 sets forth the development of the net original cost by account as of December 31, 2018. Table 2 sets forth, by depreciable group, the estimated survivor curve, original cost, book depreciation reserve as of December 31, 2018, future book accruals, calculated annual accrual amount and rate, and composite remaining life for plant in service. Table 3 presents the bringforward of the book reserve to December 31, 2018. Table 4 sets forth the calculation of the depreciation accruals for the twelve months ended December 31, 2018. Table 5 presents the annual amortization of experienced and estimated net salvage based on the period 2014 through 2018.

DESCRIPTION OF DETAILED TABULATIONS

The supporting data for the depreciation calculations are presented in account sequence in the section beginning on page II-2. The original cost, calculated accrued depreciation, allocated book reserve, future accruals, remaining life and annual accrual are shown for each vintage of each account or subaccount. The amounts of regular retirements, gross salvage and cost of removal are set forth by account for the years 2014 through 2018, beginning on pages III-2 through III-5.

PENNSYLVANIA-AMERICAN WATER COMPANY

TABLE 1. DEVELOPMENT OF NET ORIGINAL COST AS OF DECEMBER 31, 2018

	DEPRCIABLE GROUP	ORIGINAL COST AS OF DECEMBER 31, 2018		CUSTOMER ADVANCES		CONTRIBUTIONS IN AID OF CONSTRUCTION		EXCLUDED PROPERTY		NET ORIGINAL COST AS OF DECMEBER 31, 2018
	(1)	(2)	-	(3)	-	(4)	-	(5)	=	(6)
INTANGIBLE PLANT										
301.00	ORGANIZATION	774,398.06								774,398.06
302.00	FRANCHISES AND CONSENTS	2,404,599.20								2,404,599.20
303.00	MISCELLANEOUS INTANGIBLE PLANT	15,569.16								15,569.16
	TOTAL INTANGIBLE PLANT	**3,194,566.42**		**0.00**		**0.00**		**0.00**		**3,194,566.42**
NONDEPRECIABLE PLANT										
303.20	POWER AND PUMPING LAND	3,576,428.03								3,576,428.03
303.30	PURIFICATION LAND	15,412.25								15,412.25
303.40	TRANS. AND DISTR. LAND AND RIGHTS OF WAY	4,578,480.03				215,927.20				4,362,552.83
303.50	DISTRIBUTION RESERVOIRS AND STANDPIPE LAND	2,389,882.77								2,389,882.77
303.51	TRANSMISSION AND DISTRIBUTION - LAND	1,762,423.06								1,762,423.06
303.52	TRANSMISSION AND DISTRIBUTION - RIGHTS OF WAY	5,288,947.81								5,288,947.81
303.61	OFFICE LAND	3,918,022.99								3,918,022.99
	TOTAL NONDEPRECIABLE PLANT	**21,529,596.94**		**0.00**		**215,927.20**		**0.00**		**21,313,669.74**
DEPRECIABLE PLANT										
303.14	WATER RIGHTS - HIBERNIA	1,942,822.51								1,942,822.51
303.35	WASTE HANDLING AND TREATMENT LAND	155,025.17								155,025.17
303.99	COMPREHENSIVE PLANNING STUDIES	9,920,726.11								9,920,726.11
304.15	OTHER WATER SOURCE STRUCTURES	34,442,969.90								34,442,969.90
304.20	POWER AND PUMPING STRUCTURES	107,320,207.30				1,289,607.60		41,310.00		105,989,289.70
304.30	PURIFICATION BUILDINGS	274,724,337.33				169,605.01		230,375.00		274,324,357.32
304.36	WASTE HANDLING AND TREATMENT STRUCTURE	11,733,221.74								11,733,221.74
304.38	WASTE HANDLING & TREATMENT STRUCTURE PAINTING	65,958.42								65,958.42
304.39	PURIFICATION BUILDINGS - TANK PAINTING	134,806.79								134,806.79
304.61	OFFICE BUILDINGS	40,019,986.62				60,000.00		12,834.00		39,947,152.62
304.62	STORES, SHOP AND GARAGE BUILDINGS	55,222,287.14				576.00				55,221,711.14
304.63	MISCELLANEOUS STRUCTURES AND IMPROVEMENTS	4,933,374.39								4,933,374.39
305.00	COLLECTING AND IMPOUNDING RESERVOIRS	134,357,766.90				3,575.00				134,354,191.90
306.00	LAKE, RIVER AND OTHER INTAKES	20,005,870.35				41,551.00				19,964,319.35
307.00	WELLS AND SPRINGS	11,241,893.43				71,610.27				11,170,283.16
310.00	OTHER POWER PRODUCTION EQUIPMENT	18,152,052.81				118,273.00		26,561.00		18,007,218.81
311.20	ELECTRIC PUMPING EQUIPMENT	21,282,287.19				1,954,569.05		116,716.00		19,211,002.14
311.50	OTHER	1,634,152.00								1,634,152.00
311.52	SOURCE OF SUPPLY	8,509,617.14								8,509,617.14
311.53	WATER TREATMENT	47,732,222.90								47,732,222.90
311.54	TRANSMISSION AND DISTRIBUTION	8,693,988.14								8,693,988.14

PENNSYLVANIA-AMERICAN WATER COMPANY

TABLE 1. DEVELOPMENT OF NET ORIGINAL COST AS OF DECEMBER 31, 2018

	DEPRCIABLE GROUP	ORIGINAL COST AS OF DECEMBER 31, 2018	- CUSTOMER ADVANCES	- CONTRIBUTIONS IN AID OF CONSTRUCTION	- EXCLUDED PROPERTY	= NET ORIGINAL COST AS OF DECMEBER 31, 2018
	(1)	(2)	(3)	(4)	(5)	(6)
320.10	PURIFICATION SYSTEM - LARGE STRUCTURES	203,017,958.78		27,162.27	627,852.00	202,362,944.51
320.18	PURIFICATION SYSTEM - LARGE STRUCTURES PAINT	103,245.73				103,245.73
320.19	PURIFICATION SYSTEM - LARGE STRUCTURES PAINT	3,770,702.48				3,770,702.48
320.20	PURIFICATION SYSTEM - CHEMICAL TREATMENT	83,453,443.30		42,367.00		83,411,076.30
320.29	PURIFICATION SYSTEM - CHEM. TREATMENT PAINT	8,167.87				8,167.87
320.30	GRANULAR ACTIVATED CARBON	8,693,834.87				8,693,834.87
320.37	WASTE HANDLING & TREATMENT - EQUIPMENT	16,075,077.23				16,075,077.23
330.00	DISTRIBUTION RESERVOIRS AND STANDPIPES	101,037,841.09		2,905,114.51		98,132,726.58
330.10	ELEVATED TANKS AND STANDPIPES	17,636,401.77				17,636,401.77
330.20	GROUND LEVEL FACILITIES	22,144,158.48				22,144,158.48
330.30	BELOW GRADE FACILITIES	818,744.06				818,744.06
330.40	CLEARWELL	14,179,641.14				14,179,641.14
330.58	DISTR. RESERVOIRS AND STANDPIPES - PAINTING	2,375,281.44				2,375,281.44
330.59	DISTR. RESERVOIRS AND STANDPIPES - PAINTING	36,418,707.41				36,418,707.41
331.00	MAINS AND ACCESSORIES	2,676,234,771.44	81,810,993.14	178,351,203.78	502,366.00	2,415,570,208.52
333.00	SERVICES	578,601,077.41	1,753,981.88	9,002,408.46		567,844,687.07
334.00	METERS	203,441,435.13	305,369.35	1,653,080.42		201,482,985.36
335.00	FIRE HYDRANTS	107,503,420.52		4,275,268.25		103,228,152.27
340.10	OFFICE FURNITURE	19,179,166.67				19,179,166.67
340.20	COMPUTERS AND PERIPHERAL EQUIPMENT	18,458,835.00		354.00		18,458,481.00
340.30	COMPUTER SOFTWARE - 5 YEAR	36,694,738.71				36,694,738.71
340.31	COMPUTER SOFTWARE - 10 YEAR	62,548,894.51				62,548,894.51
341.00	NOT CLASSIFIED	16,002.14				16,002.14
341.10	LIGHT DUTY TRUCKS	18,911,227.50				18,911,227.50
341.20	EQUIPMENT	14,430,392.96				14,430,392.96
341.30	AUTOS	4,883,332.68				4,883,332.68
341.40	OTHER	5,895,986.16				5,895,986.16
342.00	STORES EQUIPMENT	400,072.70				400,072.70
343.00	TOOLS AND WORK EQUIPMENT	26,095,362.58		61.00		26,095,301.58
344.00	LABORATORY EQUIPMENT	3,323,028.15				3,323,028.15
345.00	POWER OPERATED EQUIPMENT	2,571,357.61				2,571,357.61
346.00	EQUIPMENT	2,585,584.40				2,585,584.40
346.10	NON-TELEPHONE	918,926.11				918,926.11
346.19	REMOTE CONTROL AND INSTRUMENTATION	6,460,864.86				6,460,864.86
346.20	TELEPHONE	831,870.50				831,870.50
347.00	MISCELLANEOUS EQUIPMENT	17,035,118.69		4,085.00		17,031,033.69
348.00	OTHER TANGIBLE EQUIPMENT	735,410.29				735,410.29
	TOTAL DEPRECIABLE PLANT	**5,129,715,656.65**	**83,870,344.37**	**199,970,471.62**	**1,558,014.00**	**4,844,316,826.66**
	TOTAL WATER PLANT IN SERVICE	**5,154,439,820.01**	**83,870,344.37**	**200,186,398.82**	**1,558,014.00**	**4,868,825,062.82**

PENNSYLVANIA-AMERICAN WATER COMPANY

TABLE 2. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WATER PLANT AS OF DECEMBER 31, 2018

	DEPRECIABLE GROUP	SURVIVOR CURVE		NET ORIGINAL COST AS OF DECEMBER 31, 2018	BOOK RESERVE	FUTURE ACCRUALS	ANNUAL ACCRUAL AMOUNT	ANNUAL ACCRUAL RATE, PERCENT	COMPOSITE REMAINING LIFE
	(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)
INTANGIBLE PLANT									
301.00	ORGANIZATION	NONDEPR.		774,398.06					
302.00	FRANCHISES AND CONSENTS	NONDEPR.		2,404,599.20					
303.00	MISCELLANEOUS INTANGIBLE PLANT	NONDEPR.		15,569.16					
	TOTAL INTANGIBLE PLANT			**3,194,566.42**					
NONDEPRECIABLE PLANT									
303.20	POWER AND PUMPING LAND	NONDEPR.		3,576,428.03					
303.30	PURIFICATION LAND	NONDEPR.		15,412.25					
303.40	TRANSMISSION AND DISTRIBUTION LAND AND RIGHTS OF WAY	NONDEPR.		4,362,552.83					
303.50	DISTRIBUTION RESERVOIRS AND STANDPIPES LAND	NONDEPR.		2,389,882.77					
303.51	TRANSMISSION AND DISTRIBUTION - LAND	NONDEPR.		1,762,423.06					
303.52	TRANSMISSION AND DISTRIBUTION - RIGHTS OF WAY	NONDEPR.		5,288,947.81					
303.61	OFFICE LAND	NONDEPR		3,918,022.99					
	TOTAL NONDEPRECIABLE PLANT			**21,313,669.74**					
DEPRECIABLE PLANT									
303.14	WATER RIGHTS - HIBERNIA	25-SQ		1,942,822.51	1,763,172	179,651	119,767	6.16	1.5
303.35	WASTE HANDLING AND TREATMENT LAND	100-R2	*	155,025.17	155,025	0	0	-	-
303.99	COMPREHENSIVE PLANNING STUDIES	5-SQ		9,920,726.11	6,716,899	3,203,827	1,251,002	12.61	2.6
304.15	OTHER WATER SOURCE STRUCTURES	60-R3		34,442,969.90	7,573,274	26,869,696	624,862	1.81	43.0
304.20	POWER AND PUMING STRUCTURES								
	LARGE STRUCTURES	70-R2.5	*	64,671,856.38	7,894,471	56,777,385	1,515,893	2.34	37.5
	OTHER STRUCTURES	55-R3		41,317,433.32	9,408,085	31,909,348	1,013,195	2.45	31.5
	TOTAL ACCOUNT 304.2			105,989,289.70	17,302,556	88,686,733	2,529,088	2.39	35.1
304.30	PURIFICATION BUILDINGS								
	LARGE STRUCTURES	60-R2.5	*	221,661,139.93	71,976,298	149,684,840	4,739,588	2.14	31.6
	OTHER STRUCTURES	55-R3		52,663,217.39	17,798,107	34,865,110	965,350	1.83	36.1
	TOTAL ACCOUNT 304.3			274,324,357.32	89,774,405	184,549,950	5,704,938	2.08	32.3
304.36	WASTE HANDLING AND TREATMENT STRUCTURES	60-R2.5	*	11,733,221.74	5,437,209	6,296,013	317,692	2.71	19.8
304.38	WASTE HANDLING AND TREATMENT STRUCTURES PAINTING	10-SQ		65,958.42	53,322	12,636	1,944	2.95	6.5
304.39	PURIFICATION BUILDINGS - TANK PAINTING	10-SQ		134,806.79	118,388	16,419	2,526	1.87	6.5
304.61	OFFICE BUILDINGS								
	LARGE STRUCTURES	50-R1.5	*	33,043,308.29	2,227,308	30,816,000	1,588,814	4.81	19.4
	OTHER OTHER STRUCTURES	45-R3		6,903,844.33	1,760,585	5,143,259	252,918	3.66	20.3
	TOTAL ACCOUNT 304.61			39,947,152.62	3,987,893	35,959,259	1,841,732	4.61	19.5
304.62	STORES, SHOP AND GARAGE BUILDINGS								
	LARGE STRUCTURES	75-R2	*	46,534,320.53	5,760,761	40,773,559	1,216,856	2.61	33.5
	OTHER OTHER STRUCTURES	45-R3		8,687,390.61	2,972,865	5,714,526	197,657	2.28	28.9
	TOTAL ACCOUNT 304.62			55,221,711.14	8,733,626	46,488,085	1,414,513	2.56	32.9

PENNSYLVANIA-AMERICAN WATER COMPANY

TABLE 2. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WATER PLANT AS OF DECEMBER 31, 2018

	DEPRECIABLE GROUP	SURVIVOR CURVE	NET ORIGINAL COST AS OF DECEMBER 31, 2018	BOOK RESERVE	FUTURE ACCRUALS	ANNUAL ACCRUAL AMOUNT	ANNUAL ACCRUAL RATE, PERCENT	COMPOSITE REMAINING LIFE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
304.63	MISCELLANEOUS STRUCTURES AND IMPROVEMENTS	50-R2.5	4,933,374.39	688,106	4,245,268	118,887	2.41	35.7
	TOTAL ACCOUNT 304		526,792,842.02	133,668,779	393,124,059	12,556,182	2.38	31.3
305.00	COLLECTING AND IMPOUNDING RESERVOIRS							
	LARGE RESERVOIRS	125-R2.5	127,795,628.42	12,895,938	114,899,691	1,855,378	1.45	61.9
	OTHER RESERVOIRS	75-R3	6,558,563.48	1,994,257	4,564,306	211,899	3.23	21.5
	TOTAL ACCOUNT 305		134,354,191.90	14,890,195	119,463,997	2,067,277	1.54	57.8
306.00	LAKE, RIVER AND OTHER INTAKES							
	LARGE RESERVOIRS	65-S1.5	14,550,654.76	4,232,561	10,318,093	281,627	1.94	36.6
	OTHER RESERVOIRS	60-S1	5,413,664.59	1,518,542	3,895,123	114,947	2.12	33.9
	TOTAL ACCOUNT 306		19,964,319.35	5,751,103	14,213,216	396,574	1.99	35.8
307.00	WELLS AND SPRINGS	55-R2	11,170,283.16	4,335,267	6,835,016	214,258	1.92	31.9
310.00	POWER GENERATION EQUIPMENT	40-R2.5	18,007,218.81	4,138,472	13,868,747	507,133	2.82	27.3
	PUMPING EQUIPMENT							
311.20	ELECTRIC PUMPING EQUIPMENT	50-R1	19,211,002.14	2,866,110	16,344,892	607,142	3.16	26.9
311.50	OTHER	50-R1	1,634,152.00	442,578	1,191,574	38,877	2.38	30.6
311.52	SOURCE OF SUPPLY	50-R1	8,509,617.14	1,490,308	7,019,309	230,180	2.70	30.5
311.53	WATER TREATMENT	50-R1	47,732,222.90	24,443,262	23,288,961	844,364	1.77	27.6
311.54	TRANSMISSION AND DISTRIBUTION	50-R1	8,693,988.14	2,116,640	6,577,348	228,997	2.63	28.7
	TOTAL ACCOUNT 311		85,780,982.32	31,358,898	54,422,084	1,949,560	2.27	27.9
	PURIFICATION SYSTEM							
320.10	PURIFICATION STRUCTURES							
	LARGE STRUCTURES	70-R2	184,705,299.72	68,522,614	116,182,684	3,855,315	2.09	30.1
	OTHER OTHER STRUCTURES	55-R3	17,657,644.79	6,494,933	11,162,712	326,633	1.85	34.2
	TOTAL ACCOUNT 320.1		202,362,944.51	75,017,547	127,345,396	4,181,948	2.07	30.5
320.18	LARGE STRUCTURES PAINT	10-SQ	103,245.73	103,246	0	0	-	-
320.19	LARGE STRUCTURES PAINT	10-SQ	3,770,702.48	3,730,550	40,152	6,177	0.16	6.5
320.20	CHEMICAL TREATMENT	32-R1	83,411,076.30	32,322,374	51,088,702	3,007,085	3.61	17.0
320.29	CHEMICAL TREATMENT PAINT	FULLY ACCRUED	8,167.87	8,168	0	0	-	-
	TOTAL PURIFICATION SYSTEM		289,656,136.89	111,181,885	178,474,250	7,195,210	2.48	24.8
320.30	GRANULAR ACTIVATED CARBON	6-L2.5	8,693,834.87	7,889,111	804,724	352,710	4.06	2.3
320.37	WASTE HANDLING AND TREATMENT - EQUIPMENT	25-R3	16,075,077.23	10,177,065	5,898,012	454,920	2.83	13.0
	TOTAL ACCOUNT 320		314,425,048.99	129,248,061	185,176,986	8,002,840	2.55	23.1
330.00	DISTRIBUTION RESERVOIRS AND STANDPIPES	65-R2	98,132,726.58	33,734,636	64,398,091	1,654,187	1.69	38.9
330.10	ELEVATED TANKS AND STANDPIPES	65-R2	17,636,401.77	1,995,151	15,641,251	351,909	2.00	44.4
330.20	GROUND LEVEL FACILITIES	65-R2	22,144,158.48	1,625,703	20,518,455	461,150	2.08	44.5
330.30	BELOW GRADE FACILITIES	65-R2	818,744.06	94,397	724,347	15,980	1.95	45.3
330.40	CLEARWELL	65-R2	14,179,641.14	1,641,824	12,537,817	277,639	1.96	45.2
330.58	DISTRIBUTION RESERVOIRS AND STANDPIPES - PAINTING	10-SQ	2,375,281.44	2,271,962	103,319	15,895	0.67	6.5
330.59	DISTRIBUTION RESERVOIRS AND STANDPIPES - PAINTING	10-SQ	36,418,707.41	23,152,151	13,266,556	1,947,156	5.35	6.8
	TOTAL ACCOUNT 330		191,705,660.88	64,515,824	127,189,836	4,723,916	2.46	26.9

PENNSYLVANIA-AMERICAN WATER COMPANY

TABLE 2. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WATER PLANT AS OF DECEMBER 31, 2018

	DEPRECIABLE GROUP	SURVIVOR CURVE	NET ORIGINAL COST AS OF DECEMBER 31, 2018	BOOK RESERVE	FUTURE ACCRUALS	ANNUAL ACCRUAL AMOUNT	ANNUAL ACCRUAL RATE, PERCENT	COMPOSITE REMAINING LIFE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
331.00	MAINS AND ACCESSORIES	110-R2	2,415,570,208.52	334,433,465	2,081,136,744	28,333,986	1.17	73.5
333.00	SERVICES	70-R2	567,844,687.07	138,762,554	429,082,133	9,665,934	1.70	44.4
334.00	METERS AND METER INSTALLATIONS	19-L1.5	201,482,985.36	86,722,828	114,760,157	11,361,534	5.64	10.1
335.00	FIRE HYDRANTS	72-R2	103,228,152.27	21,864,870	81,363,282	1,738,263	1.68	46.8
340.00	OFFICE FURNITURE AND EQUIPMENT							
	FURNITURE	20-SQ	19,179,166.67	10,246,557	8,932,610	1,167,381	6.09	7.7
	COMPUTERS AND PERIPHERAL EQUIPMENT	5-SQ	18,458,481.00	10,236,065	8,222,416	4,056,320	21.98	2.0
	COMPUTER SOFTWARE - 5 YEAR	5-SQ	36,694,738.71	11,923,801	24,770,938	7,550,771	20.58	3.3
	COMPUTER SOFTWARE - 10 YEAR	10-SQ	62,548,894.51	33,663,138	28,885,757	7,051,454	11.27	4.1
	TOTAL ACCOUNT 340		136,881,280.89	66,069,561	70,811,721	19,825,926	14.48	3.6
341.00	TRANSPORATION EQUIPMENT							
	NOT CLASSIFIED	6-L3	16,002.14	16,002	0	0	-	-
	LIGHT DUTY TRUCKS	6-L3	18,911,227.50	11,779,314	7,131,914	2,386,794	12.62	3.0
	EQUIPMENT	6-L3	14,430,392.96	8,523,832	5,906,561	1,912,723	13.25	3.1
	AUTOS	6-L3	4,883,332.68	3,523,998	1,359,335	437,513	8.96	3.1
	OTHER	6-L3	5,895,986.16	3,635,257	2,260,729	740,427	12.56	3.1
	TOTAL ACCOUNT 341		44,136,941.44	27,478,403	16,658,539	5,477,457	12.41	3.0
342.00	STORES EQUIPMENT	20-SQ	400,072.70	175,368	224,705	25,808	6.45	8.7
343.00	TOOLS AND WORK EQUIPMENT	20-SQ	26,095,301.58	6,924,992	19,170,310	1,386,538	5.31	13.8
344.00	LABORATORY EQUIPMENT	20-R0.5	3,323,028.15	1,953,912	1,369,116	149,806	4.51	9.1
345.00	POWER OPERATED EQUIPMENT	10-S2	2,571,357.61	2,356,661	214,697	54,619	2.12	3.9
346.00	COMUNICATION EQUIPMENT							
	EQUIPMENT	15-SQ	2,585,584.40	1,596,948	988,636	191,330	7.40	5.2
	NON-TELEPHONE	15-SQ	918,926.11	337,227	581,699	62,431	6.79	9.3
	REMOTE CONTROL AND INSTRUMENTATION	10-SQ	6,460,864.86	2,304,114	4,156,751	639,314	9.90	6.5
	TELEPHONE	10-SQ	831,870.50	576,271	255,600	90,692	10.90	2.8
	TOTAL ACCOUNT 346		10,797,245.87	4,814,560	5,982,686	983,767	9.11	6.1
347.00	MISCELLANEOUS EQUIPMENT	25-SQ	17,031,033.69	7,190,728	9,840,306	740,716	4.35	13.3
348.00	OTHER TANGIBLE EQUIPMENT	25-SQ	735,410.29	336,044	399,366	29,846	4.06	13.4
	TOTAL DEPRECIABLE PLANT		**4,844,316,826.66**	**1,095,625,641**	**3,748,691,181**	**111,562,709**	**2.30**	
	AMORTIZATION OF NET SALVAGE					**10,118,367**		
	TOTAL WATER PLANT IN SERVICE		**4,868,825,062.82**	**1,095,625,641**	**3,748,691,181**	**121,681,076**		

* Life Span Procedure was used. Curve shown is Interim Survivor Curve.

PENNSYLVANIA-AMERICAN WATER COMPANY

TABLE 3. BRINGFORWARD TO DECEMBER 31, 2018, OF BOOK RESERVE AS OF DECEMBER 31, 2017

Account (1)	BOOK RESERVE BALANCE AS OF 12/31/2017 (2)	+	PROJECTED DEPRECIATION ACCRUALS (3)	-	PROJECTED RETIREMENTS (4)	-	PROJECTED COST OF REMOVAL (5)	+	PROJECTED SALVAGE (6)	+	ACQUISITIONS AND ADJUSTMENTS (7)	=	PROJECTED BOOK RESERVE BALANCE AS OF 12/31/2018 (8)
303.14	1,643,499		119,673										1,763,172
303.35	155,025		1								(1)		155,025
303.99	5,352,539		1,364,360										6,716,899
304.15	6,909,235		664,039										7,573,274
304.20	15,033,851		2,322,205		50,000		3,500						17,302,556
304.30	85,330,298		5,335,142		625,500		125,100		31,275				89,946,115
304.36	5,115,719		321,490										5,437,209
304.61	8,272,646		492,346		4,118,189		658,910						3,987,893
304.62	8,353,831		863,511		420,623		63,093						8,733,626
304.63	587,392		100,714										688,106
305.00	13,760,888		1,974,307		676,000		169,000						14,890,195
306.00	5,387,209		363,894										5,751,103
307.00	4,108,224		227,043										4,335,267
310.00	3,660,377		478,095										4,138,472
311.00	29,682,739		1,686,559		10,000		400						31,358,898
320.00	105,563,784		6,709,898		983,601		108,196						111,181,885
320.30	7,281,524		618,087		10,000		500						7,889,111
320.37	9,643,694		533,371										10,177,065
330.00	59,927,838		5,281,086		415,030		278,070						64,515,824
331.00	307,251,055		33,308,236		2,001,904		4,143,941		20,019				334,433,465
333.00	130,484,389		10,279,715		758,163		1,288,877		45,490				138,762,554
334.00	82,002,013		12,137,416		5,794,220		1,796,208		173,827				86,722,828
335.00	20,413,015		1,835,503		132,750		253,553		2,655				21,864,870
340.00	54,302,838		19,960,056		8,193,333								66,069,561
341.00	23,491,852		5,385,886		1,385,480		13,855						27,478,403
342.00	148,957		26,411										175,368
343.00	5,794,792		1,403,657		273,457								6,924,992
344.00	1,785,651		168,261										1,953,912
345.00	2,212,806		143,855										2,356,661
346.00	4,832,669		939,756		957,865								4,814,560
347.00	7,210,908		780,531		800,711								7,190,728
348.00	306,186		29,858										336,044
TOTAL	**1,016,007,443**		**115,854,962**		**27,606,826**		**8,903,203**		**273,266**		**(1)**		**1,095,625,641**

PENNSYLVANIA-AMERICAN WATER COMPANY

TABLE 4. CALCULATION OF DEPRECIATION ACCRUALS FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2018

ACCOUNT (1)	NET ORIGINAL COST AS OF 12/31/2017 (2)	NET ORIGINAL COST AS OF 12/31/2018 (3)	ACCRUAL RATE (4)	AVERAGE ACCRUALS (5) **	AMORTIZATION OF NET SALVAGE (6) **	PROJECTED DEPRECIATION ACCRUALS (7)=(5)+(6)
303.14	1,942,822.51	1,942,822.51	6.16	119,678	(5)	119,673
303.35	155,025.17	155,025.17	0.00	0	1	1
303.99	9,576,726.11	9,920,726.11	13.49	1,364,360	0	1,364,360
304.15	34,442,969.90	34,442,969.90	1.83	630,306	33,733	664,039
304.20	93,905,163.70	105,989,289.70	2.43	2,294,131	28,074	2,322,205
304.30	243,136,140.53	274,525,122.53	2.04	5,060,596	274,546	5,335,142
304.36	11,733,221.74	11,733,221.74	2.74	321,490	0	321,490
304.61	17,094,819.62	39,947,152.62	2.57	463,808	28,538	492,346
304.62	32,773,506.14	55,221,711.14	2.43	827,212	36,299	863,511
304.63	3,533,821.39	4,933,374.39	2.36	84,774	15,940	100,714
305.00	104,994,473.90	134,354,191.90	1.59	1,841,311	132,996	1,974,307
306.00	17,500,498.35	19,964,319.35	2.01	362,121	1,773	363,894
307.00	11,170,283.16	11,170,283.16	1.96	218,938	8,105	227,043
310.00	16,166,661.81	18,007,218.81	2.80	459,831	18,264	478,095
311.00	75,163,955.32	85,780,982.32	2.09	1,580,172	106,387	1,686,559
320.00	249,747,732.89	289,656,136.89	2.42	6,175,354	534,544	6,709,898
320.30	8,392,061.87	8,693,834.87	6.87	577,398	40,689	618,087
320.37	16,075,077.23	16,075,077.23	3.07	493,505	39,866	533,371
330.00	175,036,176.88	191,705,660.88	2.38	4,247,686	1,033,400	5,281,086
331.00	2,266,777,896.52	2,415,570,208.52	1.18	27,309,171	5,999,065	33,308,236
333.00	544,561,188.07	567,844,687.07	1.71	9,499,159	780,556	10,279,715
334.00	190,951,156.36	201,482,985.36	5.65	11,052,527	1,084,889	12,137,416
335.00	97,220,732.27	103,228,152.27	1.69	1,691,756	143,747	1,835,503
340.00	128,187,365.27	136,881,280.89	14.81	19,947,271	12,785	19,960,056
341.00	38,595,020.44	44,136,941.44	13.47	5,380,407	5,479	5,385,886
342.00	400,072.70	400,072.70	6.57	26,285	126	26,411
343.00	24,418,459.37	26,095,301.58	5.47	1,390,131	13,526	1,403,657
344.00	3,323,028.15	3,323,028.15	4.99	165,819	2,442	168,261
345.00	2,571,357.61	2,571,357.61	5.56	142,967	888	143,855
346.00	9,582,111.31	10,797,245.87	9.36	935,813	3,943	939,756
347.00	16,642,716.36	17,031,033.69	4.55	773,172	7,359	780,531
348.00	735,410.29	735,410.29	4.06	29,858	0	29,858
TOTAL	**4,446,507,652.94**	**4,844,316,826.66**		**105,467,007**	**10,387,955**	**115,854,962**

** developed in monthly bringforward schedule

PENNSYLVANIA-AMERICAN WATER COMPANY

TABLE 5. AMORTIZATION OF EXPERIENCED AND ESTIMATED NET SALVAGE

Account	EXPERIENCED AND ESTIMATED NET SALVAGE					5 - YEAR
	2014	2015	2016	2017	2018	AMORT.
(1)	(2)	(3)	(4)	(5)	(5)	(7)
	0	0	26	0	0	(5)
303.35	(4)	0	0	0	0	1
304.15	(46,636)	(46,243)	(70,089)	0	0	32,594
304.20	(53,488)	(56,757)	(26,237)	0	(3,500)	27,996
304.30	319,920	(476,945)	(191,035)	(19,080)	(93,825)	92,193
304.61	(65,824)	0	(70,936)	0	(658,910)	159,134
304.62	(80,107)	(3,615)	(48,019)	(14,400)	(63,093)	41,847
304.63	0	(59,776)	(11,676)	(8,250)	0	15,940
305.00	(317,805)	(46,348)	(84,116)	(59,314)	(169,000)	135,316
306.00	(2,002)	(324)	(6,542)	0	0	1,773
307.00	(13,938)	(16,118)	(1,054)	0	0	6,222
310.00	0	(8,915)	(45,776)	0	0	10,938
311.00	(162,341)	(159,509)	(103,119)	0	(400)	85,074
320.00	(93,583)	(182,337)	(101,953)	(91,944)	(108,196)	115,603
320.30	(27,730)	(78,144)	(16,457)	0	(500)	24,566
320.37	(6,734)	0	(192,597)	0	0	39,866
330.00	(631,746)	(1,024,942)	(1,370,181)	(475,306)	(278,070)	756,049
331.00	(3,496,437)	(7,578,550)	(11,564,326)	(4,703,868)	(4,123,922)	6,293,421
333.00	(446,624)	(606,667)	(987,614)	(1,239,963)	(1,243,387)	904,851
334.00	(764,036)	(1,258,131)	(770,084)	(1,414,519)	(1,622,381)	1,165,830
335.00	(146,091)	81,394	(276,615)	(244,260)	(250,898)	167,294
340.00	1,941	(20,871)	(41,508)	0	0	12,088
341.00	(1,555)	(13,623)	(1,158)	(11,060)	(13,855)	8,250
342.00	0	(630)	0	0	0	126
343.00	(9,640)	(19,321)	(18,941)	0	0	9,580
344.00	(983)	(3,939)	(5,015)	0	0	1,987
345.00	(201)	(3,680)	(472)	0	0	871
346.00	(1,029)	(7,472)	(777)	0	0	1,856
347.00	(9,534)	(21,448)	(4,547)	0	0	7,106
TOTAL	(6,056,209)	(11,612,910)	(16,010,818)	(8,281,964)	(8,629,937)	10,118,367

PART II. DETAILED DEPRECIATION CALCULATIONS

VOLUME 12

PENNSYLVANIA-AMERICAN WATER COMPANY

2017 GENERAL BASE RATE CASE

R-2017-2595853

EXHIBITS NO. 11-D, 11-E, 11-F

DEPRECIATION STUDY

WASTEWATER OPERATIONS

(EXCLUDING SCRANTON WASTEWATER)

AS OF DECEMBER 31, 2016, 2017, 2018

Exhibit No. 11-D
Witness: J. J. Spanos

PENNSYLVANIA-AMERICAN WATER COMPANY

HERSHEY, PENNSYLVANIA

WASTEWATER OPERATIONS

(Excluding Scranton Wastewater)

2016 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION ACCRUALS
RELATED TO WASTEWATER PLANT
AS OF DECEMBER 31, 2016

Prepared by:

Gannett Fleming

Excellence Delivered As Promised

Exhibit No. 11-D
Witness: J. J. Spanos

PENNSYLVANIA-AMERICAN WATER COMPANY

Hershey, Pennsylvania

WASTEWATER OPERATIONS

(Excluding Scranton Wastewater)

2016 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION ACCRUALS
RELATED TO WASTEWATER PLANT
AS OF DECEMBER 31, 2016

GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC

Camp Hill, Pennsylvania

Gannett Fleming

Excellence Delivered ***As Promised***

April 21, 2017

Pennsylvania-American Water Company
800 West Hersheypark Drive
Hershey, PA 17033

Attention Mr. John R. Cox
Manager of Rates and Regulations

Gentlemen:

Pursuant to your request, we have determined the annual depreciation accruals applicable to wastewater plant as of December 31, 2016. Summaries of the original cost, annual accruals and the book depreciation reserve are presented in Tables 1 through 3, beginning on page I-3 of the attached report.

A description of the methods and procedures upon which the study was based, as well as support for the service life estimates, is set forth in a companion report "2017 Depreciation Study - Calculated Annual Depreciation Accruals Related to Wastewater Plant as of December 31, 2017".

Respectfully submitted,

GANNETT FLEMING VALUATION
AND RATE CONSULTANTS, LLC

John J. Spanos

JOHN J. SPANOS
Sr. Vice President

JJS:mlw

062027.100

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TABLE OF CONTENTS

PART I. RESULTS OF STUDY I-1
Summary of Results I-2
Detailed Tabulations of Depreciation Calculations I-2

Table 1. Development of Net Original Cost as of December 31, 2016 ..... I-3

Table 2. Summary of Estimated Survivor Curves, Original Cost, Book Reserve and Calculated Annual Depreciation Accruals Related to Water Plant as of December 31, 2016 ..... I-4

Table 3. Amortization of Experienced Net Salvage I-5

PART II. DETAILED DEPRECIATION CALCULATIONS II-1
Cumulative Depreciated Original Cost II-2
Net Utility Plant in Service II-5

PART III. EXPERIENCED NET SALVAGE III-1

PART I. RESULTS OF STUDY

PENNSYLVANIA-AMERICAN WATER COMPANY

WASTEWATER OPERATIONS
(Excluding Scranton Wastewater)

DEPRECIATION STUDY

PART I. RESULTS OF STUDY

SUMMARY OF RESULTS

Table 1 presents the development of net original cost used in the study. The net original cost is the original cost of wastewater plant less advances and contributions. The results of the depreciation study are summarized in Table 2, which sets forth the book reserve and the calculated annual depreciation related to net original cost as of December 31, 2016, and the annual amortization of net negative salvage. Table 3 presents the calculation of the amortization of experienced net salvage, by account, based on the five-year period, 2012-2016.

DETAILED TABULATIONS OF DEPRECIATION CALCULATIONS

The supporting data for the depreciation calculations are presented in account sequence in the section beginning on page II-2. The original cost, calculated accrued depreciation, allocated book reserve, future accruals, remaining life and annual accrual are shown for each vintage of each account or subaccount. The amounts of regular retirements, gross salvage, and cost of removal are set forth by account for the years 2012 through 2016, on pages III-2 through III-6.

PENNSYLVANIA-AMERICAN WATER COMPANY
WASTEWATER OPERATIONS (EXCLUDING SCRANTON WASTEWATER)

TABLE 1. DEVELOPMENT OF NET ORIGINAL COST AS OF DECEMBER 31, 2016

DEPRCIABLE GROUP	ORIGINAL COST AS OF DECEMBER 31, 2016	- CUSTOMER ADVANCES	- CONTRIBUTIONS IN AID OF CONSTRUCTION	- EXCLUDED PROPERTY	= NET ORIGINAL COST AS OF DECMEBER 31, 2016
(1)	(2)	(3)	(4)	(5)	(6)
DEPRECIABLE PLANT					
354.20 STRUCTURES AND IMPROVEMENTS - COLLECTION	479,296.86				479,296.86
354.30 STRUCTURES AND IMPROVEMENTS - SPP	18,169,291.90		2,734,528.70		15,434,763.20
354.40 STRUCTURES AND IMPROVEMENTS - TDP	50,958,423.67		1,853,012.73		49,105,410.94
354.70 STRUCTURES AND IMPROVEMENTS - GENERAL	2,130,769.53				2,130,769.53
355.00 POWER GENERATING EQUIPMENT	4,881,040.73		144,517.16		4,736,523.57
360.10 COLLECTION SEWERS - FORCE MAINS	30,666,434.21	157,753.14	11,251,126.61		19,257,554.46
361.10 COLLECTION SEWERS - GRAVITY MAINS	73,305,655.63	143,423.53	9,166,636.12		63,995,595.98
361.20 MANHOLES	13,045,669.35		4,387,312.76		8,658,356.59
363.00 SERVICES	15,575,965.95	70,197.45	3,737,893.58		11,767,874.92
364.00 FLOW MEASURING DEVICES	533,521.59		14,726.81		518,794.78
365.00 FLOW MEASURING INSTALLATIONS	20,918.30				20,918.30
370.00 RECEIVING WELLS	103,531.95				103,531.95
371.00 PUMPING EQUIPMENT	7,114,659.39		66,626.22		7,048,033.17
380.00 TREATMENT EQUIPMENT	52,675,840.17		2,200,080.47		50,475,759.70
381.00 PLANT SEWERS	6,450,916.81		30,192.33		6,420,724.48
382.00 OUTFALL SEWER LINES	674,274.67				674,274.67
389.10 OTHER PLANT AND MISCELLANEOUS EQUIPMENT	273,149.74				273,149.74
390.00 OFFICE FURNITURE AND EQUIPMENT	199,675.37				199,675.37
391.00 TRANSPORTATION EQUIPMENT	440,469.70				440,469.70
392.00 STORES EQUIPMENT	64,249.97				64,249.97
393.00 TOOLS, SHOP AND GARAGE EQUIPMENT	536,841.71				536,841.71
394.00 LABORATORY EQUIPMENT	342,757.97				342,757.97
395.00 POWER OPERATED EQUIPMENT	532,736.59		10,000.00		522,736.59
396.00 COMMUNICATION EQUIPMENT	1,522,349.38				1,522,349.38
397.00 MISCELLANEOUS EQUIPMENT	3,256,051.56		29,000.00		3,227,051.56
TOTAL DEPRECIABLE PLANT	**283,954,492.70**	**371,374.12**	**35,625,653.49**	**0.00**	**247,957,465.09**
NONDEPRECIABLE PLANT					
352.10 FRANCHISES	221,139.78				221,139.78
353.20 LAND AND LAND RIGHTS - COLLECTION	1,093,483.20				1,093,483.20
353.30 LAND AND LAND RIGHTS - SPP	85,560.07				85,560.07
353.40 LAND AND LAND RIGHTS - TDP	1,677,525.60		125,000.00		1,552,525.60
TOTAL NONDEPRECIABLE PLANT	**3,077,708.65**	**0.00**	**125,000.00**	**0.00**	**2,952,708.65**
TOTAL WASTEWATER PLANT IN SERVICE	**287,032,201.35**	**371,374.12**	**35,750,653.49**	**0.00**	**250,910,173.74**

PENNSYLVANIA-AMERICAN WATER COMPANY
WASTEWATER OPERATIONS (EXCLUDING SCRANTON WASTEWATER)

TABLE 2. SUMMARY OF ESTIMATED SURVIVOR CURVE, ORIGINAL COST, BOOK RESERVE, AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WASTEWATER PLANT AS OF DECEMBER 31, 2016

	DEPRECIABLE GROUP	SURVIVOR CURVE	ORIGINAL COST AS OF DECEMBER 31, 2016	BOOK RESERVE	FUTURE ACCRUALS	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	COMPOSITE REMAINING LIFE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)=(6)/(3)	(8)
	DEPRECIABLE PLANT							
354.20	STRUCTURES AND IMPROVEMENTS - COLLECTION	45-R3	479,296.86	49,350	429,947	11,001	2.30	39.1
354.30	STRUCTURES AND IMPROVEMENTS - SPP	50-R2.5	15,434,763.20	4,146,488	11,288,276	249,925	1.62	45.2
354.40	STRUCTURES AND IMPROVEMENTS - TDP	65-R2	49,105,410.94	9,948,199	39,157,212	691,430	1.41	56.6
354.70	STRUCTURES AND IMPROVEMENTS - GENERAL	35-S1	2,130,769.53	1,306,466	824,304	24,748	1.16	33.3
355.00	POWER GENERATING EQUIPMENT	35-R2.5	4,736,523.57	2,652,039	2,084,484	70,197	1.48	29.7
360.10	COLLECTION SEWERS - FORCE MAINS	70-S2	19,257,554.46	175,918	19,081,636	359,040	1.86	53.1
361.10	COLLECTION SEWERS - GRAVITY MAINS	70-R2.5	63,995,595.98	11,371,594	52,624,002	925,253	1.45	56.9
361.20	MANHOLES	50-S1.5	8,658,356.59	1,103,203	7,555,154	183,051	2.11	41.3
363.00	SERVICES	38-R3	11,767,874.92	3,048,755	8,719,120	380,797	3.24	22.9
364.00	FLOW MEASURING DEVICES	20-L3	518,794.78	(3,852)	522,647	39,167	7.55	13.3
365.00	FLOW MEASURING INSTALLATIONS	30-S1.5	20,918.30	4,022	16,896	733	3.50	23.1
370.00	RECEIVING WELLS	50-R3	103,531.95	16,346	87,186	2,042	1.97	42.7
371.00	PUMPING EQUIPMENT	40-S0	7,048,033.17	1,267,841	5,780,192	162,743	2.31	35.5
380.00	TREATMENT EQUIPMENT	45-R2	50,475,759.70	10,681,481	39,794,279	1,072,308	2.12	37.1
381.00	PLANT SEWERS	50-R3	6,420,724.48	831,789	5,588,936	129,614	2.02	43.1
382.00	OUTFALL SEWER LINES	50-R3	674,274.67	157,760	516,515	13,676	2.03	37.8
389.10	OTHER PLANT AND MISCELLANEOUS EQUIPMENT	20-S2.5	273,149.74	72,881	200,268	14,747	5.40	13.6
390.00	OFFICE FURNITURE AND EQUIPMENT	20-SQ	199,675.37	53,384	146,291	11,861	5.94	12.3
391.00	TRANSPORTATION EQUIPMENT	15-L4	440,469.70	245,469	195,000	20,435	4.64	9.5
392.00	STORES EQUIPMENT	25-SQ	64,249.97	18,187	46,063	2,310	3.60	19.9
393.00	TOOLS, SHOP AND GARAGE EQUIPMENT	20-SQ	536,841.71	241,652	295,190	18,017	3.36	16.4
394.00	LABORATORY EQUIPMENT	15-SQ	342,757.97	193,677	149,081	13,157	3.84	11.3
395.00	POWER OPERATED EQUIPMENT	16-L2.5	522,736.59	242,424	280,312	32,263	6.17	8.7
396.00	COMMUNICATION EQUIPMENT	15-SQ	1,522,349.38	854,060	668,289	65,055	4.27	10.3
397.00	MISCELLANEOUS EQUIPMENT	15-SQ	3,227,051.56	467,686	2,759,366	288,902	8.95	9.6
	TOTAL DEPRECIABLE PLANT		**247,957,465.09**	**49,146,818**	**198,810,646**	**4,782,472**	**1.93**	
	AMORTIZATION OF NET SALVAGE					**65,222**		
	NONDEPRECIABLE PLANT							
352.10	FRANCHISES		221,139.78					
353.20	LAND AND LAND RIGHTS - COLLECTION		1,093,483.20					
353.30	LAND AND LAND RIGHTS - SPP		85,560.07					
353.40	LAND AND LAND RIGHTS - TDP		1,552,525.60					
	TOTAL NONDEPRECIABLE PLANT		**2,952,708.65**					
	TOTAL WASTEWATER PLANT IN SERVICE		**250,910,173.74**	**49,146,818**	**198,810,646**	**4,847,694**		

PENNSYLVANIA-AMERICAN WATER COMPANY
WASTEWATER OPERATIONS (EXCLUDING SCRANTON WASTEWATER)

TABLE 3. AMORTIZATION OF EXPERIENCED NET SALVAGE

Account (1)	EXPERIENCED NET SALVAGE 2012 (2)	2013 (3)	2014 (4)	2015 (5)	2016 (5)	5 - YEAR AMORT. (7)
354.20	0	0	(17,282)	(1,398)	(42)	3,744
354.30	(3,707)	(1,424)	(0)	(4,141)	0	1,854
354.40	(159,227)	(27,581)	(10,305)	(1,027)	(4,581)	40,544
354.70	0	0	0	(480)	0	96
355.00	(3,170)	(963)	(510)	(1,666)	(4,934)	2,248
360.10	(461)	(8,182)	(1,577)	(3,256)	(12,703)	5,236
361.10	(14,158)	(34,624)	(16,027)	(65,334)	(6,970)	27,423
361.20	0	0	0	(7,497)	(53,000)	12,099
363.00	(2,580)	(15,735)	(26,515)	(27,377)	(11,694)	16,780
364.00	0	0	(816)	0	0	163
371.00	(2,645)	(2,291)	(4,325)	(4,902)	(11,515)	5,136
380.00	(120,523)	(6,028)	(21,655)	(1,623)	(23,917)	34,749
381.00	0	0	0	0	(2,110)	422
382.00	(1)	0	0	0	0	0
390.00	0	0	0	0	(276)	55
393.00	0	(240)	(240)	0	171,552	(34,214)
394.00	0	(6)	0	0	(566)	115
395.00	0	0	0	0	44,960	(8,992)
396.00	(1,192)	(2,027)	0	(4,190)	131,476	(24,813)
397.00	0	0	0	0	87,116	(17,423)
TOTAL	(307,663)	(99,101)	(99,252)	(122,889)	302,795	65,222

PART II. DETAILED DEPRECIATION CALCULATIONS

AQUA PENNSYLVANIA, INC.

WASTEWATER ASSETS

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED

ANNUAL DEPRECIATION ACCRUALS RELATED TO WASTEWATER PLANT AS OF MARCH 31, 2018

DEPRECIABLE GROUP	SURVIVOR CURVE	ORIGINAL COST AS OF MARCH 31, 2018	BOOK RESERVE	FUTURE ACCRUALS	ANNUAL ACCRUAL AMOUNT	COMPOSITE REMAINING LIFE	ANNUAL ACCRUAL RATE, PERCENT
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
COLLECTION	55-S0.5	1,277,000.00	409,543	867,457	24,595	35.3	1.93
PUMPING	60-S1	1,084,876.22	122,337	962,539	21,574	44.6	1.99
TREATMENT AND DISPOSAL	50-R2	6,537,155.71	1,836,991	4,700,165	162,774	28.9	2.49
GENERAL	50-R3	14,636.81	8,523	6,114	354	17.3	2.42
TOTAL ACCOUNT 354		8,913,668.74	2,377,394	6,536,275	209,297		
360.00 COLLECTION MAINS - FORCE	75-R2.5	9,872,459.72	1,286,248	8,586,212	165,153	52.0	1.67
361.00 COLLECTION MAINS - GRAVITY	75-R2.5	4,083,815.05	769,857	3,313,958	65,836	50.3	1.61
363.00 SERVICES	70-R4	1,488,413.86	517,616	970,798	17,881	54.3	1.20
371.30 PUMPING EQUIPMENT-PUMPING	25-L0.5	464,547.60	35,266	429,282	32,552	13.2	7.01
380.00 TREATMENT AND DISPOSAL EQUIPMENT	40-SO	1,553,793.25	762,551	791,242	36,744	21.5	2.36
381.40 PLANT SEWERS - TREATMENT AND DISPOSAL	40-R1.5	1,536.55	1,220	317	32	9.9	2.08
382.00 OUTFALL LINES	40-R2.5	1,536.55	1,220	317	45	7.0	2.93
389.20 OTHER PLANT AND MISCELLANEOUS EQUIPMENT - COLLECTION	20-L3	13,030.75	4,882	8,149	721	11.3	5.53
390.10 OFFICE FURNITURE AND EQUIPMENT - FURNITURE	20-SQ	274.98	260	15	0	-	-
393.00 TOOLS, SHOP AND GARAGE EQUIPMENT	20-SQ	4,449.14	4,504	(55)	0		
394.00 LABORATORY EQUIPMENT	25-SQ	1,362.82	1,383	(20)	0		
TOTAL DEPRECIABLE PLANT		26,398,889.01	5,762,401	20,636,490	528,261		
TOTAL CONTRIBUTIONS IN AID OF CONSTRUCTION		26,398,889.01	5,762,401	20,636,490	528,261		
AMORTIZATION OF NET SALVAGE					5,718		
TOTAL WASTEWATER PLANT		118,682,738.17	32,776,275	83,039,273	3,017,474		

Water and Wastewater Industries

Appraisal Work Papers

Market Approach and Cost of Capital
Value Line Investment Surveys and Selected Yields
Water and Wastewater Industries
Market and Financial Ratios

AUS Consultants
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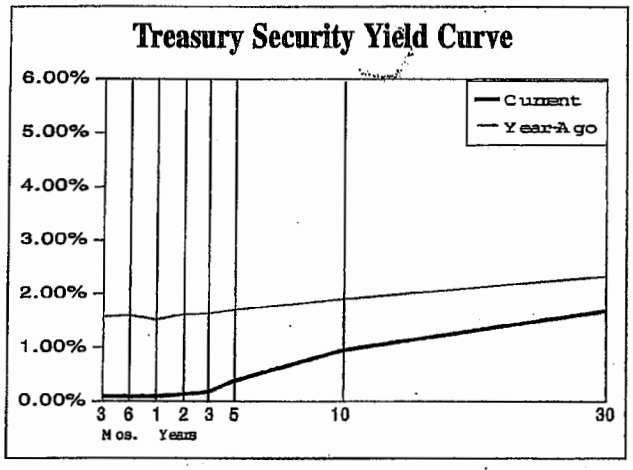
8555 West Forest Home Avenue
Greenfield, Wisconsin 53228
Office Telephone: 414-529-5755
J. Weinert's Cell: 414-698-8371
J. Weinert's E-Mail: weinertj@auswest.net

Selected Yields

TAXABLE	Recent (12/21/20)	3 Months Ago (9/21/20)	Year Ago (12/24/19)
Market Rates			
Discount Rate	0.25	0.25	2.25
Federal Funds	0.00-0.25	0.00-0.25	1.50-1.75
Prime Rate	3.25	3.25	4.75
30-day CP (A1/P1)	0.10	0.13	1.87
3-month LIBOR	0.24	0.22	1.96
U.S. Treasury Securities			
3-month	0.09	0.10	1.57
6-month	0.09	0.11	1.60
1-year	0.09	0.12	1.52
5-year	0.39	0.27	1.71
10-year	0.95	0.68	1.90
10-year (inflation-protected)	-1.00	-0.94	0.22
30-year	1.68	1.43	2.33
30-year Zero	N/A	N/A	2.35
Common Stocks			
VL Stocks (Median)	2.00	2.40	2.10
DJ Industrials (12-mo. est.)	2.00	2.20	2.40
VL Utilities	3.80	4.00	3.20

TAXABLE	Recent (12/21/20)	3 Months Ago (9/21/20)	Year Ago (12/24/19)
Corporate Bonds			
Financial (10-year) A	1.75	1.76	2.71
Industrial (25/30-year) A	2.60	2.67	3.35
Utility (25/30-year) A	2.76	2.79	3.43
Utility (25/30-year) Baa/BBB	3.08	3.06	3.80
S&P 500 High Yield Corp. Bond Index	3.60	4.24	3.95
Foreign Bonds (10-Year)			
Canada	0.73	0.54	1.61
Germany	-0.58	-0.53	-0.24
Japan	0.02	0.01	-0.02
United Kingdom	0.21	0.15	0.77
Mortgage-Backed Securities			
GNMA 5.5%	2.23	2.72	3.58
FHLMC 5.5% (Gold)	2.14	2.35	3.70
FNMA 5.5%	2.56	2.72	3.64
Preferred Stock			
Utility A	6.09	6.23	5.99
Financial BBB	5.26	5.46	5.34
Financial Adjustable A	N/A	N/A	5.46



TAX-EXEMPT	Recent (12/21/20)	3 Months Ago (9/21/20)	Year Ago (12/24/19)
Bond Buyer Indexes			
20-Bond Index (GOs)	2.12	2.22	2.74
25-Bond Index (Revs)	2.57	2.72	3.21
General Obligation Bonds (GOs)			
1-year AAA	0.11	0.11	1.04
1-year A	0.49	0.44	1.14
5-year AAA	0.19	0.26	1.12
5-year A	0.60	0.69	1.29
10-year AAA	0.67	0.80	1.47
10-year A	1.10	1.27	1.81
25/30-year AAA	1.35	1.51	2.03
25/30-year A	1.90	2.02	2.48
Revenue Bonds (Revs) (15 Years)			
Education AA	1.22	1.53	1.98
Electric AA	1.09	1.33	1.92
Water/Sewer AA	1.06	1.34	1.93
Hospital AA	1.27	1.63	2.02
Toll Road AA	1.38	1.81	1.96

Source: Bloomberg Finance L.P.

Federal Reserve Data

BANK RESERVES *(One-Month Period; In Billions, Not Seasonally Adjusted)*

	Recent Levels			Average Level Over the Last...		
	11/20	10/20	Change	3 Mos.	6 Mos.	12 Mos.
Total Reserves	3034.7	2876.6	158.1	2921.4	2887.7	2561.4
Borrowed Reserves	66.6	74.1	-7.5	73.0	82.1	64.1
Non-Borrowed Reserves	2968.1	2802.5	165.6	2848.4	2805.5	2497.3

MONEY SUPPLY *(One-Week Period; in Billions, Seasonally Adjusted)*

	Recent Levels			Annual Growth Rates Over the Last...		
	12/7/20	11/30/20	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	6272.9	6060.7	212.2	85.4%	54.0%	58.7%
M2 (M1+savings+small time deposits)	19226.1	18998.0	228.1	15.0%	13.3%	26.0%

Source: United States Federal Reserve Bank

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THE VALUE LINE Investment Survey®

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Part 3 Ratings & Reports

ISSUE 9

Pages 1700-1850

File in the binder in order of issue number, removing previous issue bearing the same number.

January 8, 2021

	PAGE
MACHINERY INDUSTRY	1701
★ AAON, Inc.	1702
Alamo Group	1703
Albany International 'A'	1704
Altra Industrial Motion Corp.	1705
Applied Industrial Technologies	1706
★ Brooks Automation	1707
Carrier Global	1708
Columbus McKinnon Corp.	1709
Curtiss-Wright	1710
Donaldson	1711
★ Dover Corp.	1712
Flowserve Corp.	1713
Gates Industrial Corp.	1714
★ Graco Inc.	1715
IDEX Corp.	1716
Ingersoll Rand	1717
Kornit Digital	1718
★ Lennox International Inc.	1719
Lincoln Electric Holdings	1720
★★ Lindsay Corp.	1721
MSA Safety Inc.	1722
MSC Industrial Direct Co., Inc.	1723
Middleby Corp. (The)	1724
Mueller Water Products, Inc.	1725
Nordson Corp.	1726
Otis Worldwide	1727
RBC Bearings Inc.	1728
Regal Beloit Corp.	1729
Rexnord Corporation	1730
Roper Technologies	1731
SPX FLOW	1732
Smith (A.O.)	1733
★★ Snap-on Inc.	1734
★ Stanley Black & Decker	1735
Tennant Co.	1736
Thermon Group	1737
★ Toro Company	1738
Trane Technologies	1739
★ United Rentals, Inc.	1740
Watts Water Technologies	1741
Welbilt, Inc.	1742
★ Xylem Inc.	1743
DIVERSIFIED COMPANY INDUSTRY	1744
ABB Ltd.	1745
Aerojet Rocketdyne Holdings	1746
AMETEK, Inc.	1747
ARAMARK Holdings	1748
Barnes Group	1749
Brady Corp.	1750
Brookfield Infrastructure L.P.	1751
Carlisle Companies, Inc.	1752
Chemed Corp.	1753
Colfax Corporation	1754
Crane Co.	1755
Danaher Corp.	1756
ESCO Technologies, Inc.	1757
EnPro Industries, Inc.	1758
General Electric	1759
Graham Holdings	1760
Griffon Corp.	1761
Helios Technologies	1762
★ Honeywell International Inc.	1763
ITT Inc.	1764
Jefferies Financial	1765
John Bean Tech.	1766
Johnson Controls Int'l plc	1767
Kadant Inc.	1768
Kaman Corp.	1769
★ Myers Industries	1770
National Presto	1771
Park-Ohio Holdings	1772
★ Parker-Hannifin Corp.	1773
Pentair plc	1774
Raven Industries	1775
Realogy Holdings Corp.	1776
Rogers Communications Inc.	1777
SPX Corp.	1778
Siemens AG	1779
Spectrum Brands	1780
Standex International	1781
Textron, Inc.	1782
3M Company	1783
TriMas Corporation	1784
Valmont Industries	1785
Viad Corp.	1786
★ Whirlpool Corp.	1787
WATER UTILITY INDUSTRY	1788
American States Water Co.	1789
★ American Water Works Co.	1790
★ California Water Svc.	1791
Consolidated Water Co.	1792
Essential Utilities	1793
★★ Middlesex Water Company	1794
SJW Group	1795
★ York Water Company (The)	1796
BROKERS & EXCHANGES INDUSTRY	1797
BGC Partners, Inc.	1798
★ Cboe Global Markets	1799
CME Group Inc.	1800
Interactive Brokers	1801
Intercontinental Exchange, Inc.	1802
LPL Financial Holdings	1803
★ MarketAxess Holdings	1804
★ Nasdaq, Inc.	1805
★ Schwab (Charles)	1806
INVESTMENT BANKING INDUSTRY	1807
★ Goldman Sachs	1808
Greenhill & Co.	1809
★ Houlihan Lokey, Inc.	1810
★ Morgan Stanley	1811
★ Piper Sandler Cos.	1812
★ Raymond James Financial	1813
Stifel Financial Corp.	1814
E-COMMERCE INDUSTRY	1815
★ Akamai Technologies, Inc.	1816
Arista Networks, Inc.	1817
★ Avalara, Inc.	1818
★ Black Knight, Inc.	1819
★★ Cornerstone OnDemand	1820
Coupa Software	1821
Five9, Inc.	1822
GoDaddy Inc.	1823
HubSpot, Inc.	1824
Medallia, Inc.	1825
★ MercadoLibre, Inc.	1826
New Relic, Inc.	1827
Nutanix, Inc.	1828
Open Text Corp.	1829
Paylocity Holding Corp.	1830
Sabre Corporation	1831
★★ salesforce.com, inc.	1832
Shopify Inc.	1833
Slack Technologies	1834
Smartsheet Inc.	1835
Splunk, Inc.	1836
Twilio Inc.	1837
★ Workday, Inc.	1838
Zendesk, Inc.	1839
SUPPLEMENTARY REPORTS	1842

★★ Rank 1 (Highest) for Timeliness.
★ Rank 2 (Above Average).

ESPECIALLY NOTEWORTHY:

*On December 20th, **Aerojet Rocketdyne Holdings** inked a definitive agreement with Lockheed Martin under which the latter would acquire the outstanding shares of AJRD. Turn to page 1746 for the terms of the deal, which has been unanimously approved by each company's Board of Directors.*

*Financial services titan **Morgan Stanley** is looking to further bolster its wealth management business. Just months off its industry-altering acquisition of E*TRADE, the company announced that it has agreed to purchase industry mate Eaton Vance. See our take on this development on page 1811.*

***Slack Technologies** has continued to see breakneck top-line growth, and this has not gone unnoticed. Indeed, the business technology software operator recently agreed to be acquired by customer relationship management leader **salesforce.com**. Specifics of the deal are on pages 1834 and 1832, respectively.*

*Meanwhile, commerce company **Shopify** also continues to gain significant traction with consumers, benefiting from favorable demand trends as well as growth initiatives that should remain catalysts for the foreseeable future. Turn to page 1833 to learn more.*

In three parts: Part 1 is the Summary & Index. Part 2 is Selection & Opinion. This is Part 3, Ratings & Reports. Volume LXXVI, No. 22

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See back cover for important disclosures.

The Water Utility Industry consists of companies that provide water services mostly to residential customers. The group continues to be highly ranked among the 96 industries that are followed by *Value Line*.

Over the past three months since our last report, these stocks have had a wider range of returns than is typical for this industry. Even though theses equities are sought out by investors for their well-defined earnings and good dividend growth prospects, they have performed well, despite the recent strong market showing. We attribute this partially to investors willing to pay a steep premium to own these relatively scarce stocks.

The fundamentals of the Water Industry have not changed much in the past 10 years. Previously, in order to keep customers' bills low, water companies did not invest the funds required to keep their pipelines and wastewater facilities in top condition. As a result, over the past decade, they have been pouring large amounts of money into upgrading their assets. Despite the progress made, much of the nation's water infrastructure is in less than ideal shape, with some systems having pipes that were installed 50 to 75 years ago.

Most water districts in the United States are run by municipalities and states. Indeed, when the smallest districts are included, there are over 100,000 separate domestic entities that provide water services. Consolidation has been ongoing in this sector, as the smaller less-efficient operators are being absorbed, by larger players.

External debt is used frequently to fund these major construction projects that are in progress.

As regulated companies, the members of this group are allowed to act as monopolies. However, to offset the lack of competition, water utilities permit state regulators to determine the rates they can charge. Unlike other regulated industries, water stands out for its generally constructive relationship with its overseers. This is a major reason why the equities of these companies have been so successful.

Strong Demand, Few Stocks

One of the trademarks of the Water Utility Industry is that there are only eight publicly traded equities that we follow. Moreover, of this group only two fall under the definition of being Large Cap stocks (having a market capitalization of over $10 billion (*American Water Works* and *Essential Utilities*.) Four are classified as Mid Cap ($1 billion to under $5 billion). Included in this group, are *American States Water*, *California Water*, *Middlesex Water*, and *SJW Group*. The Small Cap stocks (under $1 billion) are *Consolidated Water* and *York Water*. Combined, the total market cap of the entire industry is under $50 billion. Thus, there is a limited pool of shares for investors wanting to have a presence in the space. It's also one of the reasons why water stocks trade with such high Price Earnings ratios, as people are willing to pay a steep premium to own them.

Industry Fundamentals

As we mentioned, the average age of water pipelines in the United States is estimated to be more than 50 years old, with it not being unusual for some pipes to having been laid 75 to 100 years ago. Thus, capital budgets are usually burdensome, as miles and miles of new pipe are installed annually. Also, because of the size of the outlays, not all of the expenditures can be financed with internally generated funds. Many in the industry have to rely upon debt. Thus, while the normal Financial Strength rating in the group is a B+ to a B++, *California Water* is the only one that rates a grade as high as A.

INDUSTRY TIMELINESS: 9 (of 96)

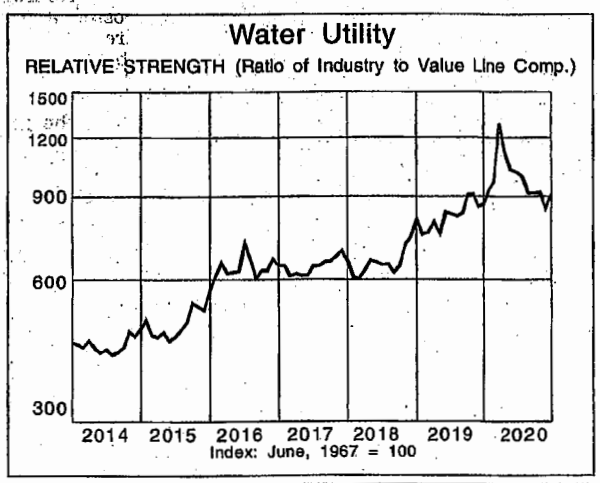
Consolidation remains ongoing, as many of the smaller water companies are inefficient and undercapitalized. The large caps often absorb many water districts each year. Regulators are usually not bothered by this because the results can be better service for the customers and sometimes even lower bills. *American Water Works* uses the growth by acquisition strategy more than its peers, and we don't think that the situation will change anytime soon.

Another of the industry's attractive attributes is its regulatory climate, or basically the relationship between the water companies and authorities. Regulated businesses and utilities are often involved in disagreements and lawsuits. An example of this would be electric and gas companies and the states they operate in. Since authorities establish the rate of return that utilities can earn, a constructive relationship between the parties cannot be underestimated.

Conclusion

As noted, there are a handful of opportunities here that momentum accounts may find attractive. However, due to the strong showing of many of the stocks, long-term total return potential here is often not just underwhelming, but well below that of the average stock covered by *Value Line*. Unfortunately, this seems to be the case even on a risk-adjusted basis. Indeed, many of these equities are already trading within their 2023-2025 projected Target Price Range. Thus, despite all of its positives, investors with a long-term horizon may want to look elsewhere, as a lot of good news is already factored into share prices. As always, we advise subscribers to read each individual report before investing to better understand the level of risk being assumed.

James A. Flood



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AMER. STATES WATER NYSE-AWR

RECENT PRICE 79.15 | P/E RATIO 34.0 (Trailing: 35.3 / Median: 22.0) | RELATIVE P/E RATIO 1.60 | DIV'D YLD 1.8% | VALUE LINE 1789

TIMELINESS 4 Lowered 12/11/20
SAFETY 2 Raised 7/20/12
TECHNICAL 4 Lowered 12/25/20
BETA .65 (1.00 = Market)

18-Month Target Price Range

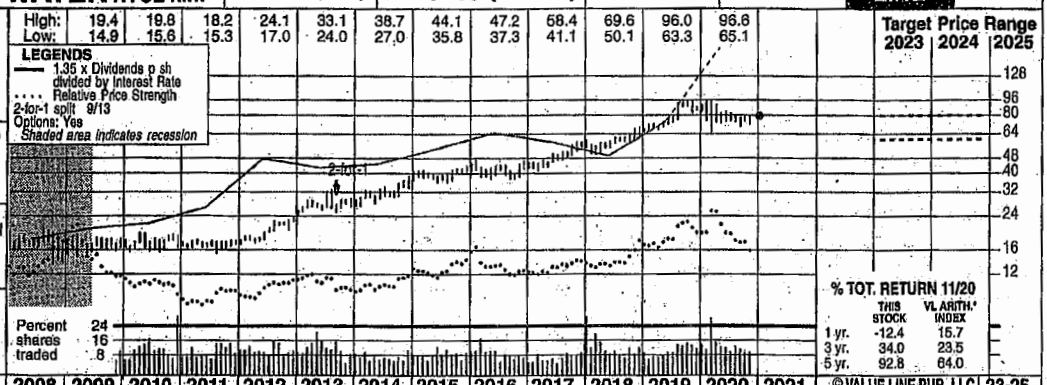
Low-High	Midpoint (% to Mid)
$65-$124	$95 (20%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	80	(Nil)	3%
Low	60	(-25%)	-4%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	125	135	121
to Sell	166	129	135
Hld's(000)	26162	25635	25731



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
6.81	7.03	7.88	8.75	9.21	9.74	10.71	11.12	12.12	12.19	12.17	12.56	11.92	12.01	11.88	12.86	12.95	13.40	Revenues per sh	16.40
1.11	1.32	1.45	1.65	1.69	1.70	2.11	2.13	2.48	2.65	2.67	2.81	2.70	2.96	2.84	3.26	3.25	3.50	"Cash Flow" per sh	4.50
.63	.66	.67	.81	.78	.81	1.11	1.12	1.41	1.61	1.57	1.61	1.62	1.88	1.72	2.28	2.25	2.40	Earnings per sh A	2.90
.44	.45	.46	.48	.50	.51	.52	.55	.64	.76	.83	.87	.91	.99	1.06	1.16	1.28	1.40	Div'd Decl'd per sh B■	1.85
2.51	2.12	1.95	1.45	2.23	2.09	2.12	2.13	1.77	2.52	1.89	2.39	3.55	3.08	3.44	4.12	3.40	3.60	Cap'l Spending per sh	3.75
7.51	7.86	8.32	8.77	8.97	9.70	10.13	10.84	11.80	12.72	13.24	12.77	13.52	14.45	15.19	16.33	17.30	18.50	Book Value per sh D	21.35
33.50	33.60	34.10	34.46	34.60	37.06	37.26	37.70	38.53	38.72	38.29	36.50	36.57	36.68	36.76	36.85	37.00	37.25	Common Shs Outst'g C	37.50
23.2	21.9	27.7	24.0	22.6	21.2	15.7	15.4	14.3	17.2	20.1	24.6	25.6	25.7	34.0	34.4	35.5		Avg Ann'l P/E Ratio	23.5
1.23	1.17	1.50	1.27	1.36	1.41	1.00	.97	.91	.97	1.06	1.24	1.34	1.29	1.84	1.87	1.79		Relative P/E Ratio	1.30
3.6%	3.1%	2.5%	2.5%	2.9%	2.9%	3.0%	3.2%	3.1%	2.7%	2.6%	2.2%	2.2%	2.0%	1.8%	1.5%	1.6%		Avg Ann'l Div'd Yield	2.6%
398.9	419.3	466.9	472.1	465.8	458.6	436.1	440.6	486.6	473.9	480	500	Revenues ($mill)	615						
41.4	42.0	54.1	62.7	61.1	60.5	59.7	69.4	63.9	84.3	83.0	89.0	Net Profit ($mill)	110						
43.2%	41.7%	39.9%	36.3%	38.4%	38.4%	36.8%	36.0%	22.0%	22.6%	25.0%	23.0%	Income Tax Rate	23.0%						
5.8%	2.0%	2.5%	--	--	--	--	--	2.5%	--	1.0%	1.0%	AFUDC % to Net Profit	1.0%						
44.3%	45.4%	42.2%	39.8%	39.1%	41.1%	39.4%	38.0%	40.5%	44.4%	41.0%	41.5%	Long-Term Debt Ratio	49.5%						
55.7%	54.6%	57.8%	60.2%	60.9%	58.9%	60.6%	62.0%	59.5%	55.6%	59.0%	58.5%	Common Equity Ratio	51.5%						
677.4	749.1	787.0	818.4	832.6	791.5	815.3	854.9	938.4	1082.5	1085	1180	Total Capital ($mill)	1565						
855.0	896.5	917.8	981.5	1003.5	1060.8	1150.9	1205.0	1296.3	1415.7	1495	1575	Net Plant ($mill)	1780						
7.6%	7.1%	8.3%	8.9%	8.6%	9.0%	8.6%	9.3%	7.9%	8.9%	9.0%	8.5%	Return on Total Cap'l	8.5%						
11.0%	10.3%	11.9%	12.7%	12.0%	13.0%	12.1%	13.1%	11.4%	14.0%	13.0%	13.0%	Return on Shr. Equity	14.0%						
11.0%	10.3%	11.9%	12.7%	12.0%	13.0%	12.1%	13.1%	11.4%	14.0%	13.0%	13.0%	Return on Com Equity	14.0%						
5.8%	5.3%	6.6%	6.8%	5.7%	6.0%	5.3%	6.2%	4.5%	6.9%	6.0%	5.5%	Retained to Com Eq	5.0%						
47%	49%	45%	47%	53%	54%	56%	52%	61%	51%	57%	58%	All Div'ds to Net Prof	64%						

CAPITAL STRUCTURE as of 9/30/20
Total Debt $440.7 mill. Due in 5 Yrs $6.9 mill.
LT Debt $440.3 mill. LT Interest $25.0 mill.
(41% of Cap'l)

Leases, Uncapitalized: Annual rentals $2.7 mill.
Pension Assets-12/19 $192.5 mill.
Oblig. $231.9 mill.

Pfd Stock None

Common Stock 36,889,061 shs.
as of 10/30/20

MARKET CAP: $2.9 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	7.1	1.3	8.1
Accts Receivable	23.4	20.9	33.7
Other	101.0	100.3	97.6
Current Assets	131.5	122.5	139.4
Accts Payable	59.5	55.6	53.6
Debt Due	40.3	5.3	.4
Other	46.8	55.1	59.5
Current Liab.	146.6	116.0	113.5

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	3.0%	--	5.0%
"Cash Flow"	6.0%	3.0%	7.0%
Earnings	9.5%	5.0%	6.5%
Dividends	8.0%	7.5%	9.5%
Book Value	5.5%	4.0%	5.5%

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	98.8	113.2	124.4	104.2	440.6
2018	94.7	106.9	124.2	111.0	436.8
2019	101.7	124.7	134.5	113.0	473.9
2020	109.1	121.3	133.7	115.9	480
2021	110	125	145	120	500

Calendar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	.34	.62	.57	.35	1.88
2018	.29	.44	.62	.37	1.72
2019	.35	.72	.76	.45	2.28
2020	.38	.69	.72	.46	2.25
2021	.43	.72	.75	.50	2.40

Calendar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.242	.242	.255	.255	.99
2018	.255	.255	.275	.275	1.06
2019	.275	.275	.305	.305	1.16
2020	.305	.305	.335	.335	
2021					

BUSINESS: American States Water Co. operates as a holding company. Through its principal subsidiary, Golden State Water Co., it supplies water to 260,708 customers in 10 California counties. Service areas include the metropolitan areas of Los Angeles and Orange Counties. The company also provides electricity to 24,420 customers in Big Bear Lake and San Bernardino Cnty. Provides water & wastewater services to U.S. military bases through its ASUS subsidiary. Sold Chaparral City Wtr. of AZ. (6/11). Employs 841. BlackRock, Inc. owns 15.9% of out. shares; Vanguard, 11.9%; off. & dir. 1.0%. (4/20 Proxy). Chairman: Lloyd Ross. Pres. & CEO: Robert Sprowls. Inc: CA. Address: 630 East Foothill Blvd., San Dimas, CA 91773. Tel: 909-394-3600. Internet: www.aswater.com.

American States Water probably turned in flattish results in 2020. In the key water segment, higher rates implemented retroactively in 2019 caused a reduction in administrative costs that wasn't replicated last year. A higher effective tax rate and an increase in other operating expenses also contributed to a weaker showing. Nonregulated operations also likely posted a negative comparison due to a decrease in construction activity on military bases. An improved performance from the electric business was not enough to offset these negatives. All told, for the full year, the company's share net likely declined about $0.03, to $2.25.

We look for earnings to get back on track this year, however. This is based on our expectations that the company's expense ratios revert to normal levels. The nonregulated businesses should also do much better, as more military bases in the United States are privatized (more below). In sum, share earnings could well advance a healthy 7%, to $2.40.

A new application for rates should not be ruled upon for some time. As per California procedure, Golden States Water filed a general rate case last year seeking higher tariffs for the years 2022-2024. A final decision by state authorities is not expected until very late this year. The outcome will have a major impact on the utility's profits for this three-year period. We are assuming a reasonable decision in our projections, as relations with the state regulators have generally been constructive.

Nonregulated business should provide an earnings boost. American States' contract service operations ought to make inroads in this market as, more domestic military installations conduct bidding processes to have outside companies provide water to these bases. Returns in this sector are higher than the regulated businesses. The company has already proven itself in this area, as it has won a number of these 50-year contracts.

These shares do not stand out at this time. AWR is ranked to underperform the market averages in the year ahead. Furthermore, long-term prospects are not bright either, as the equity is currently trading near the high end of our 2023-2025 Target Price Range.

James A. Flood *January 8, 2021*

(A) Primary earnings. Excludes nonrecurring gains/(losses): '04, 7¢; '05, 13¢; '06, 3¢; '08, (14¢); '10, (23¢); '11, 10¢. Next earnings report due mid-February.
(B) Dividends historically paid in early March, June, September, and December. ■ Div'd reinvestment plan available.
(C) In millions, adjusted for split.
(D) Includes intangibles. As of 9/30/20: $1.1 million/$0.03 a share.

Company's Financial Strength	A
Stock's Price Stability	100
Price Growth Persistence	95
Earnings Predictability	85

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AMERICAN WATER NYSE-AWK

RECENT PRICE 149.65 | P/E RATIO 37.1 (Trailing: 41.0 Median: 22.0) | RELATIVE P/E RATIO 1.74 | DIV'D YLD 1.6% | VALUE LINE 1790

TIMELINESS 2 Lowered 11/13/20
SAFETY 3 New 7/25/08
TECHNICAL 2 Lowered 1/8/21
BETA .85 (1.00 = Market)

18-Month Target Price Range

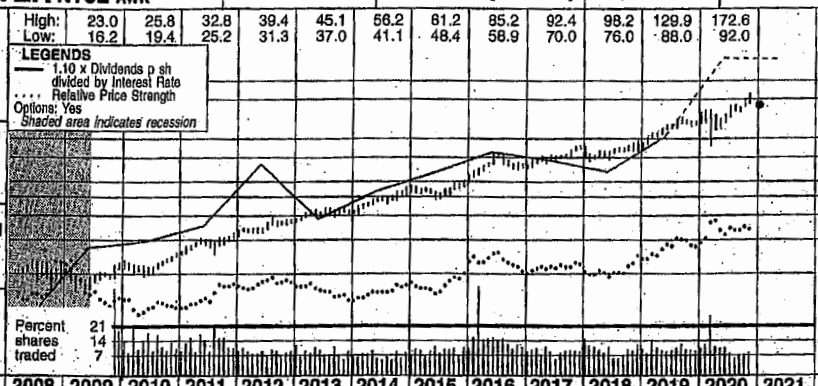
Low-High	Midpoint (% to Mid)
$109-$244	$177 (20%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	140	(-5%)	Nil
Low	90	(-40%)	-9%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	333	363	401
to Sell	415	371	337
Hld's(000)	151948	151102	150689



% TOT. RETURN 11/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	28.2	15.7
3 yr.	76.2	23.5
5 yr.	190.9	64.0

2004	2005	2006E	2007E	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB, LLC	23-25
--	--	13.08	13.84	14.61	13.98	15.49	15.18	16.25	16.28	16.78	17.72	18.54	18.81	19.04	19.97	*20.95*	*22.00*	Revenues per sh	*24.75*
--	--	.65	d.47	2.87	2.89	3.56	3.73	4.27	4.36	4.75	5.13	5.26	5.14	6.15	6.65	*7.25*	*7.90*	"Cash Flow" per sh	*8.75*
--	--	d.97	d2.14	1.10	1.25	1.53	1.72	2.11	2.06	2.39	2.64	2.62	2.38	3.15	3.43	*3.90*	*4.25*	Earnings per sh A	*4.90*
--	--	--	--	.40	.82	.86	.90	1.21	.84	1.21	1.33	1.47	1.62	1.78	1.96	*2.15*	*2.35*	Div'd Decl'd per sh B■	*2.90*
--	--	4.31	4.74	6.31	4.50	4.38	5.27	5.25	5.50	5.33	6.51	7.36	8.04	8.78	9.15	*10.50*	*9.20*	Cap'l Spending per sh	*9.00*
--	--	23.86	28.39	25.64	22.91	23.59	24.11	25.11	26.52	27.39	28.25	29.24	30.13	32.42	33.83	*36.10*	*37.90*	Book Value per sh D	*42.50*
--	--	160.00	160.00	160.00	174.63	175.00	175.66	176.99	178.25	179.46	178.28	178.10	178.44	180.68	180.81	*181.50*	*182.00*	Common Shs Outst'g C	*189.00*
--	--	--	--	18.9	15.6	14.6	16.8	16.7	19.9	20.0	20.5	27.7	33.8	27.3	32.9	*35.3*		Avg Ann'l P/E Ratio	*23.5*
--	--	--	--	1.14	1.04	.93	1.05	1.06	1.12	1.05	1.03	1.45	1.70	1.47	1.79	*1.78*		Relative P/E Ratio	*1.30*
--	--	--	--	1.9%	4.2%	3.6%	3.1%	3.4%	2.0%	2.5%	2.5%	2.0%	2.0%	2.1%	1.7%	*1.6%*		Avg Ann'l Div'd Yield	*2.5%*
						2710.7	2666.2	2876.9	2901.9	3011.3	3159.0	3302.0	3357.0	3440.0	3610.0	*3800*	*4000*	Revenues ($mill)	*4675*
						267.8	304.9	374.3	389.3	429.8	476.0	468.0	426.0	567.0	621.0	*708*	*775*	Net Profit ($mill)	*925*
						40.4%	39.5%	40.7%	39.1%	39.4%	39.1%	39.2%	53.3%	26.2%	25.5%	*21.5%*	*21.5%*	Income Tax Rate	*21.0%*
						--	--	6.2%	5.1%	--	--	--	--	5.1%	4.0%	*5.0%*	*5.0%*	AFUDC % to Net Profit	*5.0%*
						56.8%	55.7%	53.9%	52.4%	52.4%	53.7%	52.4%	54.7%	56.3%	58.5%	*59.5%*	*60.0%*	Long-Term Debt Ratio	*59.0%*
						43.2%	44.2%	46.1%	47.6%	47.4%	46.2%	47.5%	45.3%	43.6%	41.4%	*40.5%*	*40.0%*	Common Equity Ratio	*41.0%*
						9561.3	9580.3	9635.5	9940.7	10364	10911	10967	11875	13433	14760	*16150*	*17200*	Total Capital ($mill)	*20000*
						11059	11021	11739	12391	12900	13933	14992	16246	17409	18232	*19250*	*20250*	Net Plant ($mill)	*22200*
						4.4%	4.6%	5.4%	5.1%	5.5%	5.7%	5.6%	4.9%	5.4%	5.4%	*6.5%*	*5.5%*	Return on Total Cap'l	*6.0%*
						6.5%	7.2%	8.4%	7.8%	8.7%	9.4%	9.0%	7.9%	9.7%	10.1%	*11.0%*	*11.0%*	Return on Shr. Equity	*11.5%*
						6.5%	7.2%	8.4%	7.8%	8.7%	9.4%	9.0%	7.9%	9.7%	10.1%	*11.0%*	*11.5%*	Return on Com Equity	*11.5%*
						2.6%	3.5%	3.6%	4.7%	4.3%	4.7%	4.0%	2.5%	4.2%	4.4%	*5.0%*	*4.5%*	Retained to Com Eq	*4.5%*
						56%	52%	57%	40%	50%	50%	56%	68%	56%	57%	*55%*	*55%*	All Div'ds to Net Prof	*59%*

CAPITAL STRUCTURE as of 9/30/20
Total Debt $10691 mill. **Due in 5 Yrs** $2500 mill.
LT Debt $9580 mill. **LT Interest** $354 mill. (60% of Cap'l)

Leases, Uncapitalized: Annual rentals $14.0 mill.
Pension Assets12/19 $1747.0 mill
Oblig. $2161.0 mill.
Pfd Stock $4.0 mill. **Pfd Div'd** $.3 mill

Common Stock 181,271,995 shares as of 10/28/20

MARKET CAP: $27.1 billion (Large Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	158	91	599
Accts Receivable	301	294	358
Other	322	900	1010
Current Assets	781	1285	1967
Accts Payable	175	203	162
Debt Due	1035	814	1111
Other	884	1028	987
Current Liab.	2094	2045	2260

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	3.0%	3.0%	*4.5%*
"Cash Flow"	13.0%	6.0%	*6.5%*
Earnings	45.5%	6.5%	*8.5%*
Dividends	16.0%	10.5%	*8.5%*
Book Value	2.5%	4.0%	*5.0%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	756	844	936	821	3357
2018	761	853	976	850	3440
2019	813	882	1013	902	3610
2020	844	931	1079	*946*	*3800*
2021	*885*	*970*	*1145*	*1000*	*4000*

Calendar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	.52	.73	1.12	.01	2.38
2018	.59	.91	1.03	.62	3.15
2019	.62	.94	1.33	.54	3.43
2020	.68	.97	1.46	*.79*	*3.90*
2021	*.73*	*1.05*	*1.60*	*.87*	*4.25*

Calendar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.375	.415	.415	.415	1.62
2018	.415	.455	.455	.455	1.78
2019	.455	.50	.50	.50	1.96
2020	.50	.55	.55	.55	
2021					

BUSINESS: American Water Works Company, Inc. is the largest investor-owned water and wastewater utility in the U.S., providing services to approximately 15 million people in 46 states. Nonregulated business assists municipalities and military bases with the maintenance and upkeep as well. Regulated operations made up 86% of 2019 revenues. New Jersey is its largest market accounting for 24.6% of regulated revenues; Pennsylvania, 22.3%; Missouri, 10.5%. Has 6,800 employees. The Vanguard Grp. owns 12.4% of outstanding shares; BlackRock, Inc., 8.7%; officers & directors, less than 1.0%. (3/20 Proxy). President & CEO: Susan N. Story. Chairman: George MacKenzie. Address: 1 Water Street, Camden, NJ 08102. Tel.: 856-346-8200. Internet: www.amwater.com.

American Water Works probably completed another strong year. In 2020, we think the water utility posted solid earnings growth for the third consecutive year. Indeed, we estimate that its share net rose nearly 14% to $3.90. Much of this can be attributed to the demand for water by residential customers not being impacted much by the state of the economy.

The positive profit trend should continue this year. Through the bottom-line gain will likely not match last year's rate, American Water should still see a solid 9% increase in earnings per share.

Acquisitions should remain a key part of the growth strategy. The utility has been purchasing many smaller municipally run water districts for years. Many of these entities are extremely inefficient and lack the financial wherewithal to replace their aging pipelines. American Water has a proven track record of absorbing new assets and streamlining costs, all while improving service. It's likely because of these two factors that regulators have treated the company so constructively.

The construction budget is enormous, but manageable. Management targeted $1.9 billion to refurbish and expand its existing water infrastructure in 2019. What's more, the cost of continuing the program should average about $2 billion annually over the next decade. Internally generated funds should cover a good deal of the funds needed, but the company has been issuing bonds to finance the difference. Indeed, its long-term debt-to-total capital ratio has reached the 60% mark. New equity issuance has been very restrained, and shares outstanding have increased only around 4% over the past 11 years. As the equity has performed well over that time span, management may want to consider selling new stock as a way of improving its finances.

The dividend ought to be hiked later this year. At the next meeting in February, we expect the quarterly payout to be raised 9.3%, or $0.05 per share, to $0.60. Moreover, this healthy rate of growth is probably sustainable through mid-decade.

These shares remain timely. However, like most in the water utility group, total return prospects through 2023-2025 are well below the *Value Line* median.

James A. Flood *January 8, 2021*

(A) Diluted earnings. Excludes nonrecur. losses: '08, $4.62; '09, $2.63; '11, $0.07. Disc. oper.: '06, ($0.04); '11, $0.03; '12, ($0.10); '13,($0.01). GAAP used as of 2014. Next earnings report due mid-February
(B) Dividends paid in March, June, September, and December. ■ Div. reinvestment available.
(C) In millions. (D) Includes intangibles. On 9/30/20: $1.562 billion, $8.62/share.
(E) Pro forma numbers for '06 & '07.

Company's Financial Strength	B++
Stock's Price Stability	85
Price Growth Persistence	80
Earnings Predictability	85

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CALIFORNIA WATER NYSE-CWT

RECENT PRICE 54.21 | P/E RATIO 19.1 (Trailing: 29.0 Median: 23.0) | RELATIVE P/E RATIO 0.90 | DIV'D YLD 1.6% | VALUE LINE 1791

TIMELINESS 2 Raised 11/20/20
SAFETY 3 Lowered 7/27/07
TECHNICAL 4 Lowered 1/8/21
BETA .65 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$42-$79	$61 (10%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	60	(+10%)	5%
Low	40	(-25%)	-5%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	104	109	101
to Sell	118	107	106
Hld's(000)	35792	35580	36492

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
High:	24.1	19.8	19.4	19.3	23.4	26.4	26.0	36.8	46.2	49.1	57.5	57.4						
Low:	16.7	16.9	16.7	16.8	18.4	20.3	19.5	22.5	32.4	35.3	44.6	39.7						

LEGENDS
— 1.33 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
2-for-1 split 6/11
Options: Yes
Shaded area indicates recession

Target Price Range 2023 | 2024 | 2025
120 100 80 64 48 32 24 20 16 12 8

Percent shares traded: 18 12 6

% TOT. RETURN 11/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-2.4	16.7
3 yr.	13.8	23.5
5 yr.	140.5	64.0

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
8.59	8.72	8.10	8.88	9.90	10.82	11.05	12.00	13.34	12.23	12.50	12.29	12.70	13.89	14.53	14.72	16.00	16.00	Revenues per sh	16.05
1.42	1.52	1.36	1.56	1.86	1.93	1.93	2.07	2.32	2.21	2.47	2.22	2.34	3.00	3.11	3.14	3.60	3.45	"Cash Flow" per sh	3.65
.73	.74	.67	.75	.95	.98	.91	.86	1.02	1.02	1.19	.94	1.01	1.40	1.36	1.31	2.00	1.90	Earnings per sh A	2.15
.57	.57	.58	.58	.59	.59	.60	.62	.63	.64	.65	.67	.69	.72	.75	.79	.85	.89	Div'd Decl'd per sh B ■	1.05
1.87	2.01	2.14	1.84	2.41	2.66	2.97	2.83	3.04	2.58	2.76	3.69	4.77	5.40	5.65	5.64	4.85	4.75	Cap'l Spending per sh	4.25
7.83	7.90	9.07	9.25	9.72	10.13	10.45	10.76	11.28	12.54	13.11	13.41	13.75	14.44	15.19	16.07	18.00	18.15	Book Value per sh C	19.35
36.73	36.78	41.31	41.33	41.45	41.53	41.67	41.82	41.98	47.74	47.81	47.88	47.97	48.01	48.07	48.53	50.00	51.00	Common Shs Outst'g D	53.00
20.1	24.9	29.2	26.1	19.8	19.7	20.3	21.3	17.9	20.1	19.7	24.8	29.6	26.9	30.3	39.3	24.5		Avg Ann'l P/E Ratio	23.0
1.06	1.33	1.58	1.39	1.19	1.31	1.29	1.34	1.14	1.13	1.04	1.25	1.55	1.35	1.64	2.13	1.24		Relative P/E Ratio	1.30
3.9%	3.1%	2.9%	3.0%	3.1%	3.1%	3.2%	3.4%	3.5%	3.1%	2.8%	2.9%	2.3%	1.9%	1.8%	1.5%	1.7%		Avg Ann'l Div'd Yield	2.1%
460.4	501.8	560.0	584.1	597.5	588.4	609.4	668.9	698.2	714.6	800	815	Revenues ($mill) E	850
37.7	38.1	42.6	47.3	56.7	45.0	48.7	67.2	65.6	63.1	100	97.0	Net Profit ($mill)	115
39.5%	40.5%	37.5%	30.3%	33.0%	36.0%	35.5%	30.1%	24.5%	19.1%	21.0%	21.0%	Income Tax Rate	21.0%
4.2%	7.6%	8.0%	4.3%	2.7%	4.3%	6.1%	3.5%	3.1%	5.8%	5.0%	5.0%	AFUDC % to Net Profit	5.0%
52.4%	51.7%	47.8%	41.6%	40.1%	44.4%	44.6%	42.7%	49.3%	50.2%	45.5%	44.0%	Long-Term Debt Ratio	39.0%
47.6%	48.3%	52.2%	58.4%	59.9%	55.6%	55.4%	57.3%	50.7%	49.8%	54.5%	56.0%	Common Equity Ratio	61.0%
914.7	931.5	908.2	1024.9	1045.9	1154.4	1191.2	1209.3	1440.2	1566.7	1650	1650	Total Capital ($mill)	1675
1294.3	1381.1	1457.1	1515.8	1590.4	1701.8	1859.3	2048.0	2232.7	2406.4	2550	2575	Net Plant ($mill)	2700
5.5%	5.5%	6.3%	6.0%	6.3%	5.2%	5.5%	7.1%	5.9%	5.5%	7.0%	6.5%	Return on Total Cap'l	7.5%
8.6%	8.0%	9.0%	7.9%	9.1%	7.0%	7.4%	9.7%	9.0%	8.1%	11.0%	10.5%	Return on Shr. Equity	11.0%
8.6%	8.0%	9.0%	7.9%	9.1%	7.0%	7.4%	9.7%	9.0%	8.1%	11.0%	10.5%	Return on Com Equity	11.0%
3.0%	2.3%	3.4%	3.4%	4.1%	2.0%	2.4%	4.7%	4.0%	3.2%	6.5%	5.5%	Retained to Com Eq	5.5%
66%	71%	62%	56%	55%	71%	66%	51%	55%	60%	43%	47%	All Div'ds to Net Prof	49%

CAPITAL STRUCTURE as of 9/30/20
Total Debt $1182.1 mill. Due in 5 Yrs $357.0 mill.
LT Debt $785.1 mill. LT Interest $40.0 mill.
(Total interest coverage: 11.2x) (50% of Cap'l)

Pension Assets-12/19 $573.6 mill.
Oblig. $812.0 mill.

Pfd Stock None

Common Stock 49,840,000 shs.

MARKET CAP: $2.7 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	47.2	42.7	113.3
Other	141.5	142.0	192.5
Current Assets	188.7	184.7	305.8
Accts Payable	95.6	108.5	127.2
Debt Due	170.0	197.0	397.0
Other	55.6	53.2	79.6
Current Liab.	321.2	358.7	603.8

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	4.0%	2.5%	2.0%
"Cash Flow"	5.5%	5.5%	3.0%
Earnings	4.5%	4.5%	8.0%
Dividends	2.5%	3.5%	5.5%
Book Value	4.5%	4.5%	4.0%

Calendar	QUARTERLY REVENUES ($ mill.) E Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	122.1	171.1	211.7	162.0	666.9
2018	134.6	174.9	221.3	167.4	698.2
2019	128.1	179.0	232.6	176.9	714.6
2020	125.6	175.5	304.1	194.8	800
2021	155	205	255	200	815

Calendar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.02	.39	.70	.29	1.40
2018	d.02	.31	.75	.32	1.36
2019	d.16	.35	.88	.24	1.31
2020	d.42	.11	1.94	.37	2.00
2021	.08	.45	.95	.42	1.90

Calendar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.18	.18	.18	.18	.72
2018	.1875	.1875	.1875	.1875	.75
2019	.1975	.1975	.1975	.1975	.79
2020	.2125	.2125	.2125	.2125	
2021					

BUSINESS: California Water Service Group provides regulated and nonregulated water service to 489,600 customers in 100 communities in the state of California. Accounts for over 94% of total customers. Also operates in Washington, New Mexico, and Hawaii. Main service areas: San Francisco Bay area, Sacramento Valley, Salinas Valley, San Joaquin Valley & parts of Los Angeles. Acquired Rio Grande Corp; West Hawaii Utilities (9/08). Revenue breakdown, '19: residential, 67%; business, 20%; industrial, 5%; public authorities, 5%; other 3%. Off. and dir. own 1% of common stock (4/20 proxy). Has 1,184 employees. Pres. and CEO: Martin A. Kropelnicki. Inc.: DE. Addr.: 1720 North First St., San Jose, CA 95112-4598. Tel.: 408-367-8200. Internet: www.calwatergroup.com.

California Water Service Group's 2018 general rate case has officially been approved. The California Public Utilities Commission (CPUC) has fully adopted the proposal. Specifically, subsequent to CPUC giving California Water the nod, the company is now authorized to invest more than $825 million through 2021 for various infrastructure upgrades, such as improvements to its water distribution system, treatment facilities, and piping systems. Because of this development, California Water's third-quarter financial results reflect the application and recording of certain assets and revenues recovered under the new rate decision. Moreover, the company has been approved to boost revenues by increasing customer rates beginning this year through 2022.

All things considered, our financial projections are being raised across the board. For 2020, the company likely generated share profits of $2.00 (up from our previous call of $0.85) from revenues of $800 million (up from $730 million). Modest top-line growth is probably in the cards this year, given the favorable rate case decision mentioned above, coupled with the likelihood for sustainable water consumption, though the bottom line may contract by a dime, largely due to the tough year-over-year comparison.

California Water's subsidiary, Hawaii Water, announced it will acquire wastewater system assets from Keauhou Community Services. The deal, which would add roughly 1,500 customers to Hawaii Water's roster, is pending approval by local regulators. Financial details were not disclosed. Finally, the asset purchase comes off the heels of its recent acquisition of Rainier Water Company in Washington State. On top of expanding populations, we think bolt-on asset agreements will be par for the course.

Short-term investors are best suited here. The issue has been upgraded one notch for Timeliness, to 2 (Above Average). Notably, the stock price has risen more than 15% since our October review. That said, we think it would be prudent for patient accounts to remain on the sidelines, for now, as total return potential out to 2023-2025 does not stand out at recent levels.

Nicholas P. Patrikis *January 8, 2021*

(A) Basic EPS. Excl. nonrecurring gain (loss): '11, 4¢. Next earnings report due early Feb.
(B) Dividends historically paid in late Feb., May, Aug., and Nov. ■ Div'd reinvestment plan available.
(C) Incl. intangible assets. In '19 : $24.9 mill., $0.51/sh.
(D) In millions, adjusted for split.
(E) Excludes non-regulated revenues

Company's Financial Strength	B++
Stock's Price Stability	95
Price Growth Persistence	70
Earnings Predictability	65

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CONSOL. WATER CO. NDQ-CWCO

RECENT PRICE 12.33 | P/E RATIO 27.4 (Trailing: 37.4 / Median: 24.0) | RELATIVE P/E RATIO 1.29 | DIV'D YLD 2.8% | VALUE LINE 1792

TIMELINESS 4 Lowered 1/8/21
SAFETY 3 New 1/17/14
TECHNICAL 5 Lowered 1/8/21
BETA .85 (1.00 = Market)

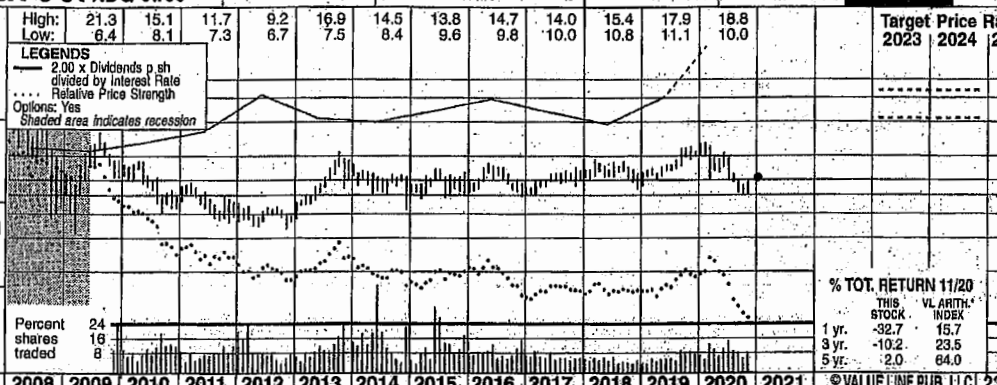
18-Month Target Price Range
Low-High Midpoint (% to Mid)
$8-$20 $14 (15%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	35	(+185%)	33%
Low	25	(+105%)	23%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	47	48	28
to Sell	42	45	57
Hld's(000)	8750	8027	7661



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
2.02	1.12	2.71	3.41	4.52	3.99	3.49	3.79	4.49	4.35	4.46	3.86	3.89	4.18	4.39	4.57	4.80	4.20	Revenues per sh	9.40
.77	.37	.87	1.20	.95	1.18	.86	.83	1.17	.96	.80	.89	.95	1.12	1.15	1.05	.85	.95	"Cash Flow" per sh	1.95
.49	.23	.59	.79	.50	.74	.43	.42	.64	.58	.42	.51	.27	.41	.68	.56	.35	.30	Earnings per sh A	1.40
.23	.12	.24	.20	.33	.28	.30	.30	.30	.30	.30	.30	.30	.31	.34	.34	.34	.34	Div'd Decl'd per sh B■	.75
.24	.77	1.83	.54	.46	.18	.09	.96	.31	.29	.32	.21	.23	.31	1.08	.23	.15	.25	Cap'l Spending per sh	.50
4.20	2.54	7.49	8.21	8.36	8.53	8.69	8.83	9.20	9.44	9.58	9.81	9.79	9.91	10.34	10.88	10.65	10.80	Book Value per sh D	12.20
11.51	23.46	14.13	14.40	14.53	14.54	14.55	14.57	14.59	14.69	14.72	14.78	14.87	14.92	14.98	15.05	15.20	15.40	Common Shs Outst'g C	16.00
23.1	80.0	43.0	35.4	37.8	19.0	26.9	22.4	12.4	20.0	28.3	22.7	44.8	29.0	19.4	25.7	39.3		Avg Ann'l P/E Ratio	22.0
1.22	4.26	2.32	1.88	2.27	1.27	1.71	1.41	.79	1.12	1.49	1.14	2.35	1.46	1.05	1.39	1.98		Relative P/E Ratio	1.20
2.0%	.7%	.9%	.7%	1.7%	2.0%	2.6%	3.2%	3.8%	2.6%	2.5%	2.6%	2.5%	2.6%	2.6%	2.4%	2.5%		Avg Ann'l Div'd Yield	2.5%
						50.7	55.2	65.5	63.8	65.6	57.1	57.9	62.3	65.7	68.8	73.0	65.0	Revenues ($mill)	150
						6.3	6.1	9.3	8.6	6.3	7.5	4.0	6.1	10.2	8.6	5.5	4.5	Net Profit ($mill)	22.0
						--	--	--	--	--	--	--	--	--	1.0%	NMF	NMF	Income Tax Rate	NMF
						--	4.0%	--	--	--	--	--	--	--	--	NMF	NMF	AFUDC % to Net Profit	NMF
						11.8%	5.1%	3.7%	--	--	--	--	--	--	--	Nil	Nil	Long-Term Debt Ratio	Nil
						88.2%	94.9%	96.3%	99.8%	99.8%	100.0%	100.0%	100.0%	100.0%	100.0%	100%	100%	Common Equity Ratio	100%
						143.3	135.6	139.4	138.9	141.2	145.0	145.6	147.9	155.0	163.8	162	166	Total Capital ($mill)	200
						56.2	64.3	61.6	58.6	56.4	53.7	53.1	50.5	64.9	61.2	60.0	60.0	Net Plant ($mill)	85.0
						4.9%	5.0%	7.0%	6.2%	4.4%	5.2%	2.7%	4.2%	6.6%	5.2%	3.5%	2.5%	Return on Total Cap'l	11.0%
						5.0%	4.7%	6.9%	6.2%	4.4%	5.2%	2.7%	4.2%	6.6%	5.2%	3.5%	2.5%	Return on Shr. Equity	11.0%
						5.0%	4.7%	6.9%	6.2%	4.4%	5.2%	2.7%	4.1%	6.6%	5.2%	3.5%	2.5%	Return on Com Equity	11.0%
						1.5%	1.0%	3.6%	3.0%	1.2%	2.1%	NMF	1.1%	3.3%	2.1%	NMF	NMF	Retained to Com Eq	5.0%
						69%	79%	48%	51%	73%	59%	112%	73%	50%	60%	97%	113%	All Div'ds to Net Prof	54%

CAPITAL STRUCTURE as of 9/30/20
Total Debt $0.1 Due in 5 Yrs $0.1
LT Debt $0.1 LT Interest NMF (0% of Total Cap'l)
Leases, Uncapitalized: Annual rentals $.9 mill.

No Defined Benefit Pension Plan

Pfd Stock NMF (33,059 shares out.) Div'd NMF

Common Stock 15,112,975 shs. as of 11/10/20

MARKET CAP: $175 million (Small Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	31.3	42.9	38.2
Accts Receivable	24.2	23.2	24.4
Other	6.9	7.3	9.0
Current Assets	62.4	73.4	71.6
Accts Payable	4.6	3.7	3.1
Debt Due	--	--	--
Other	3.3	4.5	4.6
Current Liab.	7.9	8.2	7.7

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '15-'17 to '22-'24
Revenues	5.0%	.5%	13.5%
"Cash Flow"	2.0%	.5%	10.0%
Earnings	-3.0%	-4.5%	17.0%
Dividends	5.0%	--	14.5%
Book Value	5.0%	2.0%	2.5%

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	15.6	15.3	16.6	14.8	62.3
2018	14.3	15.9	18.8	16.7	65.7
2019	17.0	18.3	15.9	17.6	68.8
2020	20.8	19.1	17.7	15.4	73.0
2021	17.0	17.0	15.0	16.0	65.0

Calendar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	.18	.11	.08	.04	.41
2018	.14	.14	.30	.10	.68
2019	.17	.16	.11	.12	.56
2020	.19	d.04	.09	.11	.35
2021	.15	.10	.10	.15	.50

Calendar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.075	.075	.075	.075	.30
2018	.085	.085	.085	.085	.34
2019	.085	.085	.085	.085	.34
2020	.085	.085	.085	.085	
2021					

BUSINESS: Consolidated Water Co. Ltd. develops and operates desalination plants and water distribution systems in areas where naturally occurring supplies of water are scarce. It provides water in the Cayman Islands, the Bahamas, and the British Virgin Islands. At 12/31/19, it operated 12 plants with a capacity of 25.6 million gallons per day. Sold Bali operations and divested Belize assets in '19. Also manufactures products for the industry through Aerex sub. Inc.: Cayman Is. Employs 105. Pres./CEO: F. McTaggart. Based on 4/19 proxy Offs./ Dirs. own 4.8% of stock; Amundi Asset, 7.7%; BlackRock, 8.6%. (No proxy filed in 2020). Addr.: Regatta Off. Pk. Windward-Three, West Bay Rd., P.O. Box 1114 Grand Cayman, KYI-1102, Cayman Is. Tel.: (345) 945-4277. Int.: www.cwco.com.

Consolidated Water is different from all other companies in the Water Utility Industry. The builder and operator of desalination plants does the majority of its business outside of the United States. Thus, it is subject to the laws and regulations of foreign countries, which have not been beneficial to the company over the past several years.

The long-planned Mexican desalination plant has been shelved. Consolidated began planning for the proposed plant almost a decade ago. The Rosarito project was to initially supply 50 million gallons per day of potable water to the city of Tijuana. In time, the facility's capacity was to double to provide 100 million gallons per day. The company placed significant importance on this project and spent a considerable amount of funds going through a rigorous planning process. Legal issues arose in the latter part of 2019, and Consolidated's management seems to believe that it will no longer be built. The company has filed a lawsuit, but judging the outcome is difficult.

Earnings have been reclassified. In the third-quarter report, the Rosarito project is now considered a discontinued operation, and earnings statements for the entire year seem to have been restated.

The Rosarito project is the second-straight much-ballyhooed plant to fail. Several years ago, the company built a desalination plant in Bali, Indonesia to much fanfare due to the island's urgent need for fresh water. The facility was built on speculation, however. Problems with the government arose causing Consolidated to exit the business.

Finances are not as strong as they appear. Despite having just about no debt whatsoever, the possibility of Rosarito-related writeoffs could put a dent in the balance sheet.

These shares are ranked to underperform the market in the year ahead. Moreover, the company's prospects remain undefined following the problems in Mexico. While the world continues to be in great need of potable water, Consolidated is having a difficult time capitalizing on it. Much of this has to do with the fact that these arid regions often aren't easy places to conduct business.

James A. Flood *January 8, 2021*

(A) Fully diluted earnings. Excludes gains from discontinued operations: '17, $0.07 a share; '18, $0.07 a share; '19, $0.24 a share; losses in 2020 of $0.30 a share. Next earnings report due mid-February.
(B) Dividends historically paid in late January, April, July, and October. ■ Dividend reinvestment plan available.
(C) In millions, adjusted for stock split.
(D) Includes intangibles. As of 9/30/20, $17.7 million/$1.17 a share.

Company's Financial Strength	B+
Stock's Price Stability	70
Price Growth Persistence	45
Earnings Predictability	45

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ESSENTIAL UTIL. NYSE-WTRG

RECENT PRICE **46.08** | P/E RATIO **41.5** (Trailing: 46.5 Median: 23.0) | RELATIVE P/E RATIO **1.95** | DIV'D YLD **2.3%** | VALUE LINE **1793**

TIMELINESS **3** Lowered 1/8/21
SAFETY **3** Lowered 1/8/21
TECHNICAL **2** Raised 1/1/21
BETA .95 (1.00 = Market)

18-Month Target Price Range

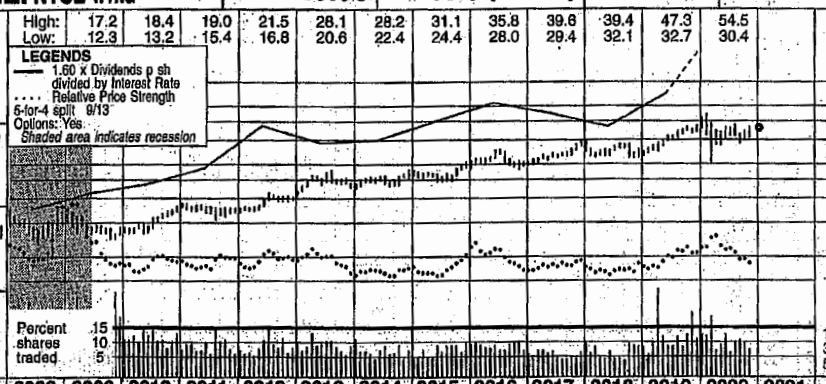
Low-High	Midpoint (% to Mid)
$35-$93	$64 (40%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	55	(+20%)	7%
Low	40	(-15%)	Nil

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	252	250	237
to Sell	292	235	227
Hld's(000)	161407	161504	167838



% TOT. RETURN 11/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	4.0	15.7
3 yr.	27.1	23.5
5 yr.	72.5	64.0

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	©VALUE LINE PUB. LLC	23-25
2.78	3.08	3.23	3.61	3.71	3.93	4.21	4.10	4.32	4.32	4.37	4.61	4.62	4.56	4.71	4.03	*6.15*	*8.15*	Revenues per sh	*8.45*
.87	.97	1.01	1.10	1.14	1.29	1.42	1.45	1.51	1.82	1.89	1.87	2.07	2.12	1.90	1.73	*2.05*	*2.30*	"Cash Flow" per sh	*2.65*
.51	.57	.56	.57	.58	.62	.72	.63	.67	1.16	1.20	1.14	1.32	1.35	1.08	1.04	*1.05*	*1.20*	Earnings per sh [A]	*1.75*
.29	.32	.35	.38	.41	.44	.47	.50	.54	.58	.63	.69	.74	.79	.85	.91	*.97*	*1.04*	Div'd Decl'd per sh [B■]	*1.30*
1.23	1.47	1.64	1.43	1.58	1.66	1.89	1.90	1.98	1.73	1.84	2.07	2.16	2.69	2.78	2.49	*2.75*	*4.00*	Cap'l Spending per sh	*4.75*
4.71	5.04	5.57	5.85	6.26	6.50	6.81	7.21	7.90	8.63	9.27	9.78	10.43	11.02	11.28	17.58	*18.55*	*18.75*	Book Value per sh	*20.00*
158.97	161.21	165.41	166.75	169.21	170.61	172.46	173.60	175.43	177.93	178.59	176.54	177.39	177.71	176.09	220.76	*251.25*	*252.00*	Common Shs Outst'g [C]	*260.00*
25.1	31.8	34.7	32.0	24.9	23.1	21.1	21.3	21.9	21.2	20.8	23.5	23.9	24.7	32.6	39.1	*42.2*		Avg Ann'l P/E Ratio	*27.0*
1.33	1.69	1.87	1.70	1.50	1.54	1.34	1.34	1.39	1.19	1.09	1.18	1.25	1.24	1.76	2.12	*2.13*		Relative P/E Ratio	*1.50*
2.3%	1.8%	1.8%	2.1%	2.8%	3.1%	3.1%	2.8%	2.8%	2.4%	2.5%	2.6%	2.3%	2.4%	2.4%	2.2%	*2.2%*		Avg Ann'l Div'd Yield	*2.7%*
						728.1	712.0	757.8	788.6	779.9	814.2	819.9	809.5	838.1	889.7	*1550*	*2050*	Revenues ($mill)	*2200*
						124.0	144.8	153.1	205.0	213.9	201.8	234.2	239.7	192.0	224.5	*265*	*300*	Net Profit ($mill)	*455*
						39.2%	32.9%	39.0%	10.0%	10.5%	6.9%	8.2%	6.6%	6.6%	6.6%	*1.5%*	*3.5%*	Income Tax Rate	*8.0%*
						--	--	--	1.1%	2.4%	3.1%	3.8%	6.3%	6.8%	7.2%	*4.5%*	*7.0%*	AFUDC % to Net Profit	*7.0%*
						56.6%	52.7%	52.7%	48.9%	48.5%	50.3%	48.4%	50.6%	54.4%	43.1%	*53.0%*	*57.0%*	Long-Term Debt Ratio	*40.5%*
						43.4%	47.3%	47.3%	51.1%	51.5%	49.7%	51.6%	49.4%	45.6%	56.9%	*47.0%*	*43.0%*	Common Equity Ratio	*59.5%*
						2706.2	2646.8	2929.7	3003.6	3216.0	3469.5	3587.7	3965.4	4407.8	6824.2	*9880*	*10370*	Total Capital ($mill)	*12800*
						3469.3	3612.9	3936.2	4167.3	4402.0	4888.9	5001.6	5399.9	5930.3	6345.8	*9525*	*10160*	Net Plant ($mill)	*12000*
						5.9%	6.9%	6.6%	8.0%	7.8%	6.9%	7.6%	7.1%	5.5%	4.2%	*3.5%*	*4.0%*	Return on Total Cap'l	*4.5%*
						10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	5.8%	*5.5%*	*6.5%*	Return on Shr. Equity	*9.0%*
						10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	5.8%	*5.5%*	*6.5%*	Return on Com Equity	*9.0%*
						3.7%	4.6%	4.3%	6.7%	6.1%	4.7%	5.6%	5.1%	2.1%	.9%	*NMF*	*1.0%*	Retained to Com Eq	*2.5%*
						65%	60%	61%	50%	52%	60%	56%	59%	79%	84%	*92%*	*87%*	All Div'ds to Net Prof	*74%*

CAPITAL STRUCTURE as of 9/30/20
Total Debt $5444.0 mill. **Due in 5 Yrs** $496.0 mill.
LT Debt $5191.0 mill. **LT Interest** $196.0 mill.
(53% of Cap'l)

Pension Assets-12/19 $266.4 mill.
Oblig. $310.6 mill.

Pfd Stock None
Common Stock 245,271,727 shares
as of 10/23/20

MARKET CAP: $11.3 billion (Large Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	3.6	1868.9	8.5
Receivables	101.2	67.1	126.8
Inventory (AvgCst)	15.8	18.4	66.6
Other	26.6	58.3	109.3
Current Assets	147.2	2012.7	311.2
Accts Payable	77.3	74.9	158.2
Debt Due	160.0	130.8	253.0
Other	161.7	113.1	255.8
Current Liab.	399.0	318.8	667.0

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	1.5%	.5%	*11.5%*
"Cash Flow"	5.0%	2.0%	*5.5%*
Earnings	7.0%	1.5%	*7.0%*
Dividends	7.5%	8.0%	*7.5%*
Book Value	8.0%	9.0%	*7.0%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	187.8	203.4	215.0	203.3	809.5
2018	194.3	211.9	226.2	205.7	838.1
2019	201.1	218.9	243.6	226.1	889.7
2020	255.6	384.5	348.6	*561.3*	*1550*
2021	*550*	*450*	*450*	*600*	*2050*

Calendar	EARNINGS PER SHARE [A] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.28	.34	.43	.30	1.35
2018	.29	.37	.44	d.02	1.08
2019	.09	.25	.38	.28	1.04
2020	.20	.29	.22	*.34*	*1.05*
2021	*.22*	*.33*	*.33*	*.32*	*1.20*

Calendar	QUARTERLY DIVIDENDS PAID [B■] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.1913	.1913	.2047	.2047	.79
2018	.2047	.2047	.219	.219	.85
2019	.219	.219	.2343	.2343	.91
2020	.2343	.2343	.2507	.2507	
2021					

BUSINESS: Essential Utilities, Inc. became the new name for Aqua America on Feb. 3, 2020, to reflect the acquisition of Peoples, a natural gas utility, which occurred in 3/20. In 2019, Aqua Amer. provided water and wastewater services to about three million people in PA, OH, TX, IL, NC, NJ, IN, and VA. Employed 1,583. Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others. Water supply revenues 2019: residential, 58%; commercial, 16%; industrial, wastewater & other, 26%. Off. & dir. own less than 1% of the common stock; BlackRock, 10.5%; Vanguard, 10.4%; (4/20 proxy). Canadian Pension Plan about 8.8%. Pres. & CEO: Christopher Franklin. Inc.: PA Addr.: 762 West Lancaster Ave., Bryn Mawr, PA 19010. Tel.: 610-525-1400. Int.: www.essential.co.

Essential Utilities' prospects should be better defined going forward. The basic makeup of the company was greatly altered last March when the water company (formerly know as Aqua America), paid $4.3 billion, and assumed over $1 billion in debt, to acquire Peoples, a large natural gas concern. Due to the transaction, Essential had to absorb a number of one-time charges related to the acquisition. Following this year's first quarter, year-over-year comparisons will become more meaningful. All told, eliminating some of the costs incurred in 2020, we estimate that Essential's share net can climb 14%, to $1.20, in 2021. *(Please note: Management was scheduled to hold a conference call providing guidance for 2021 shortly after this report was made public.)*

Dividend growth prospects are good. Following the merger, the board raised the quarterly payout 7%. We expect this rate to be maintained over the next three- to five-year period.

The company has an ambitious capital spending program. On the water side of the business, like almost all of its peers, Essential is in the midst of spending heavily to replace aging pipelines. It's also making outlays to modernize the natural gas infrastructure. Overall, the construction budget should total close to $3.0 billion over the 2020-2022 period.

Finances have weakened. Despite the large acquisition and assumption of debt, the balance sheet is in decent shape with long-term debt accounting for slightly over half of total capital. Nevertheless, we are lowering its Financial Strength two notches to B+, which is an average rating.

Regulation will continue to have a huge impact on operations. In the water utility sector, state authorities treat companies under their domain relatively constructively. In the gas business, the same cannot be said, as regulators and gas utilities seem to clash more often regarding rate hikes and allowed returns.

Shares of Essential have done well since our October report. They are ranked to only perform in line with the market averages in the coming year, though. Moreover, as is the case with most members of this group, CWCO's total return prospects to 2023-2025 are subpar.

James A. Flood *January 8, 2021*

(A) Diluted egs. Excl. nonrec. gains: '12, 18¢. Excl. gain from disc. operations: '12, 7¢; '13, 9¢; '14, 11¢. Quarterly EPS do not add in '19 due to a large change in the number of shares outstanding in the Dec. period. Next earnings report mid-February. (B) Dividends historically paid in early March, June, Sept., & Dec. ■ Div'd. reinvestment plan available (5% discount). (C) In millions, adjusted for stock splits. (D) Includes intangibles: 9/30/20, $2,342.5 bill./$9.55 a share.

Company's Financial Strength	B+
Stock's Price Stability	90
Price Growth Persistence	70
Earnings Predictability	60

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MIDDLESEX WATER NDQ-MSEX

RECENT PRICE 72.38 | P/E RATIO 32.8 (Trailing: 33.4 Median: 21.0) | RELATIVE P/E RATIO 1.54 | DIV'D YLD 1.5% | VALUE LINE 1794

TIMELINESS 1 Raised 11/13/20
SAFETY 2 New 10/21/11
TECHNICAL 2 Raised 1/1/21
BETA .75 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$57-$102	$80 (10%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	70	(-5%)	1%
Low	50	(-30%)	-6%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	55	66	52
to Sell	70	55	69
Hld's(000)	10280	10359	10357

High: 17.9 19.3 19.4 19.6 22.5 23.7 28.0 44.5 46.7 60.3 67.7 76.1
Low: 11.6 14.7 16.5 17.5 18.6 19.1 21.2 25.0 32.2 34.0 51.0 48.8

LEGENDS
1.20 x Dividends p sh divided by Interest Rate
Relative Price Strength
Options: Yes
Shaded area indicates recession

Target Price Range 2023 | 2024 | 2025
120 100 80 64 48 32 24 20 16 12 8

Percent shares traded 12 8 4

% TOT. RETURN 11/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	10.3	15.7
3 yr.	56.1	23.5
5 yr.	194.1	64.0

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
6.25	6.44	6.16	6.50	6.79	6.75	6.60	6.50	6.98	7.19	7.26	7.77	8.16	8.00	8.42	7.72	8.05	8.45	Revenues per sh	9.15
1.28	1.33	1.33	1.49	1.53	1.40	1.55	1.46	1.56	1.72	1.84	1.97	2.17	2.24	2.89	2.90	3.05	3.15	"Cash Flow" per sh	3.65
.73	.71	.82	.87	.89	.72	.96	.84	.90	1.03	1.13	1.22	1.38	1.38	1.96	2.01	2.20	2.25	Earnings per sh A	2.65
.66	.67	.68	.69	.70	.71	.72	.73	.74	.75	.76	.76	.81	.86	.91	.98	1.04	1.10	Div'd Decl'd per sh B■	1.25
2.54	2.18	2.31	1.66	2.12	1.49	1.90	1.50	1.36	1.26	1.40	1.59	2.91	3.08	4.40	5.11	3.95	4.50	Cap'l Spending per sh	5.00
8.02	8.26	9.52	10.05	10.03	10.33	11.13	11.27	11.48	11.82	12.24	12.74	13.40	14.02	15.17	18.57	16.15	16.50	Book Value per sh	17.50
11.36	11.58	13.17	13.25	13.40	13.52	15.57	15.70	15.82	15.96	16.12	16.23	16.30	16.35	16.40	17.43	17.65	17.75	Common Shs Outst'g C	18.00
26.4	27.4	22.7	21.6	19.8	21.0	17.6	21.7	20.8	19.7	18.5	19.1	25.6	26.4	22.2	29.7	29.8		Avg Ann'l P/E Ratio	23.0
1.39	1.46	1.23	1.15	1.19	1.40	1.13	1.36	1.32	1.11	.97	.96	1.34	1.43	1.20	1.61	1.50		Relative P/E Ratio	1.30
3.4%	3.5%	3.7%	3.7%	4.0%	4.7%	4.2%	4.0%	4.0%	3.7%	3.7%	3.3%	2.3%	2.2%	2.1%	1.6%	1.6%		Avg Ann'l Div'd Yield	2.1%
						102.7	102.1	110.4	114.8	117.1	126.0	132.9	130.8	138.1	134.6	142	150	Revenues ($mill)	165
						14.3	13.4	14.4	16.6	18.4	20.0	22.7	22.8	32.5	33.9	34.0	40.0	Net Profit ($mill)	48.0
						32.1%	32.7%	33.9%	34.1%	35.0%	34.5%	34.0%	32.7%	2.8%	2.8%	21.0%	21.0%	Income Tax Rate	21.0%
						6.8%	6.1%	3.4%	1.9%	1.7%	1.9%	2.7%	3.1%	1.4%	3.4%	2.0%	2.0%	AFUDC % to Net Profit	2.5%
						43.1%	42.3%	41.5%	40.4%	40.5%	39.4%	37.9%	37.5%	37.8%	41.5%	44.5%	42.5%	Long-Term Debt Ratio	38.5%
						55.8%	56.6%	57.4%	58.7%	58.8%	59.8%	61.5%	61.8%	61.6%	58.2%	55.5%	57.0%	Common Equity Ratio	61.0%
						310.5	312.5	316.5	321.4	335.8	345.4	355.4	370.7	404.1	556.7	515	515	Total Capital ($mill)	520
						405.9	422.2	435.2	446.5	465.4	481.9	517.8	557.2	618.5	705.7	720	735	Net Plant ($mill)	775
						5.7%	5.2%	5.4%	5.9%	6.3%	6.6%	7.1%	6.9%	8.9%	6.7%	8.0%	8.5%	Return on Total Cap'l	9.5%
						8.1%	7.5%	7.6%	8.7%	9.2%	9.6%	10.3%	9.8%	12.9%	10.4%	13.5%	13.5%	Return on Shr. Equity	15.0%
						8.2%	7.5%	7.8%	8.7%	9.3%	9.6%	10.3%	9.9%	13.0%	10.4%	13.5%	13.5%	Return on Com Equity	15.0%
						2.1%	1.0%	1.4%	2.4%	3.1%	3.5%	4.3%	3.8%	7.0%	5.4%	7.0%	7.0%	Retained to Com Eq	8.0%
						75%	87%	83%	73%	67%	63%	58%	62%	46%	48%	47%	49%	All Div'ds to Net Prof	47%

CAPITAL STRUCTURE as of 9/30/20
Total Debt $278.2 mill. Due in 5 Yrs $43.7 mill.
LT Debt $234.5 mill. LT Interest $7.2 mill.
(Total Interest coverage: 8.5x)
(42% of Cap'l)

Pension Assets-12/19 $80.4 mill.
Oblig. $100.9 mill.
Pfd Stock $2.4 mill. Pfd Div'd: $.1 mill.

Common Stock 17,469,410 shs.
as of 10/29/20

MARKET CAP: $1.3 billion (Mid-Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	3.7	2.2	5.3
Other	27.1	26.9	32.6
Current Assets	30.8	29.1	37.9
Accts Payable	19.3	23.3	24.9
Debt Due	55.8	27.2	43.7
Other	19.3	14.5	16.8
Current Liab.	94.4	65.0	85.4

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	2.0%	2.5%	2.0%
"Cash Flow"	6.0%	9.5%	5.5%
Earnings	8.0%	12.0%	7.0%
Dividends	2.5%	4.0%	5.5%
Book Value	4.5%	6.0%	1.5%

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	30.1	33.0	36.2	31.5	130.8
2018	31.2	34.9	38.7	33.3	138.1
2019	30.7	33.4	37.8	32.7	134.6
2020	31.8	35.3	39.9	35.0	142
2021	33.0	37.0	44.0	36.0	150

Calendar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	.27	.33	.46	.32	1.38
2018	.27	.52	.74	.43	1.96
2019	.39	.49	.66	.46	2.01
2020	.44	.55	.72	.49	2.20
2021	.45	.55	.73	.52	2.25

Calendar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.21125	.21125	.21125	.22375	.86
2018	.22375	.22375	.22375	.24	.91
2019	.24	.24	.24	.2562	.98
2020	.2562	.2562	.2562	.2725	
2021					

BUSINESS: Middlesex Water Company engages in the ownership and operation of regulated water utility systems in New Jersey, Delaware, and Pennsylvania. It also operates water and wastewater systems under contract on behalf of municipal and private clients in NJ and DE. Its Middlesex System provides water services to 61,000 retail customers, primarily in Middlesex County, New Jersey. In 2019, the Middlesex System accounted for 60% of operating revenues. At 12/31/19, the company had 352 employees. Incorporated: NJ. President, CEO, and Chairman: Dennis W. Doll. Officers & directors own 3.1% of the com. stock; BlackRock Inst. Trust Co., 7.7% (4/20 proxy). Add.: 485 C Route 1 South, Suite 400, Iselin, NJ 08830. Tel.: 732-634-1500. Int.: www.middlesexwater.com.

Middlesex Water reported better-than-expected bottom-line results in the third quarter. Notably, the company earned $0.72 a share, or 9% above the previous-year tally. The strong performance stemmed largely from lower taxes due to regulatory accounting changes, as well as higher operating income. Meanwhile, despite slightly missing our $42 million mark, revenues of nearly $40 million (up 6% year over year) were aided by increased residential and wholesale water consumption, along with a wider customer base in its Delaware system.

All in all, we now expect Middlesex Water to close out 2020 with revenues of $142 million (down from our previous call of $145 million) and share net of $2.20 (up from $2.15). For this year, modest top- and bottom-line growth is probably in the cards. Water consumption should stay elevated as personal hygiene remains a top priority. Assuming the economy gets back on track in the near term, we expect the reopening of businesses and resumed construction and industrial projects to boost wholesale consumption.

Infrastructure spending is apt to be robust through mid-decade. Specifically, Middlesex's Water For Tomorrow initiative has earmarked investment funds of $300 million that will be used to improve watermains, pipe systems, wastewater treatment facilities, and other vital infrastructure upgrades. To supplement its spending, we suspect management can pass along some of these costs to consumers via periodic regulator-approved rate hikes.

The stock etched a fresh high-water mark during the December interim. Based on our Timeliness Ranking System, Middlesex shares are slated as a top selection (1) for relative year-ahead price performance and, thus, ought to appeal to momentum accounts. On the other hand, we continue to recommend that subscribers with a long-term bent remain on the sidelines, as most of the growth we envision over the coming three to five years appears to already be factored into the current quotation. Moreover, even after recently increasing the quarterly payout by 6%, the dividend yield is subpar.

Nicholas P. Patrikis *January 8, 2021*

(A) Diluted earnings. Next earnings report due early February.
(B) Dividends historically paid in mid-Feb., May, Aug., and November. ■ Div'd reinvestment plan available.
(C) In millions.

Company's Financial Strength	B++
Stock's Price Stability	80
Price Growth Persistence	65
Earnings Predictability	80

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SJW GROUP NYSE-SJW

RECENT PRICE 69.04 | P/E RATIO 30.3 (Trailing: 34.2 Median: 21.0) | RELATIVE P/E RATIO 1.42 | DIV'D YLD 1.9% | VALUE LINE 1795

TIMELINESS — Suspended 5/4/18
SAFETY 3 New 4/22/11
TECHNICAL — Suspended 5/4/18
BETA .85 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$51-$120	$86 (25%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	95	(+40%)	10%
Low	65	(-5%)	1%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	72	76	62
to Sell	95	75	77
Hld's(000)	19448	19939	19827

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
	9.14	9.86	10.35	11.25	12.12	11.68	11.62	12.85	14.01	13.73	15.76	14.97	16.61	18.97	14.00	14.78	*19.30*	*20.00*	Revenues per sh	*21.65*
	1.89	2.21	2.38	2.30	2.44	2.21	2.38	2.80	2.97	2.90	4.42	3.86	4.76	5.24	3.29	3.67	*3.85*	*4.25*	"Cash Flow" per sh	*5.30*
	.87	1.12	1.19	1.04	1.08	.81	.84	1.11	1.18	1.12	2.54	1.85	2.57	2.86	1.82	1.35	*2.10*	*2.55*	Earnings per sh A	*3.65*
	.51	.53	.57	.61	.65	.66	.68	.69	.71	.73	.75	.78	.81	1.04	1.12	1.20	*1.28*	*1.36*	Div'd Decl'd per sh B■	*1.66*
	2.31	2.83	3.87	6.62	3.79	3.17	5.65	3.75	5.67	4.68	5.02	5.24	6.95	7.26	5.08	6.25	*5.25*	*5.75*	Cap'l Spending per sh	*6.50*
	10.11	10.72	12.48	12.90	13.99	13.68	13.75	14.20	14.71	15.92	17.75	18.83	20.61	22.57	31.31	31.27	*32.25*	*35.60*	Book Value per sh	*39.15*
	18.27	18.27	18.28	18.36	18.18	18.50	18.55	18.59	18.67	20.17	20.29	20.38	20.46	20.52	28.40	28.46	*29.00*	*29.50*	Common Shs Outst'g C	*30.00*
	19.6	19.7	23.5	33.4	26.2	28.7	29.1	21.2	20.4	24.3	11.2	16.6	15.7	18.8	32.7	47.8	*30.6*		Avg Ann'l P/E Ratio	*22.0*
	1.04	1.05	1.27	1.77	1.58	1.91	1.85	1.33	1.30	1.37	.59	.84	.82	.95	1.77	2.58	*1.54*		Relative P/E Ratio	*1.20*
	3.0%	2.4%	2.0%	1.7%	2.3%	2.6%	2.6%	2.9%	3.0%	2.7%	2.6%	2.5%	2.0%	1.9%	1.9%	1.9%	*2.0%*		Avg Ann'l Div'd Yield	*2.1%*
							215.6	239.0	261.5	276.9	319.7	305.1	339.7	389.2	397.7	420.5	*560*	*590*	Revenues ($mill)	*650*
							15.8	20.9	22.3	23.5	51.8	37.9	52.8	59.2	38.8	38.7	*61.0*	*75.0*	Net Profit ($mill)	*110*
							38.6%	41.1%	41.1%	38.7%	32.5%	38.1%	38.8%	36.7%	20.6%	25.3%	*21.0%*	*21.0%*	Income Tax Rate	*21.0%*
							--	--	--	--	--	--	--	--	2.0%	1.5%	*1.5%*	*1.5%*	AFUDC % to Net Profit	*1.5%*
							53.7%	56.6%	55.0%	51.1%	51.6%	49.8%	50.7%	48.2%	32.7%	59.1%	*58.0%*	*53.5%*	Long-Term Debt Ratio	*39.0%*
							46.3%	43.4%	45.0%	48.9%	48.4%	50.2%	49.3%	51.8%	67.3%	40.9%	*42.0%*	*46.5%*	Common Equity Ratio	*61.0%*
							550.7	607.9	610.2	656.2	744.5	764.6	855.0	894.3	1320.7	2173.6	*2235*	*2250*	Total Capital ($mill)	*1925*
							785.5	756.2	831.6	698.7	963.0	1036.8	1146.4	1239.3	1328.8	2208.5	*2300*	*2450*	Net Plant ($mill)	*2775*
							4.3%	4.9%	5.0%	5.0%	8.3%	6.3%	7.4%	7.9%	3.9%	2.5%	*3.5%*	*4.0%*	Return on Total Cap'l	*6.5%*
							6.2%	7.9%	8.1%	7.3%	14.4%	9.9%	12.5%	12.8%	4.4%	4.3%	*6.5%*	*7.0%*	Return on Shr. Equity	*9.5%*
							6.2%	7.9%	8.1%	7.3%	14.4%	9.9%	12.5%	12.8%	4.4%	4.3%	*6.5%*	*7.0%*	Return on Com Equity	*9.5%*
							1.2%	3.1%	3.3%	2.8%	10.2%	5.7%	8.6%	8.2%	1.8%	.5%	*2.5%*	*3.5%*	Retained to Com Eq	*5.0%*
							80%	61%	59%	62%	29%	42%	31%	36%	60%	88%	*61%*	*53%*	All Div'ds to Net Prof	*45%*

% TOT. RETURN 11/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	6.0	15.7
3 yr.	1.5	23.5
5 yr.	136.5	64.0

CAPITAL STRUCTURE as of 9/30/20
Total Debt $1379.5 mill. Due in 5 Yrs $22.4 mill.
LT Debt $1307.6 mill. LT Interest $50.0 mill.
(LT Interest Coverage: 4.9x)
(60% of Cap'l)

Pension Assets-12/19 $243.5 mill.
Oblig. $338.2 mill.

Pfd Stock None.
Common Stock 26,652,177 shs.

MARKET CAP: $2.0 billion (Mid Cap)

CURRENT POSITION ($MILL.)

	2018	2019	9/30/20
Cash Assets	420.7	17.9	20.2
Accts Receivable	19.2	36.3	51.4
Other	62.8	67.8	83.3
Current Assets	502.7	122.0	154.9
Accts Payable	24.9	34.9	33.8
Debt Due	--	22.3	71.9
Other	139.1	177.4	199.7
Current Liab.	164.0	234.6	305.4

ANNUAL RATES of change (per sh)

	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	3.0%	2.0%	*5.5%*
"Cash Flow"	6.0%	3.5%	*4.5%*
Earnings	7.5%	4.5%	*10.5%*
Dividends	6.0%	9.0%	*7.0%*
Book Value	7.5%	12.0%	*5.5%*

QUARTERLY REVENUES ($ mill.)

Calendar	Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	69.0	102.1	124.6	93.5	389.2
2018	75.0	99.1	124.9	98.7	397.7
2019	77.7	103.0	114.0	126.0	420.5
2020	115.8	147.2	166.9	*131.1*	*560*
2021	*120*	*150*	*175*	*145*	*590*

EARNINGS PER SHARE A

Calendar	Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	.18	.90	.94	.84	2.86
2018	.06	.62	.76	.38	1.82
2019	.21	.47	.33	.34	1.35
2020	.08	.69	.91	*.42*	*2.10*
2021	*.20*	*.75*	*.95*	*.65*	*2.55*

QUARTERLY DIVIDENDS PAID B■

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.2175	.2175	.2175	.3875	1.04
2018	.28	.28	.28	.28	1.12
2019	.30	.30	.30	.30	1.20
2020	.32	.32	.32	.32	
2021					

BUSINESS: SJW Group engages in the production, purchase, storage, purification, distribution, and retail sale of water. It provides water service to approximately 231,000 connections with a total population of roughly one million people in the San Jose area and 16,000 connections that reach about 49,000 residents in the region between San Antonio and Austin, Texas. The company merged with Connecticut Water (10/19) which provides service to approx. 138,000 connections with a total population of 450,000 people. Has 361 employees. Officers and directors own 8.3% of outstanding shares (3/20 proxy). Chairman & CEO: Richard Roth. Incorporated: California. Address: 110 West Taylor Street, San Jose, CA 95110. Telephone: (408) 279-7800. Internet: www.sjwater.com.

SJW Group reported solid third-quarter financial results. The regulated water utility posted revenues of $166 million, a jump of 46% year over year, and earnings of $0.91 per share, nearly triple the year-earlier tally in the September interim. Underpinning the impressive advance was approximately $37 million in new revenues associated with the CTWS merger, roughly $5 million linked to water rate increases and higher customer usage, and about $10 million in reserve revenues recognized from previous years. Moreover, COVID-19-related disruptions that hampered results in previous periods have largely subsided, and merger-related expenses have notably waned.

Our 2020 share-profit forecast sits a nickel above management's upper guidance range. Our slightly-more-optimistic call for earnings of $2.10 per share stems from the recent outperformance, as well as improving post-merger operating metrics. Meanwhile, we are adding $5 million to our top-line estimate, to $560 million. For 2021, we currently look for revenues and earnings to expand 5% and 21%, respectively.

SJW Group is well positioned for long-term growth, in our view. For one, its recently bolstered geographic footprint now spans four states, which augurs well for an expanding customer base and increased operational synergies. Too, the top line ought to get a boost from the implementation of periodic rate hikes. Meanwhile, we think aggressive capital investment to replace and upgrade aging infrastructure, such as watermains, pipe systems, and treatment facilities is likely on tap. Lastly, an improving economic backdrop and a renewed focus on personal hygiene from the general public should support higher consumer water consumption in the coming years.

Strong business prospects aside, we are hesitant to recommend the stock at recent levels. Unranked SJW shares have risen about 10% in value since our October review, and are currently trading inside our 3- to 5-year Target Price Range. The dividend yield is merely average, as well. Thus, we suggest interested subscribers remain on the sidelines until a better entry point is available.

Nicholas P. Patrikis *January 8, 2021*

Company's Financial Strength	B+
Stock's Price Stability	75
Price Growth Persistence	70
Earnings Predictability	45

(A) Diluted earnings. Excludes nonrecurring losses: '04, $3.78; '05, $1.09; '06, $16.36; '08, $1.22; '10, $0.46. GAAP accounting as of 2013. Next earnings report due early Feb. Quarterly egs. may not add due to rounding. (B) Dividends historically paid in early March, June, September, and December. ■ Div'd reinvestment plan available. (C) In millions. (D) Paid special dividend of $0.17 per share on 11/17. (E) Suspended due to recent CTWS merger.

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YORK WATER NDQ-YORW

RECENT PRICE 47.16 | P/E RATIO 36.3 (Trailing: 37.7 / Median: 26.0) | RELATIVE P/E RATIO 1.70 | DIV'D YLD 1.6% | VALUE LINE 1796

TIMELINESS 2 Raised 5/29/20
SAFETY 3 Lowered 7/17/15
TECHNICAL 2 Raised 1/1/21
BETA .80 (1.00 = Market)

18-Month Target Price Range

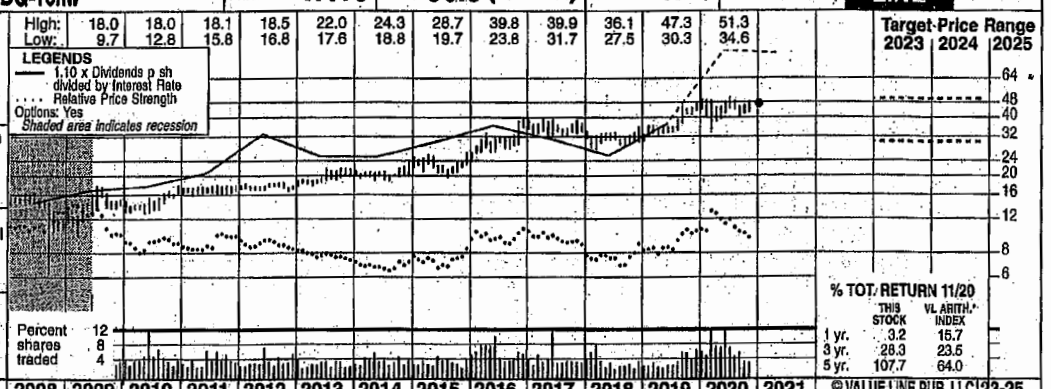
Low-High	Midpoint (% to Mid)
$37-$78	$58 (20%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	50	(+5%)	3%
Low	30	(-35%)	-8%

Institutional Decisions

	1Q2020	2Q2020	3Q2020
to Buy	61	59	46
to Sell	52	48	53
Hld's(000)	5387	5479	5302



% TOT. RETURN 11/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	3.2	15.7
3 yr.	28.3	23.5
5 yr.	107.7	64.0

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
2.18	2.58	2.56	2.79	2.89	2.95	3.07	3.18	3.21	3.27	3.58	3.68	3.70	3.77	3.74	3.96	4.10	4.20	Revenues per sh	5.10
.65	.79	.77	.86	.88	.95	1.07	1.09	1.12	1.19	1.36	1.45	1.42	1.53	1.58	1.70	1.90	1.95	"Cash Flow" per sh	2.40
.49	.56	.58	.57	.57	.64	.71	.71	.72	.75	.89	.97	.92	1.01	1.04	1.11	1.30	1.35	Earnings per sh [A]	1.60
.39	.42	.45	.48	.49	.51	.52	.53	.54	.55	.57	.60	.63	.65	.67	.70	.73	.78	Div'd Decl'd per sh [B]	.95
2.50	1.69	1.85	1.69	2.17	1.18	.83	.74	.94	.76	1.10	1.11	1.03	1.95	1.95	.16	.85	1.35	Cap'l Spending per sh	1.85
4.65	4.85	5.84	5.97	6.14	6.92	7.19	7.45	7.73	7.98	8.15	8.51	8.88	9.28	9.75	10.31	11.15	11.60	Book Value per sh	12.50
10.33	10.40	11.20	11.27	11.37	12.56	12.69	12.79	12.92	12.98	12.83	12.81	12.85	12.87	12.94	13.02	13.00	12.95	Common Shs Outst'g [C]	12.80
25.7	26.3	31.2	30.3	24.6	21.9	20.7	23.9	24.4	26.3	23.1	23.5	32.8	34.6	30.3	33.8	34.9		Avg Ann'l P/E Ratio	25.0
1.36	1.40	1.68	1.61	1.48	1.46	1.32	1.50	1.55	1.48	1.22	1.18	1.72	1.74	1.64	1.83	1.76		Relative P/E Ratio	1.40
3.1%	2.9%	2.5%	2.8%	3.5%	3.6%	3.5%	3.1%	3.1%	2.8%	2.8%	2.6%	2.1%	1.9%	2.1%	1.9%	1.6%		Avg Ann'l Div'd Yield	2.4%
						39.0	40.6	41.4	42.4	45.9	47.1	47.6	48.6	48.4	51.6	53.5	54.5	Revenues ($mill)	65.0
						8.9	9.1	9.3	9.7	11.5	12.5	11.8	13.0	13.4	14.4	17.0	17.5	Net Profit ($mill)	20.5
						38.5%	35.3%	37.6%	37.6%	29.8%	27.5%	31.3%	25.9%	15.7%	13.5%	18.5%	21.0%	Income Tax Rate	21.0%
						1.2%	1.1%	1.1%	.8%	1.8%	1.6%	1.9%	6.7%	1.7%	2.5%	1.5%	1.5%	AFUDC % to Net Profit	1.5%
						46.3%	47.1%	46.0%	45.1%	44.8%	44.4%	42.6%	43.0%	42.5%	41.3%	44.0%	40.0%	Long-Term Debt Ratio	36.0%
						51.7%	52.9%	54.0%	54.9%	55.2%	55.6%	57.4%	57.0%	57.5%	58.7%	56.0%	60.0%	Common Equity Ratio	64.0%
						176.4	180.2	184.8	188.4	189.4	196.3	198.7	209.5	219.5	228.7	260	250	Total Capital ($mill)	250
						228.4	233.0	240.3	244.2	253.2	261.4	270.9	288.8	299.2	313.2	315	320	Net Plant ($mill)	335
						6.5%	6.4%	6.4%	6.5%	7.4%	7.6%	7.2%	7.5%	7.3%	7.4%	7.5%	8.0%	Return on Total Cap'l	9.0%
						9.8%	9.5%	9.3%	9.3%	11.0%	11.5%	10.4%	10.9%	10.6%	10.7%	11.5%	11.5%	Return on Shr. Equity	13.0%
						9.8%	9.5%	9.3%	9.3%	11.0%	11.5%	10.4%	10.9%	10.6%	10.7%	11.5%	11.5%	Return on Com Equity	13.0%
						2.7%	2.5%	2.4%	2.4%	3.8%	4.4%	3.4%	4.0%	3.8%	4.0%	5.0%	5.0%	Retained to Com Eq	5.0%
						72%	73%	74%	74%	64%	62%	67%	63%	64%	62%	56%	58%	All Div'ds to Net Prof	59%

CAPITAL STRUCTURE as of 9/30/20
Total Debt $116.8 mill. Due in 5 Yrs $42.5 mill.
LT Debt $116.8 mill. LT Interest $5.5 mill.
(45% of Cap'l)

Pension Assets 12/19 $49.3 mill.
Oblig. $47.3 mill.

Pfd Stock None

Common Stock 13,049,237 shs.

MARKET CAP: $625 million (Small Cap)

CURRENT POSITION ($MILL.)	2018	2019	9/30/20
Cash Assets	--	--	10.9
Accounts Receivable	4.8	4.4	5.2
Inventory (Avg. Cost)	.9	1.0	1.2
Other	3.3	4.0	4.5
Current Assets	9.0	9.4	21.8
Accts Payable	3.0	3.4	6.8
Debt Due	1.0	6.5	--
Other	6.8	5.3	5.1
Current Liab.	10.8	15.2	11.9

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	3.0%	2.5%	5.0%
"Cash Flow"	6.0%	5.5%	7.0%
Earnings	6.0%	6.0%	7.0%
Dividends	3.0%	4.0%	6.0%
Book Value	4.5%	4.0%	4.0%

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	11.3	12.3	12.7	12.3	48.6
2018	11.6	12.0	12.7	12.1	48.4
2019	11.8	13.0	13.7	13.1	51.6
2020	12.9	13.3	14.3	13.0	53.5
2021	13.0	13.5	14.5	13.5	54.5

Calendar	EARNINGS PER SHARE [A] Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	.20	.23	.31	.27	1.01
2018	.20	.26	.29	.29	1.04
2019	.22	.28	.35	.26	1.11
2020	.31	.32	.36	.31	1.30
2021	.28	.35	.37	.35	1.35

Calendar	QUARTERLY DIVIDENDS PAID [B] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.1602	.1602	.1602	.1666	.647
2018	.1666	.1666	.1666	.1733	.673
2019	.1733	.1733	.1733	.1802	.70
2020	.1802	.1802	.1802	.1874	
2021					

BUSINESS: The York Water Company is the oldest investor-owned regulated water utility in the United States. It has operated continuously since 1816. As of December 31, 2019, the company's average daily availability was 35.4 million gallons and its service territory had an estimated population of 201,000. Has more than 71,400 customers. Residential customers accounted for 65% of 2019 revenues; commercial and industrial (28%); other (7%). It also provides sewer billing services. Incorporated: PA. York had 108 full-time employees at 12/31/19. President/Chief Executive Officer: J.T. Hand. Officers/directors own 1.2% of the common stock (3/20 proxy). Address: 130 East Market Street, York, Pennsylvania 17401. Telephone: (717) 845-3601. Internet: www.yorkwater.com.

York Water raised its quarterly dividend payment for the 24th-consecutive year. The distribution was increased 4%, to $0.1874 per share, equating to an annual return of about 1.6%. Though the water utility has historically been a consistent income generator, given several years of share-price advances, conservative yield-seeking investors might be better suited elsewhere at this juncture.

We think York delivered strong top- and bottom-line growth in 2020, which will likely be followed up by moderate expansion in 2021. The company posted revenues of $14.3 million and earnings of $0.36 a share in the September period, improving decently on a year-over-year basis and falling relatively in line with expectations. Fourth-quarter results were probably solid, too, driven by higher household water consumption and an expanding customer base. For this year, we are reiterating our calls for low single-digit revenue and earnings growth, to $54.5 million and $1.35 per share, respectively.

Long-term business prospects are bright, and should be accompanied by aggressive spending on infrastructure upgrades. Since our previous review, management invested nearly $7 million on a standpipe and other construction projects, with an estimated $12 million allocation likely tapped in the December period. Over the coming years, as the company's water delivery infrastructure ages and its customer base expands, York ought to spend heavily on pipe replacements, wastewater treatment facilities, service lines, and pumping stations. Overall, York should be able to recoup most of these investments via increased customer rates through its Distribution Systems Improvement Charge program, which requires approval from Pennsylvania regulators.

The stock price is hovering around recently etched all-time highs. Over the coming six to 12 months, YORW shares are pegged to outpace the broader market averages, thus ought to appeal to subscribers with a short-term horizon. On the other hand, 3- to 5-year total return potential is unenticing at recent levels. In fact, long-time investors might want to consider booking some profits at these elevated valuations.

Nicholas P. Patrikis *January 8, 2021*

(A) Diluted earnings. Next earnings report due early February.
(B) Dividends historically paid in late February, June, September, and December.
(C) In millions, adjusted for split.

Company's Financial Strength	B+
Stock's Price Stability	75
Price Growth Persistence	65
Earnings Predictability	100

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Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Township of Willistown, PA
Financial Summary

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Greenfield, Wisconsin 53228
Office Telephone: 414-529-5755
J. Weinert's Cell: 414-698-8371
J. Weinert's E-Mail: weinertj@auswest.net

Willistown Township, Pennsylvania
Willistown Township Wastewater

	2016	2017	2018	2019	2020
Assets					
Current Assets					
Cash and Cash Equivalents	2,192,680	2,478,889	4,914,148	4,669,115	
Due from Other Funds	344,862	36,016	36,016	36,016	
Prepaid Expenses	835,253	33,055	33,055	33,055	
Account Receivables	149,681	814,408	862,127	888,077	
Total Current Assets	**3,522,476**	**3,362,368**	**5,845,346**	**5,626,263**	-
	3,177,614	**3,326,352**	**5,809,330**	**5,590,247**	-
CA Lessdue from other funds / Revenues	**167.08%**	**164.96%**	**288.79%**	**252.79%**	**0.00%**
Noncurrent Assets					
Capital Assets					
Property, Plant, and Equipment	7,652,651	7,976,084	7,799,427	8,673,707	
Accumulated Depreciation	(2,823,990)	(3,317,549)	(3,309,006)	(3,786,175)	
Total Noncurrent Assets	**4,828,661**	**4,658,535**	**4,490,421**	**4,887,532**	-
Total Assets	**8,351,137**	**8,020,903**	**10,335,767**	**10,513,795**	-
Liabilities					
Current Liabilities					
Accounts Payable	190,789	756,828	133,964	214,225	
Note Payable	250,100	258,300	262,400	266,500	
Due to fiduciary funds	20,433	5,129	5,129	5,129	
Due to other funds	926,964	971,939	420,504	420,504	
Unearned Revenues	11,665	1,900	1,900	1,900	
Accrued Interest	6,170	5,857	5,534	5,316	
Total Non-current Laibilities	**1,406,121**	**1,999,953**	**829,431**	**913,574**	-
CL less Notes Payable	**1,156,021**	**1,741,653**	**567,031**	**647,074**	-
CL / Revenues	**60.78%**	**86.37%**	**28.19%**	**29.26%**	**0.00%**
Noncurrent Liabilities					
Notes Payable	4,952,947	4,681,223	4,405,399	4,125,475	
Total Noncurrent Liabilities	**4,952,947**	**4,681,223**	**4,405,399**	**4,125,475**	-
Total Liabilities	**6,359,068**	**6,681,176**	**5,234,830**	**5,039,049**	-
Net Position					
Net investment in Capital Assets	207,230	(51,993)	54,423	832,961	
Restricted	-	-	-	-	
Unrestricted	1,784,839	1,391,720	5,046,514	4,641,785	
Total Net Position	**1,992,069**	**1,339,727**	**5,100,937**	**5,474,746**	-
Total Liabilities and Net Position	**8,351,137**	**8,020,903**	**10,335,767**	**10,513,795**	-
Statement of Revenues. Expenses, and Change in Net Position					
Operating Revenues					
Charge for Services					
Operating Service Charges	1,901,840	2,016,468	2,011,578	2,211,380	2,582,213
Total Operating Revenues	**1,901,840**	**2,016,468**	**2,011,578**	**2,211,380**	**2,582,213**
Operating Expenses					
Sewage treatment	701,513	911,624	622,865	1,008,250	2,164,639
Operations & Maintenance	2,987,201	590,685	693,045	639,049	-
General & Administrative	130,043	653,639	107,398	229,347	-
Depreciation & Amortization	-	-	-	-	-
Total Operating Expenses	**3,818,757**	**2,155,948**	**1,423,308**	**1,876,646**	**2,164,639**
Depreciation'	481,692	493,559	505,633	477,169	477,169
Operating Income (loss)	**(2,398,609)**	**(633,039)**	**82,637**	**(142,435)**	**(59,595)**
Non-Opertating Revenues (Expenses)					
Interest Income	11,416	9,983	21,167	49,269	49,269
Loss on disposal of property	-	-	(175,813)		
Interest expense	(143,929)	(134,343)	(126,830)	(119,186)	(119,186)
Other	152,687	70,175	3,959,905	586,163	586,163
Total Non-Opertating Revenues (Expenses)	**20,174**	**(54,185)**	**3,678,429**	**516,246**	**516,246**
Income (Loss) Before Capital Contributions	**(2,378,435)**	**(687,224)**	**3,761,066**	**373,811**	**456,651**
Other Financing Sources (Uses)					
Capital Contribution	153,209	37,301	144	-	-
Operating transfers out		(2,439)			
Operating transfers in					
Total Other Financing sources (Uses)	**153,209**	**34,862**	**144**	-	-
Change in Net Position	**(2,225,226)**	**(652,362)**	**3,761,210**	**373,811**	**456,651**
Net Position at Beginning of Year	4,217,295	1,992,069	1,339,727	5,100,937	5,100,937
Net Position at end of Year	**1,992,069**	**1,339,707**	**5,100,937**	**5,474,748**	**5,557,588**

Revenues	2,582,213
	2020 Budget
Sewer Operations	
Salaries & Wages	168,926
Employee 8enefits	88,228
Materials & Services	1,404,366
Utilities	83,500
Vehicles Repair & Fuels	
Insurance	
Debt Service	
Capital Expenditures	394,619
Interfund Transfers	25,000
Total sanitary Sewer Operations	2,164,639

Willistown Township - Business-type Activities	Year	Begin Plant Balance	Increases	Decreases	End Balance	Begin Reserve Balance	Increases	Decreases	End Reserve Balance	Net Plant
Capital assets being depreciation										
Sewer collection system	2016	7,652,651	-	-	7,652,651	(2,342,298)	(481,692)		(2,823,990)	4,828,661
	2017	7,652,651	323,433	-	7,976,084	(2,823,990)	(493,559)		(3,317,549)	4,658,535
	2018	7,976,084	513,332	(689,989)	7,799,427	(3,317,549)	(505,633)	(514,176)	(3,309,006)	4,490,421
	2019	7,799,427	-	-	7,799,427	(3,309,006)	(481,692)		(3,790,698)	4,008,729
	2020	7,799,427	1,355,972	(481,692)	8,673,707	(3,790,698)	(477,169)	481,692	(3,786,175)	4,887,532

S:\water industry\Willistown Township\Willistown Wastewater System Valuation as of 6-27-2021

Revenues	2,582,213
	2020 Budget
Sewer Operations	
Salaries & Wages	168,926
Employee Benefits	88,228
Materials & Services	1,404,366
Utilities	83,500
Vehicles Repair & Fuels	
Insurance	
Debt Service	
Capital Expenditures	394,619
Interfund Transfers	25,000
Total sanitary Sewer Operations	2,164,639

Projections

See Rate Increase Schedule on tab: DCF Investor Owned Cells: L263:BS263

Inflation since 3.0%

				Forecast Parameters for Periods 1-5	6-15	6-15	16-20	21-26	27-33	34-40	40-46	47-53	54-60
Revenue Forecast	2,582,213	1.03	2,659,679	1-5	6-15	16-19	20-26	27-33	34-40	40-46	47-53	54-60	
Annual Subscriber Growth	Annual Subscriber Growth: All Periods 0.0%			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Periodic Subscriber Growth	Periodic Customer Growth: All period 0.0%			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Growth	0%												
Period every ? years	5												
	2021		2021										
Revenues	2,582,213	1.030	2,659,679	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Expense Level 1: Salaries, Wages & Benefits	257,154	1.030	264,869	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 2: Materials & Supplies	1,404,366	1.030	1,446,497	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 3: Utilities	83,500	1.030	86,005	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 4: Not Used	-	1.030	-	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 5: Not Used	-	1.030	-	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 6: Not Used	-	1.030	-	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Expense Level 7: Depreciation	477,169	1.030	491,484										
Total Expenses	2,222,189		2,288,855										
check													
Operating Income	360,024		370,824										
			1,797,371										
Working Capital		Use											
Current Assets	0.00%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%
Current Liabilities	0.00%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%	22.6%

Township of Willistown, PA's Wastewater System

Appraisal Work Papers
As of January 20, 2021

Township of Willistown, PA
Financials 2016 through 2019
Budget 2019
Rates and Customers

AUS Consultants
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8555 West Forest Home Avenue
Greenfield, Wisconsin 53228
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J. Weinert's Cell: 414-698-8371
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WILLISTOWN TOWNSHIP

ANNUAL FINANCIAL REPORT

Year Ended December 31, 2016

Maillie

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Certified Public Accountants and Business Consultants

WILLISTOWN TOWNSHIP
STATEMENT OF NET POSITION
PROPRIETARY FUNDS
DECEMBER 31, 2016

	Sewer Fund
ASSETS	
CURRENT ASSETS	
Cash and cash equivalents	$ 2,192,680
Due from other funds	344,862
Accounts receivable	835,253
Prepaid expenses	149,681
TOTAL CURRENT ASSETS	3,522,476
NONCURRENT ASSETS	
Sewer collection system	7,652,651
Less: accumulated depreciation	(2,823,990)
TOTAL NONCURRENT ASSETS	4,828,661
TOTAL ASSETS	$ 8,351,137
LIABILITIES AND NET POSITION	
LIABILITIES	
CURRENT LIABILITIES	
Accounts payable	$ 190,789
Bonds payable	250,100
Due to fiduciary funds	20,433
Due to other funds	926,964
Unearned revenue	11,665
Accrued Interest	6,170
TOTAL CURRENT LIABILITIES	1,406,121
NONCURRENT LIABILITIES	
Bonds payable	4,952,947
TOTAL LIABILITIES	6,359,068
NET POSITION	
Net investment in capital assets	207,230
Unrestricted	1,784,839
TOTAL NET POSITION	1,992,069
TOTAL LIABILITIES AND NET POSITION	$ 8,351,137

See accompanying notes to the basic financial statements.

WILLISTOWN TOWNSHIP
STATEMENT OF REVENUES, EXPENSES AND
CHANGES IN NET POSITION
PROPRIETARY FUNDS
YEAR ENDED DECEMBER 31, 2016

	Sewer Fund
OPERATING REVENUES	
Sewer charges	$ 1,901,840
OPERATING EXPENSES	
Sewage treatment	701,513
Operations and maintenance	2,987,201
General and administrative	130,043
Depreciation and amortization	481,692
TOTAL OPERATING EXPENSES	4,300,449
OPERATING LOSS	(2,398,609)
NONOPERATING REVENUES (EXPENSES)	
Investment income	11,416
Interest expense	(143,929)
Other	152,687
TOTAL NONOPERATING EXPENSES	20,174
LOSS BEFORE CAPITAL CONTRIBUTIONS	(2,378,435)
CAPITAL CONTRIBUTIONS	153,209
CHANGE IN NET POSITION	(2,225,226)
NET POSITION AT BEGINNING OF YEAR	4,217,295
NET POSITION AT END OF YEAR	$ 1,992,069

See accompanying notes to the basic financial statements.

WILLISTOWN TOWNSHIP
STATEMENT OF CASH FLOWS
PROPRIETARY FUNDS
YEAR ENDED DECEMBER 31, 2016

	Sewer Fund
CASH FLOWS FROM OPERATING ACTIVITIES	
Cash received from customers	$ 1,887,324
Cash payments to employees for services	(214,214)
Cash payments to vendors for goods and services	(3,004,190)
NET CASH USED BY OPERATING ACTIVITIES	(1,331,080)
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES	
Bond principal payments	(255,324)
Interest paid	(144,332)
State reimbursements	152,687
Tapping fees	153,209
NET CASH USED BY CAPITAL AND RELATED FINANCING ACTIVITIES	(93,760)
CASH FLOWS FROM INVESTING ACTIVITIES	
Investment earnings	11,416
NET DECREASE IN CASH AND CASH EQUIVALENTS	(1,413,424)
CASH AND CASH EQUIVALENTS AT BEGINNING OF YEAR	3,606,104
CASH AND CASH EQUIVALENTS AT END OF YEAR	$ 2,192,680
RECONCILIATION OF OPERATING LOSS TO NET CASH USED BY OPERATING ACTIVITIES	
Operating loss	$ (2,398,609)
Adjustment for noncash charges to operations	
Depreciation and amortization	481,692
Changes in assets and liabilities	
Increase in accounts receivable	(14,516)
Increase in prepaid expense	(19,985)
Increase in accounts payable	142,880
Increase in due to/from other funds, net	477,458
NET CASH USED BY OPERATING ACTIVITIES	$ (1,331,080)

See accompanying notes to the basic financial statements.

NOTE C - CAPITAL ASSETS (Continued)

	Balance January 1, 2016	Increases	Decreases	Balance December 31, 2016
BUSINESS-TYPE ACTIVITIES				
Capital assets being depreciated				
Sewer collection system	$ 7,652,651	$ -	$ -	$ 7,652,651
Accumulated depreciation				
Sewer collection system	(2,342,298)	(481,692)	-	(2,823,990)
BUSINESS-TYPE ACTIVITIES CAPITAL ASSETS, net	$ 5,310,353	$ (481,692)	$ -	$ 4,828,661

Depreciation expense was charged to functions/programs of the Township as follows:

GOVERNMENTAL ACTIVITIES	
General government	$ 136,227
Public works	80,502
Police	70,649
Parks and recreation	24,772
	$ 312,150

All of the depreciation expense in business-type activities was charged to the sewer fund.

NOTE D - INTERFUND RECEIVABLES, PAYABLES AND TRANSFERS

Balances due to/from other funds at December 31, 2016 consist of the following:

	Due from Other Funds	Due to Other Funds
GOVERNMENTAL FUNDS		
General Fund	$ 842,770	$ 81,000
State Highway Fund	-	199,064
Capital Reserve Fund	81,000	61,604
BUSINESS-TYPE ACTIVITIES		
Sewer Fund	344,862	926,964
	$ 1,268,632	$ 1,268,632

WILLISTOWN TOWNSHIP

ANNUAL FINANCIAL REPORT

Year Ended December 31, 2017

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WILLISTOWN TOWNSHIP
STATEMENT OF NET POSITION
PROPRIETARY FUNDS
DECEMBER 31, 2017

	Sewer Fund
ASSETS	
CURRENT ASSETS	
Cash and cash equivalents	$ 2,478,889
Due from other funds	36,016
Accounts receivable	814,408
Prepaid expenses	33,055
TOTAL CURRENT ASSETS	3,362,368
NONCURRENT ASSETS	
Sewer collection system	7,976,084
Less: accumulated depreciation	(3,317,549)
TOTAL NONCURRENT ASSETS	4,658,535
TOTAL ASSETS	$ 8,020,903
LIABILITIES AND NET POSITION	
LIABILITIES	
CURRENT LIABILITIES	
Accounts payable	$ 756,828
Bonds payable	258,300
Due to fiduciary funds	5,129
Due to other funds	971,939
Unearned revenue	1,900
Accrued Interest	5,857
TOTAL CURRENT LIABILITIES	1,999,953
NONCURRENT LIABILITIES	
Bonds payable	4,681,223
TOTAL LIABILITIES	6,681,176
NET POSITION	
Net investment in capital assets	(51,993)
Unrestricted	1,391,720
TOTAL NET POSITION	1,339,727
TOTAL LIABILITIES AND NET POSITION	$ 8,020,903

See accompanying notes to the basic financial statements.

WILLISTOWN TOWNSHIP

STATEMENT OF REVENUES, EXPENSES AND
CHANGES IN NET POSITION
PROPRIETARY FUNDS
YEAR ENDED DECEMBER 31, 2017

	Sewer Fund
OPERATING REVENUES	
Sewer charges	$ 2,016,468
OPERATING EXPENSES	
Sewage treatment	911,624
Operations and maintenance	590,665
General and administrative	653,639
Depreciation and amortization	493,559
TOTAL OPERATING EXPENSES	2,649,487
OPERATING LOSS	(633,019)
NONOPERATING REVENUES (EXPENSES)	
Investment income	9,983
Interest expense	(134,343)
Other	70,175
TOTAL NONOPERATING EXPENSES	(54,185)
LOSS BEFORE CAPITAL CONTRIBUTIONS AND TRANSFERS	(687,204)
CAPITAL CONTRIBUTIONS	37,301
TRANSFERS OUT	(2,439)
CHANGE IN NET POSITION	(652,342)
NET POSITION AT BEGINNING OF YEAR	1,992,069
NET POSITION AT END OF YEAR	$ 1,339,727

See accompanying notes to the basic financial statements.

WILLISTOWN TOWNSHIP
STATEMENT OF CASH FLOWS
PROPRIETARY FUNDS
YEAR ENDED DECEMBER 31, 2017

	Sewer Fund
CASH FLOWS FROM OPERATING ACTIVITIES	
Cash received from customers	$ 2,027,548
Cash payments to employees for services	(262,127)
Cash payments to vendors for goods and services	(872,619)
NET CASH PROVIDED BY OPERATING ACTIVITIES	892,802
CASH FLOWS FROM NONCAPITAL AND RELATED FINANCING ACTIVITIES	
Interfund transfers	(2,439)
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES	
Purchases of capital assets	(323,433)
Bond principal payments	(263,524)
Interest paid	(134,656)
State reimbursements	70,175
Tapping fees	37,301
NET CASH USED BY CAPITAL AND RELATED FINANCING ACTIVITIES	(614,137)
CASH FLOWS FROM INVESTING ACTIVITIES	
Investment earnings	9,983
NET INCREASE IN CASH AND CASH EQUIVALENTS	286,209
CASH AND CASH EQUIVALENTS AT BEGINNING OF YEAR	2,192,680
CASH AND CASH EQUIVALENTS AT END OF YEAR	$ 2,478,889
RECONCILIATION OF OPERATING LOSS TO NET CASH PROVIDED BY OPERATING ACTIVITIES	
Operating loss	$ (633,019)
Adjustment for noncash charges to operations	
Depreciation and amortization	493,559
Changes in assets and liabilities	
Decrease in accounts receivable	20,845
Decrease in prepaid expense	116,626
Increase in accounts payable	566,039
Decrease in escrows payable	(9,765)
Decrease in due to/from other funds, net	338,517
NET CASH PROVIDED BY OPERATING ACTIVITIES	$ 892,802

See accompanying notes to the basic financial statements.

NOTE C - CAPITAL ASSETS (Continued)

	Balance January 1, 2017	Increases	Decreases	Balance December 31, 2017
BUSINESS-TYPE ACTIVITIES				
Capital assets being depreciated				
Sewer collection system	$ 7,652,651	$ 323,433	$ -	$ 7,976,084
Accumulated depreciation				
Sewer collection system	(2,823,990)	(493,559)	-	(3,317,549)
BUSINESS-TYPE ACTIVITIES CAPITAL ASSETS, net	$ 4,828,661	$ (170,126)	$ -	$ 4,658,535

Depreciation expense was charged to functions/programs of the Township as follows:

GOVERNMENTAL ACTIVITIES	
General government	$ 51,554
Public works	86,113
Police	178,737
Parks and recreation	26,555
	$ 342,959

All of the depreciation expense in business-type activities was charged to the sewer fund.

NOTE D - INTERFUND RECEIVABLES, PAYABLES AND TRANSFERS

Balances due to/from other funds at December 31, 2017 consist of the following:

	Due from Other Funds	Due to Other Funds
GOVERNMENTAL FUNDS		
General Fund	$ 1,213,810	$ 117,016
State Highway Fund	-	199,064
Capital Reserve Fund	81,000	42,807
BUSINESS-TYPE ACTIVITIES		
Sewer Fund	36,016	971,939
	$ 1,330,826	$ 1,330,826

WILLISTOWN TOWNSHIP

ANNUAL FINANCIAL REPORT

Year Ended December 31, 2018

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WILLISTOWN TOWNSHIP
STATEMENT OF NET POSITION
PROPRIETARY FUNDS
DECEMBER 31, 2018

	Sewer Fund
ASSETS	
CURRENT ASSETS	
Cash and cash equivalents	$ 4,914,148
Due from other funds	36,016
Accounts receivable	862,127
Prepaid expenses	33,055
TOTAL CURRENT ASSETS	5,845,346
NONCURRENT ASSETS	
Sewer collection system	7,799,427
Less accumulated depreciation	(3,309,006)
TOTAL NONCURRENT ASSETS	4,490,421
TOTAL ASSETS	$ 10,335,767
LIABILITIES AND NET POSITION	
LIABILITIES	
CURRENT LIABILITIES	
Accounts payable	$ 133,964
Bonds payable	262,400
Due to fiduciary funds	5,129
Due to other funds	420,504
Unearned revenue	1,900
Accrued Interest	5,534
TOTAL CURRENT LIABILITIES	829,431
NONCURRENT LIABILITIES	
Bonds payable	4,405,399
TOTAL LIABILITIES	5,234,830
NET POSITION	
Net investment in capital assets	54,423
Unrestricted	5,046,514
TOTAL NET POSITION	5,100,937
TOTAL LIABILITIES AND NET POSITION	$ 10,335,767

See accompanying notes to the basic financial statements.

WILLISTOWN TOWNSHIP

STATEMENT OF REVENUES, EXPENSES AND
CHANGES IN NET POSITION
PROPRIETARY FUNDS
YEAR ENDED DECEMBER 31, 2018

	Sewer Fund
OPERATING REVENUES	
Sewer charges	$ 2,011,578
OPERATING EXPENSES	
Sewage treatment	622,865
Operations and maintenance	693,045
General and administrative	107,398
Depreciation and amortization	505,633
TOTAL OPERATING EXPENSES	1,928,941
OPERATING INCOME	82,637
NONOPERATING REVENUES (EXPENSES)	
Investment income	21,167
Loss on disposal of property	(175,813)
Interest expense	(126,830)
Other	3,959,905
TOTAL NONOPERATING EXPENSES	3,678,429
INCOME BEFORE TRANSFERS	3,761,066
TRANSFERS IN	144
CHANGE IN NET POSITION	3,761,210
NET POSITION AT BEGINNING OF YEAR	1,339,727
NET POSITION AT END OF YEAR	$ 5,100,937

See accompanying notes to the basic financial statements.

WILLISTOWN TOWNSHIP
STATEMENT OF CASH FLOWS
PROPRIETARY FUNDS
YEAR ENDED DECEMBER 31, 2018

	Sewer Fund
CASH FLOWS FROM OPERATING ACTIVITIES	
Cash received from customers	$ 1,963,859
Cash payments to employees for services	(306,022)
Cash payments to vendors for goods and services	(2,291,585)
NET CASH USED BY OPERATING ACTIVITIES	(633,748)
CASH FLOWS FROM NONCAPITAL AND RELATED FINANCING ACTIVITIES	
Interfund transfers	144
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES	
Purchases of capital assets	(513,332)
Bond principal payments	(271,724)
Interest paid	(127,153)
State reimbursements and other	3,959,905
NET CASH PROVIDED BY CAPITAL AND RELATED FINANCING ACTIVITIES	3,047,696
CASH FLOWS FROM INVESTING ACTIVITIES	
Investment earnings	21,167
NET INCREASE IN CASH AND CASH EQUIVALENTS	2,435,259
CASH AND CASH EQUIVALENTS AT BEGINNING OF YEAR	2,478,889
CASH AND CASH EQUIVALENTS AT END OF YEAR	$ 4,914,148
RECONCILIATION OF OPERATING INCOME TO NET CASH PROVIDED BY OPERATING ACTIVITIES	
Operating income	$ 82,637
Adjustment for noncash charges to operations	
Depreciation and amortization	505,633
Changes in assets and liabilities	
Decrease in accounts receivable	(47,719)
Increase in accounts payable	(622,864)
Decrease in due to/from other funds, net	(551,435)
NET CASH USED BY OPERATING ACTIVITIES	$ (633,748)

See accompanying notes to the basic financial statements.

NOTE C - CAPITAL ASSETS (Continued)

	Balance January 1, 2018	Increases	Decreases	Balance December 31, 2018
BUSINESS-TYPE ACTIVITIES				
Capital assets being depreciated				
Sewer collection system	$ 7,976,084	$ 513,332	$ (689,989)	$ 7,799,427
Accumulated depreciation				
Sewer collection system	(3,317,549)	(505,633)	514,176	(3,309,006)
BUSINESS-TYPE ACTIVITIES CAPITAL ASSETS, net	$ 4,658,535	$ 7,699	$ (175,813)	$ 4,490,421

Depreciation expense was charged to functions/programs of the Township as follows:

GOVERNMENTAL ACTIVITIES	
General government	$ 54,688
Public works	85,832
Police	185,438
Parks and recreation	27,210
	$ 353,168

All of the depreciation expense in business-type activities was charged to the sewer fund.

NOTE D - INTERFUND RECEIVABLES, PAYABLES AND TRANSFERS

Balances due to/from other funds at December 31, 2018 consist of the following:

	Due from Other Funds	Due to Other Funds
GOVERNMENTAL FUNDS		
General Fund	$ 621,092	$ 1,676
State Highway Fund	-	199,064
Capital Reserve Fund	-	35,864
BUSINESS-TYPE ACTIVITIES		
Sewer Fund	36,016	420,504
	$ 657,108	$ 657,108

WILLISTOWN TOWNSHIP

ANNUAL FINANCIAL REPORT

Year Ended December 31, 2019

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WILLISTOWN TOWNSHIP
STATEMENT OF NET POSITION
PROPRIETARY FUNDS
DECEMBER 31, 2019

	Sewer Fund
ASSETS	
CURRENT ASSETS	
Cash and cash equivalents	$ 4,669,115
Due from other funds	36,016
Accounts receivable	888,077
Prepaid expenses	33,055
TOTAL CURRENT ASSETS	5,626,263
NONCURRENT ASSETS	
Sewer collection system	8,673,707
Less accumulated depreciation	(3,786,175)
TOTAL NONCURRENT ASSETS	4,887,532
TOTAL ASSETS	$ 10,513,795
LIABILITIES AND NET POSITION	
LIABILITIES	
CURRENT LIABILITIES	
Accounts payable	$ 214,225
Bonds payable	266,500
Due to fiduciary funds	5,129
Due to other funds	420,504
Unearned revenue	1,900
Accrued Interest	5,316
TOTAL CURRENT LIABILITIES	913,574
NONCURRENT LIABILITIES	
Bonds payable	4,125,475
TOTAL LIABILITIES	5,039,049
NET POSITION	
Net investment in capital assets	832,961
Unrestricted	4,641,785
TOTAL NET POSITION	5,474,746
TOTAL LIABILITIES AND NET POSITION	$ 10,513,795

See accompanying notes to the basic financial statements.

WILLISTOWN TOWNSHIP

STATEMENT OF REVENUES, EXPENSES AND
CHANGES IN NET POSITION
PROPRIETARY FUNDS
YEAR ENDED DECEMBER 31, 2019

	Sewer Fund
OPERATING REVENUES	
Sewer charges	$ 2,211,380
OPERATING EXPENSES	
Sewage treatment	1,008,250
Operations and maintenance	639,049
General and administrative	229,349
Depreciation and amortization	477,169
TOTAL OPERATING EXPENSES	2,353,817
OPERATING LOSS	(142,437)
NONOPERATING REVENUES (EXPENSES)	
Investment income	49,269
Interest expense	(119,186)
Other	586,163
TOTAL NONOPERATING REVENUES (EXPENSES)	516,246
CHANGE IN NET POSITION	373,809
NET POSITION AT BEGINNING OF YEAR	5,100,937
NET POSITION AT END OF YEAR	$ 5,474,746

See accompanying notes to the basic financial statements.

WILLISTOWN TOWNSHIP
STATEMENT OF CASH FLOWS
PROPRIETARY FUNDS
YEAR ENDED DECEMBER 31, 2019

	Sewer Fund
CASH FLOWS FROM OPERATING ACTIVITIES	
Cash received from customers	$ 2,185,430
Cash payments to employees for services	(382,587)
Cash payments to vendors for goods and services	(1,413,800)
NET CASH PROVIDED BY OPERATING ACTIVITIES	389,043
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES	
Purchases of capital assets	(874,280)
Bond principal payments	(275,824)
Interest paid	(119,404)
State reimbursements and other	586,163
NET CASH USED BY CAPITAL AND RELATED FINANCING ACTIVITIES	(683,345)
CASH FLOWS FROM INVESTING ACTIVITIES	
Investment earnings	49,269
NET DECREASE IN CASH AND CASH EQUIVALENTS	(245,033)
CASH AND CASH EQUIVALENTS AT BEGINNING OF YEAR	4,914,148
CASH AND CASH EQUIVALENTS AT END OF YEAR	$ 4,669,115
RECONCILIATION OF OPERATING LOSS TO NET CASH PROVIDED BY OPERATING ACTIVITIES	
Operating loss	$ (142,437)
Adjustment for noncash charges to operations	
Depreciation and amortization	477,169
Changes in assets and liabilities	
Increase in accounts receivable	(25,950)
Increase in accounts payable	80,261
NET CASH PROVIDED BY OPERATING ACTIVITIES	$ 389,043

See accompanying notes to the basic financial statements.

NOTE C - CAPITAL ASSETS (Continued)

	Balance January 1, 2019	Increases	Decreases	Balance December 31, 2019
BUSINESS-TYPE ACTIVITIES				
Capital assets being depreciated				
Sewer collection system	$ 7,799,427	$ 874,280	$ -	$ 8,673,707
Accumulated depreciation				
Sewer collection system	(3,309,006)	(477,169)	-	(3,786,175)
BUSINESS-TYPE ACTIVITIES CAPITAL ASSETS, net	$ 4,490,421	$ 397,111	$ -	$ 4,887,532

Depreciation expense was charged to functions/programs of the Township as follows:

GOVERNMENTAL ACTIVITIES	
General government	$ 62,408
Public works	82,165
Police	183,421
Parks and recreation	27,655
	$ 355,649

All of the depreciation expense in business-type activities was charged to the sewer fund.

NOTE D - INTERFUND RECEIVABLES, PAYABLES AND TRANSFERS

Balances due to/from other funds at December 31, 2019 consist of the following:

	Due from Other Funds	Due to Other Funds
GOVERNMENTAL FUNDS		
General Fund	$ 699,908	$ 80,492
State Highway Fund	-	199,064
Capital Reserve Fund	-	35,864
BUSINESS-TYPE ACTIVITIES		
Sewer Fund	36,016	420,504
	$ 735,924	$ 735,924

Willistown Township
2020 Operating and Capital Budget Proposal

November 25, 2019

Willistown Township Fund Structure

1. Governmental Funds for General Appropriation

The **General Fund** is the Township's primary operating fund which accounts for all financial resources except those that are legally or administratively required to be accounted for in another fund. Although the operating budget includes separate displays for the *General Fund*, the *Operating Reserve Fund*, and the *Capital Reserve Fund*, it is important to note that these accounts are consolidated for financial reporting and auditing purposes.

2. Governmental Funds for Restricted Purposes

The **Open Space Fund** is largely restricted to the acquisition of parkland and open space for the benefit of the public. In addition, Act 115 of 2013 authorizes the Township to annually expend up to 25% of the accumulated fund balance, to develop, improve, design, engineer and maintain property acquired for open space under State Law.

The **Bartram Bridge Fund** is utilized to account for the operating and capital expenditures associated with the Bartram Bridge Joint Preservation Board. The Joint Preservation Board identifies problems and recommends plans and programs to the respective governing bodies of Willistown and Newtown Townships for the repair, supervision, operation and maintenance of the Bartram Covered Bridge.

Sometimes referred to as the State Highway Aid Fund, the **State Liquid Fuels Fund** is utilized to account for receipts from the State Motor License Fund and allowable highway expenditures.

3. Proprietary Funds for Restricted Purposes

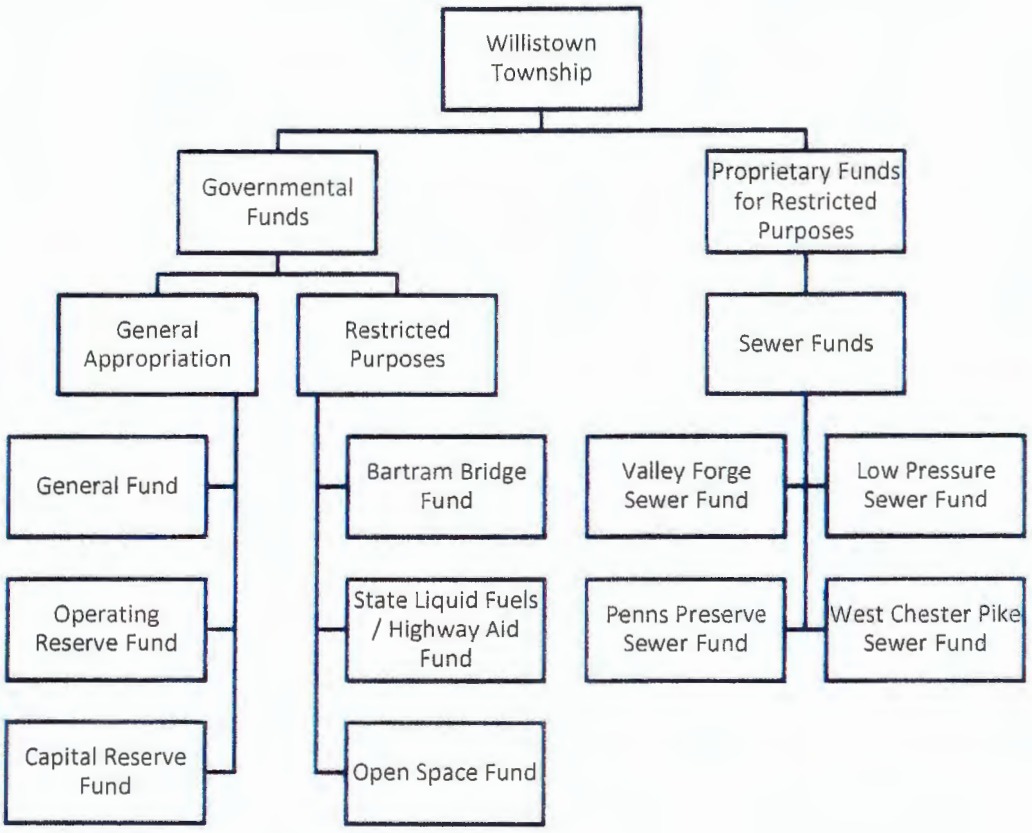
The Township's Sewer Funds are used to account for transactions related to the billing and collection of sanitary sewer fees, expenditures, and other transactions related to the collection, conveyance, and treatment of wastewater.

The **Valley Forge Sewer Fund** is used to account for service provided to customers in the area whose sewage is conveyed to the Valley Forge Sewer Authority through the Valley Creek Trunk Sewer in Tredyffrin Township.

The **Low Pressure Sewer Fund** is used to account for services provided to those customers whose properties lie at a lower elevation than the gravity sewer mains, and therefore require sewage grinder pumps to evacuate their sewage into a low pressure sewer main until it reaches the gravity sewer main.

The **Penn's Preserve Fund** is used to account for services provided to the customers in the Penn's Preserve service area.

The **West Chester Pike Sewer Fund** is used to account for capital costs associated with the extension of sanitary sewer service to accommodate thirteen residential properties on the south side of West Chester Pike just west of Street Road.



Willistown Township
2020 Operating and Capital Budget Proposal
All Funds Available for Appropriation

	Governmental Funds for General Appropriation			Governmental Funds for Restricted Purposes				Proprietary Funds for Restricted Purposes				Total
	General Fund	Operating Reserve Fund	Capital Reserve Fund	Open Space Fund	Bartram Bridge Fund	Municipal Life Insurance	State Liquid Fuels Fund	Penns Preserve Sewer Fund	Valley Forge Sewer Fund	West Chester Pike Sewer	Low Pressure Sewer Fund	
Projected Balance at December 31, 2019	$5,092,808	$1,862,876	$1,066,964	$4,509,005	$14,332	$246,886	$524,792	$128,488	$3,522,687	$332,934	$123,879	$17,425,651
Revenue:												
Real Estate Taxes	$347,000	-	-	-	-	-	-	-	-	-	-	$347,000
Local Service Tax	$275,000	-	-	-	-	-	-	-	-	-	-	$275,000
Real Estate Transfer Tax	$630,000	-	-	-	-	-	-	-	-	-	-	$630,000
Earned Income Tax	$6,448,560	-	-	$725,000	-	-	-	-	-	-	-	$7,173,560
Fines, Forfeitures and Other Costs	$23,000	-	-	-	-	-	-	-	-	-	-	$23,000
Cable Franchise Fees	$300,000	-	-	-	-	-	-	-	-	-	-	$300,000
Interest Dividends and Rents	$75,000	$18,000	$10,000	$35,000	$150	$2,000	$5,000	$2,000	$30,000	$1,000	$1,000	$179,150
Intergovernmental Revenues	$374,450	-	-		$1,500	-	$386,198	-	-	-	-	$762,148
Park & Recreation Fees	$15,000	-	-	-	-	-	-	-	-	-	-	$15,000
Charges for Services	$510,994	-	-	-	-	-	-	$146,608	$1,858,811	-	$65,800	$2,582,213
Miscellaneous	$23,158	-	-	-	-	-	-	-	-	-	-	$23,158
Interfund Transfers	$84,000	-	-	-	$1,500	-	-	-	-	-	-	$85,500
Total Revenue	$9,106,162	$18,000	$10,000	$760,000	$3,150	$2,000	$391,198	$148,608	$1,888,811	$1,000	$66,800	$12,395,729
Total Expenditures by Department:												
General Government	$1,726,030	-	$10,000	$1,000	$3,340	-	-	$4,000	$278,609	-	-	$2,022,979
Sanitary Sewer Operations	-	-	-	-	-	-	-	$172,350	$1,929,289	-	$63,000	$2,164,639
Public Works	$1,001,758	-	$483,000	-	-	-	$410,000	-	-	-	-	$1,894,758
Culture & Recreation	397,925	-	$40,000	$552,760	-	-	-	-	-	-	-	$990,685
Public Safety - Police	$5,410,449	-	$114,960	-	-	-	-	-	-	-	-	$5,525,409
Public Safety - Fire	$568,500	-	-	-	-	-	-	-	-	-	-	$568,500
Interfund Transfers	$1,500	-	-	-	-	-	-	-	-	-	-	$1,500
Total Expenditures	$9,106,162	-	$647,960	$553,760	$3,340	-	$410,000	$176,350	$2,207,898	-	$63,000	$13,168,470
Net Activity For Year	($0)	$18,000	($637,960)	$206,240	($190)	$2,000	($18,802)	($27,742)	($319,087)	$1,000	$3,800	($772,741)
Projected Cash Balance at December 31, 2020	$5,092,808	$1,880,876	$429,004	$4,715,245	$14,142	$248,886	$505,990	$100,746	$3,203,601	$333,934	$127,679	$16,652,910

Willistown Township
2020 Operating and Capital Budget Proposal
All Funds Available for Appropriation

	Governmental Funds for General Appropriation			Governmental Funds for Restricted Purposes				Proprietary Funds for Restricted Purposes				Total
	General Fund	Operating Reserve Fund	Capital Reserve Fund	Open Space Fund	Bartram Bridge Fund	Municipal Life Insurance	State Liquid Fuels Fund	Penns Preserve Sewer Fund	Valley Forge Sewer Fund	West Chester Pike Sewer	Low Pressure Sewer Fund	
Proposed Capital Expenditures Detail by Dept.:												
General Government												
Acctg/Permitting/Land Mgmt. Computer Pkge	-	-	$10,000	-	-	-	-	-	-	-	-	$10,000
Sanitary Sewer Operations												-
	-								-			-
Public Works												
Storm Water (Sunset/Chetwynd/Spring)		-	$200,000	-	-	-		-	-	-	-	$200,000
New Dump Truck (Replace F750)	-	-	$135,000	-	-	-	-	-	-	-	-	$135,000
Public Works Facility work/Bridges	-	-	$48,000	-	-	-		-	-	-	-	$48,000
Asphalt Hot Mix Hauler		-		-	-	-	$32,000	-	-	-	-	$32,000
Front End Loader (yr. 1 of 5)							$19,000					$19,000
Matching Funds Grant	-						$72,000					$72,000
2020 Resurfacing Program	-	-	$100,000	-	-	-	$175,000	-	-	-	-	$275,000
												-
Culture & Recreation												-
Greentree Park Playsets (2)	-	-	$40,000	-	-	-	-	-	-	-	-	$40,000
												-
Public Safety - Police												
New vehicles	-	-	$92,000	-	-	-	-	-	-	-	-	$92,000
Police Equipment	-	-	$12,960	-	-	-		-	-	-	-	$12,960
Police Building IT	-	-	$10,000	-	-	-	-	-	-	-	-	$10,000
Total Capital Expenditures	-	-	$647,960	-	-	-	$298,000	-	-	-	-	$945,960

Willistown Township
2020 Operating and Capital Budget Proposal
All Funds Available for Appropriation

	Governmental Funds for General Appropriation			Governmental Funds for Restricted Purposes				Proprietary Funds for Restricted Purposes				Total
	General Fund	Operating Reserve Fund	Capital Reserve Fund	Open Space Fund	Bartram Bridge Fund	Municipal Life Insurance	State Liquid Fuels Fund	Penns Preserve Sewer Fund	Valley Forge Sewer Fund	West Chester Pike Sewer	Low Pressure Sewer Fund	
Public Safety - Police:												
Salary and Wages	$2,910,373	-	-	-	-	-	-	-	-	-	-	$2,910,373
Employee Benefits	$1,825,571	-	-	-	-	-	-	-	-	-	-	$1,825,571
Materials & Services	$296,500	-	-	-	-	-	-	-	-	-	-	$296,500
Utilities	$32,500	-	-	-	-	-	-	-	-	-	-	$32,500
Vehicle Repairs & Fuel	$59,000	-	-	-	-	-	-	-	-	-	-	$59,000
Insurance	$200,000	-	-	-	-	-	-	-	-	-	-	$200,000
Debt Service	$86,505	-	-	-	-	-	-	-	-	-	-	$86,505
Capital Expenditures	-	-	$114,960	-	-	-	-	-	-	-	-	$114,960
Interfund Transfers	-	-	-	-	-	-	-	-	-	-	-	-
Total Public Safety - Police	**$5,410,449**	-	**$114,960**	-	-	-	-	-	-	-	-	**$5,525,409**
Public Safety - Fire:												
Salary and Wages	-	-	-	-	-	-	-	-	-	-	-	-
Employee Benefits	$125,000	-	-	-	-	-	-	-	-	-	-	$125,000
Materials & Services	$378,000	-	-	-	-	-	-	-	-	-	-	$378,000
Utilities	$50,000	-	-	-	-	-	-	-	-	-	-	$50,000
Vehicle Repairs & Fuel	-	-	-	-	-	-	-	-	-	-	-	-
Insurance	$15,500	-	-	-	-	-	-	-	-	-	-	$15,500
Debt Service	-	-	-	-	-	-	-	-	-	-	-	-
Capital Expenditures	-	-	-	-	-	-	-	-	-	-	-	-
Interfund Transfers	-	-	-	-	-	-	-	-	-	-	-	-
Total Public Safety Fire	**$568,500**	-	-	-	-	-	-	-	-	-	-	**$568,500**
Interfund Transfers	$1,500	-	-	-	-	-	-	-	-	-	-	$1,500
Total Interfund Transfers	**$1,500**	-	-	-	-	-	-	-	-	-	-	**$1,500**

Willistown Township
2020 Operating and Capital Budget Proposal
All Funds Available for Appropriation

	Governmental Funds for General Appropriation			Governmental Funds for Restricted Purposes				Proprietary Funds for Restricted Purposes				Total
	General Fund	Operating Reserve Fund	Capital Reserve Fund	Open Space Fund	Bartram Bridge Fund	Municipal Life Insurance	State Liquid Fuels Fund	Penns Preserve Sewer Fund	Valley Forge Sewer Fund	West Chester Pike Sewer	Low Pressure Sewer Fund	
Total Expenditures by Category												
Salary and Wages	$4,094,662	-	-	-	-	-	-	-	$310,117	-	-	$4,404,779
Employee Benefits	$2,567,519	-	-	-	-	-	-	-	$145,646	-	-	$2,713,165
Materials & Services	$1,742,666	-	-	$1,000	$3,000	-	$82,000	$124,350	$1,284,016	-	$63,000	$3,300,032
Utilities	$144,000	-	-	-	$340	-	$30,000	$27,000	$56,500	-	-	$257,840
Vehicle Repairs & Fuel	$134,100	-	-	-	-	-	-	-	-	-	-	$134,100
Insurance	$335,210	-	-	-	-	-	-	-	$17,000	-	-	$352,210
Debt Service	$86,505	-	-	$552,760	-	-	-	-	$394,619	-	-	$1,033,884
Capital Expenditures	-	-	$647,960	-	-	-	$298,000	$25,000	-	-	-	$970,960
Interfund Transfers	$1,500	-	-	-	-	-	-	-	-	-	-	$1,500
Total Expenditures	$9,106,162	-	$647,960	$553,760	$3,340	-	$410,000	$176,350	$2,207,898	-	$63,000	$13,168,470
	-	-	-	-	-	-	-	-	-	-	-	-

Willistown FMV Application
2020 Customers and Consumption

Customer Group	Customer Count	Gallons
Gravity Sewer Customers, Valley Forge System	1,694	123,965,800
Lower Pressure Sewer Customers, Valley Forge System	385	22,065,300
Penns Preserve Sewer	195	38,900
East Goshen Sewer	20	712,500
TOTAL	**2,294**	**146,782,500**

WILLISTOWN TOWNSHIP
CHESTER COUNTY, PENNSYLVANIA

RESOLUTION 16 OF 2019

A RESOLUTION ESTABLISHING SEWER RENTAL FEES CHARGED FOR THE CONVEYANCE AND TREATMENT OF SEWAGE IN THE TOWNSHIP.

BE IT AND IT IS HEREBY RESOLVED, as follows:

SECTION I. The Board of Supervisors does hereby adopt the following sewer rental fees charged to owners and users effective January 1, 2020, whether direct or indirect, of the sewer system within the Township of Willistown, Chester County, PA:

A. **Gravity Sewer Customers, Valley Forge System**

Quarterly Base Rate:	$124.66
Quarterly Consumption Based on Water Usage:	$0.00552 per gallon

B. **Low Pressure Sewer Customers, Valley Forge System - Including But Not Limited To The Sugartown Road – School Lane Sewer District, The East Central Sewer District, And The Acres Sewer District**

Quarterly Base Rate:	$124.66
Quarterly Pump Maintenance Fee:	$50.00
Quarterly Consumption Based on Water Usage:	$0.00552 per gallon

C. **Penns Preserve Sewer**

Quarterly Base Rate:	$187.96

D. **East Goshen Sewer**

Quarterly Base Rate:	$153.87

East Goshen Customers will be billed and responsible for payment of the prorated portion of the quarterly sewer payment due to East Goshen Township and/or East Goshen Municipal Authority.

Jerry Weinert

From: Scott Shearer <SHEARERS@pfm.com>
Sent: Thursday, July 15, 2021 7:14 PM
To: Jerry Weinert
Subject: FW: Willistown Customers and Flows
Attachments: 2020 Willistown Customer Count and Consumption.xlsx

Per our chat today

Scott Shearer
Managing Director

PFM Financial Advisors LLC | Public Financial Management, Inc.
shearers@pfm.com | **phone** 717.232.2723 | **fax** 717.233.6073 | **web** pfm.com
213 Market Street | Harrisburg, PA 17101

From: Stahl, Alexander R <AStahl@aquaamerica.com>
Sent: Thursday, July 15, 2021 6:15 PM
To: Scott Shearer <SHEARERS@pfm.com>; Garrett Moore <mooreg@pfm.com>; Thomas.Wyatt <Thomas.Wyatt@obermayer.com>; kimberley.farmer <kimberley.farmer@obermayer.com>
Cc: Rafferty, Thomas F <tfrafferty@aquaamerica.com>; Bubel, Mark J <MJBubel@aquaamerica.com>
Subject: Willistown Customers and Flows

ALERT: This message is from an external source.BE CAUTIOUS before clicking any link or attachment

All,

Based on the billing data provided by Willistown, the attached is the customer count and consumption for 2020. If the Township is good with these numbers, we should send to both UVEs so everyone is using the same numbers.

Thanks,
Alex

Alexander R. Stahl
Regulatory Counsel
762 W. Lancaster Ave., Bryn Mawr, PA 19010
O: 610.645.1130 (ext: 51130)
M: 267.353.9291

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EXECUTION VERSION

SANITARY SEWER

ASSET PURCHASE AGREEMENT

By and Between

Township of Willistown, Chester County

As Seller

and

Aqua Pennsylvania Wastewater, Inc.

As Buyer

Dated as of January 20, 2021

Article I. DEFINITIONS 1

Article II. TERMS OF PURCHASE AND ASSUMPTION OF LIABILITIES 10

Section 2.01. Purchase and Sale of Acquired Assets 10
Section 2.02. Excluded Assets 11
Section 2.03. Sale Free of Liens 12
Section 2.04. Assumption of Liabilities 12
Section 2.05. Further Assurances 13
Section 2.06. Certain Transfers; Assignment of Contracts 13

Article III. PURCHASE PRICE AND ADDITIONAL PURCHASE PRICE 14

Section 3.01. Purchase Price 14
Section 3.02. Fair Consideration 15
Section 3.03. Transfer Taxes 15

Article IV. REPRESENTATIONS AND WARRANTIES OF SELLER 15

Section 4.01. Organization 15
Section 4.02. Power and Authority 15
Section 4.03. Enforceability 16
Section 4.04. No Conflict or Violation 16
Section 4.05. Consents and Approvals 16
Section 4.06. Undisclosed Liabilities 16
Section 4.07. Absence of Certain Changes or Events 16
Section 4.08. Tax Matters 16
Section 4.09. Real Property and Easements 17
Section 4.10. Equipment and Machinery 17
Section 4.11. Environmental Compliance 17
Section 4.12. Authorizations and Permits 18
Section 4.13. System Contracts 19
Section 4.14. Compliance with Law; Litigation 19
Section 4.15. Broker's and Finder's Fees 19
Section 4.16. Title to the Acquired Assets; Sufficiency 20
Section 4.17. Pending Development Plans 20
Section 4.18. Land Development Agreements/Financial Security Agreements 20
Section 4.19 Customer Laterals and Grinder Pumps 20

Article V. REPRESENTATIONS AND WARRANTIES OF BUYER 20

Section 5.01. Organization 21
Section 5.02. Authorization and Validity of Agreement 21
Section 5.03. No Conflict or Violation 21
Section 5.04. Consents and Approvals 21
Section 5.05. Broker's and Finder's Fees 21
Section 5.06. Financial Wherewithal 21
Section 5.07. Sufficient Funds 22

Section 5.08. Independent Decision 22
Section 5.09. Scheduled Matters 22
Section 5.10. Independent Investigation 22
Section 5.11. Litigation 22

Article VI. TITLE TO REAL PROPERTY; EASEMENTS 23

Section 6.01. Evidence of Title 23
Section 6.02. Objections to Title. 23
Section 6.03. Title Expenses 24
Section 6.04. UCC Search; Releases 25
Section 6.05. Easements 25
Section 6.06. Unscheduled Property 26

Article VII. OTHER AGREEMENTS 27

Section 7.01. Taxes 27
Section 7.02. Cooperation on Tax Matters 27
Section 7.03. Rates 27
Section 7.04. Buyer Taxpayer 27
Section 7.05. PaPUC Approval 27
Section 7.06. Remedies for Breach of Article VII Agreements 28
Section 7.07. Operation and Maintenance of the MS4 System 28
Section 7.08. Utility Valuation Experts 28
Section 7.09. EDU Allocations 28
Section 7.10. Act 537 Plan 28
Section 7.11. Compliance and Operational Reports 30
Section 7.12 Governance Matters 30

Article VIII. INDEMNIFICATION 30

Section 8.01. Survival 30
Section 8.02. Indemnification by Seller 31
Section 8.03. Indemnification by Buyer 31
Section 8.04. Indemnification Procedure 31
Section 8.05. Limitations on Indemnification Obligations. 33
Section 8.06. Knowledge of Breach 35

Article IX. PRE-CLOSING COVENANTS OF SELLER 35

Section 9.01. Operation of the System 35
Section 9.02. Cooperation 35
Section 9.03. Supplements and Updates 35
Section 9.04. Consents and Approvals 36
Section 9.05. Pending Development Plan Agreements / Future Developments 36

Article X. PRE-CLOSING COVENANTS OF BUYER 36

Section 10.01. Actions Before the Closing Date 36
Section 10.02. Governmental Approvals 37
Section 10.03. Cooperation 37
Section 10.04. Supplements and Updates 37

Article XI. CONDITIONS PRECEDENT TO OBLIGATIONS OF SELLER 37

Section 11.01. Consents and Approvals 37
Section 11.02. Representations and Warranties of Buyer 37
Section 11.03. PaPUC Approval 38
Section 11.04. No Injunctions 38
Section 11.05. Performance of the Obligations of Buyer 38
Section 11.06. Deliveries by Buyer 38
Section 11.07. No Material Adverse Effect 38

Article XII. CONDITIONS PRECEDENT TO OBLIGATIONS OF BUYER 38

Section 12.01. Consents and Approvals 38
Section 12.02. Representations and Warranties of Seller 39
Section 12.03. PaPUC Approval 39
Section 12.04. No Injunctions 39
Section 12.05. No Material Adverse Effect 39
Section 12.06. Deliveries by Seller 39
Section 12.07. Performance of the Obligations of Seller 39
Section 12.08. Act 537 Plan. 39

Article XIII. CLOSING 40

Section 13.01. Closing Date 40
Section 13.02. Deliveries by Seller 40
Section 13.03. Deliveries by Buyer 41

Article XIV. TERMINATION 41

Section 14.01. Events of Termination 41
Section 14.02. Effect of Termination 42
Section 14.03. Damages for Willful Breach 42

Article XV. MISCELLANEOUS 42

Section 15.01. Confidentiality 42
Section 15.02. Public Announcements 43
Section 15.03. Notices 43
Section 15.04. Headings 44
Section 15.05. Severability 44
Section 15.06. Entire Agreement 44

Section 15.07. Amendments; Waivers 44
Section 15.08. Parties in Interest; Third Party Beneficiary 44
Section 15.09. Anti-Assignment; Successors and Assigns 45
Section 15.10. Governing Law; Jurisdiction 45
Section 15.11. Specific Performance 45
Section 15.12. Counterparts; Facsimile Execution 45

Exhibits

Exhibit A Bill of Sale
Exhibit B Assignment and Assumption Agreement
Exhibit C Escrow Agreement

Schedules

Schedule A Service Area
Schedule 2.02(h) Excluded Assets
Schedule 4.05 Consents and Approvals
Schedule 4.06 Undisclosed Liabilities
Schedule 4.07 Events Having a Material Adverse Effect
Schedule 4.08 Tax Matters
Schedule 4.09 Real Property and Easements; Liens
Schedule 4.10 Equipment and Machinery
Schedule 4.11 Environmental Compliance
Schedule 4.12 Authorizations and Permits
Schedule 4.13 Assigned Contracts
Schedule 4.14 Seller Litigation
Schedule 4.16(a) Exception to Title to Acquired Assets
Schedule 4.16(b) Sufficiency
Schedule 4.17 Pending Development Plans
Schedule 4.18 Land Development/Financial Security Agreements
Schedule 5.04 Buyer Consents and Approvals
Schedule 5.11 Buyer Litigation
Schedule 6.05(e) Missing Easements
Schedule 7.03(a) Rates

SANITARY SEWER ASSET PURCHASE AGREEMENT

THIS SANITARY SEWER ASSET PURCHASE AGREEMENT ("Agreement"), dated as of January 20, 2021 (the "Effective Date"), is made and entered into by and between the Township of Willistown, Chester County, a body corporate and politic, organized and existing under the laws of the Commonwealth of Pennsylvania (the "Seller"), and Aqua Pennsylvania Wastewater, Inc. (the "Buyer"), a corporation organized and existing under the laws of the Commonwealth of Pennsylvania.

RECITALS:

WHEREAS, Seller, acting by and through the Board of Supervisors of Willistown Township, Chester County (the "Township Board") owns and operates a sanitary wastewater collection and conveyance system (the "System") that provides sanitary wastewater service to various customers in Willistown Township, Pennsylvania (the "Service Area") and as set forth on Schedule A; and

WHEREAS, Buyer is a regulated public utility organized and existing under the laws of the Commonwealth of Pennsylvania that furnishes wastewater service to the public in several counties, including Chester County, Pennsylvania; and

WHEREAS, Buyer, in reliance upon the representations, warranties and covenants of Seller herein, desires to purchase and acquire from Seller, and Seller, in reliance upon the representations, warranties and covenants of Buyer herein, desires to sell, transfer and convey to Buyer all of the assets of the System (other than the Excluded Assets), and in connection therewith, Buyer has agreed to assume certain ongoing obligations and liabilities of Seller related to the acquired assets, all on the terms and conditions set forth in this Agreement.

NOW, THEREFORE, in consideration of the mutual representations, warranties, covenants, and agreements stated in this Agreement, the receipt and sufficiency of which hereby are acknowledged, intending to be legally bound, the Parties agree as follows:

ARTICLE I.

DEFINITIONS

In addition to the capitalized terms defined elsewhere in this Agreement, the following terms, as used in this Agreement (unless otherwise specified herein), have the meanings set forth in this Article I:

"**Acquired Assets**" has the meaning specified in Section 2.01.

"**Affiliate**" means, when used to indicate a relationship with a specified Person, a Person that, directly or indirectly, through one or more intermediaries, has a 10% or more voting or economic interest in such specified Person or controls, is controlled by or is under common control with (which includes, with respect to a managed fund or trust, the right to direct or cause the direction of the management and policies of such managed fund or trust as manager, advisor, supervisor, sponsor or trustee pursuant to relevant contractual arrangements) such specified

Person, and a Person is deemed to be controlled by another Person if controlled in any manner whatsoever that results in control in fact by that other Person (or that other Person and any Person or Persons with whom that other Person is acting jointly or in concert), whether directly or indirectly and whether through share ownership, a trust, a contract or otherwise (and for purposes of this definition, a managed fund or trust is deemed to be an Affiliate of the Person managing, supervising, sponsoring or advising such fund or trust and a limited partner in a managed fund or trust is deemed to be an Affiliate of such fund or trust and of the Person managing, supervising, sponsoring or advising such fund or trust).

"**Agreement**" has the meaning specified in the Preamble to this Agreement (and includes all Schedules and Exhibits referred to herein), as amended, modified and supplemented from time to time in accordance with the terms hereof.

"**Assigned Contracts**" has the meaning specified in Section 2.01(c).

"**Assignment and Assumption Agreement**" has the meaning specified in Section 13.02(c).

"**Assumed Liabilities**" has the meaning specified in Section 2.04(a).

"**Authorizations and Permits**" mean all licenses, permits, franchises, authorizations, certificates, registrations, consents, orders, adjudications, variances, waivers and approvals currently in effect issued or granted by Governmental Authorities, including without limitation, environmental permits, operating permits and approvals that are held by Seller that primarily relate directly or indirectly to the operation of the System, including those set forth on Schedule 4.12.

"**Business Day**" means any day that is neither a Saturday, Sunday nor a day observed as a holiday by either the Commonwealth of Pennsylvania or the United States government.

"**Buyer**" has the meaning specified in the Preamble of this Agreement.

"**Buyer Fundamental Representations**" has the meaning specified in Section 8.01.

"**Buyer Indemnified Persons**" has the meaning specified in Section 8.02.

"**CERCLA**" means the Comprehensive Environmental Response Compensation and Liability Act of 1980, 42 U.S.C. §9601 et seq., as amended.

"**Closing**" means the consummation of the sale and purchase of the Acquired Assets and assumption of the Assumed Liabilities, the release/waiver of liabilities and the other transactions contemplated by this Agreement, all in accordance with the terms and conditions of this Agreement and as specified in Article XIII.

"**Closing Date**" has the meaning specified in Section 13.01.

"**Closing Effective Time**" has the meaning specified in Section 13.01.

"**Code**" means the Internal Revenue Code of 1986, as amended.

"**Confidential Information**" means any information about Buyer, Seller or the System related to the transactions contemplated by this Agreement, except that such term does not include information which the receiving Party can demonstrate (a) is generally available to or known by the public other than as a result of improper disclosure by the receiving Party, (b) is obtained by the receiving Party from a source other than the disclosing Party, and that source was not bound by a duty of confidentiality to the disclosing Party with respect to such information, or (c) is legally in the public domain.

"**Direct Claim**" has the meaning specified in Section 8.04(c).

"**Easements**" means all easements, rights of way, licenses, use agreements, occupancy agreements, leases and other agreements and appurtenances for and over the real property of third parties that are necessary for or used in connection with the operation of the System or to provide continuous and unimpeded rights of way for the Acquired Assets (including access thereto).

"**EDU**" means equivalent dwelling unit and having a use rate of 229.5 gallons per day.

"**Effective Date**" has the meaning specified in the Preamble.

"**Environment**" means soil, surface waters, ground waters, land, stream sediments, flora, fauna, surface or subsurface strata and ambient air.

"**Environmental Claims**" means all notices of investigations, warnings, notice letters, notices of violations, Liens, orders, claims, demands, suits or administrative or judicial actions for any injunctive relief, fines, penalties, third party claims, or other claims asserting violations of Environmental Requirements or responsibility for Environmental Liabilities.

"**Environmental Conditions**" means the Release of Hazardous Materials or the presence of Hazardous Materials on, in, under or within any property (including the presence in the Environment), other than the presence of Hazardous Materials in locations and at concentrations that are naturally occurring.

"**Environmental Liabilities**" means any legal obligation or liability arising under Environmental Requirements or related to or arising out of any Environmental Condition, including those consisting of or relating to any (a) duty imposed by, breach of or noncompliance with any Environmental Requirements; (b) environmental, health or safety matters or conditions (including on-site or off-site contamination, occupational safety and health and regulation of Hazardous Materials); (c) Remedial Action undertaken by any Person; (d) bodily injury (including illness, disability and death, and regardless of when any such bodily injury occurred, was incurred or manifested itself), property damage (including trespass, nuisance, wrongful eviction and deprivation of the use of real or personal property), or other losses or damages incurred by any other Person (including any employee or former employee of such Person); (e) any injury to, destruction of, or loss of natural resources, or costs of any natural resource damage

assessments; (f) exposure of any Person to any Hazardous Materials; and (g) the presence or Release of any Hazardous Materials.

"**Environmental Requirements**" mean all present Laws (including common law), regulations, legally binding or otherwise enforceable requirements and Authorizations and Permits relating to human health, pollution, or protection of the Environment (including ambient air, surface water, ground water, land surface or surface strata), including (i) those relating to emissions, discharges, Releases, or threatened Releases of Hazardous Materials, and (ii) those relating to the identification, generation, manufacture, processing, distribution, use, treatment, storage, disposal, release, recovery, transport or other handling of Hazardous Materials. Without limiting the previous, the term "**Environmental Requirements**" includes (1) CERCLA; the Superfund Amendments and Reauthorization Act, Public Law 99-499, 100 Stat. 1613; the Emergency Planning and Community Right to Know Act, 42 U.S.C. Sections 11001-11050; the Resource Conservation and Recovery Act, 42 U.S.C. Sections 6901-6992k ("RCRA"); the Safe Drinking Water Act, 42 U.S.C. Sections 300f to 300j-26; the Toxic Substances Control Act, 15 U.S.C. Sections 2601-2692; the Hazardous Materials Transportation Act, 49 U.S.C. Sections 5101-5127; the Federal Water Pollution Control Act, 33 U.S.C. Sections 1251-1387; the Oil Pollution Act of 1990, 33 U.S.C. Sections 2701--2761; the Clean Air Act, 42 U.S.C. Sections 7401-7671q; the Atomic Energy Act of 1954, as amended, 42 U.S.C. Sections 2011 et seq.; the Low Level Radioactive Waste Policy Act, as amended, 42 U.S.C. Section 2021b et seq.; the Occupational Safety and Health Act, 29 U.S.C. Sections 651-678, and the regulations promulgated pursuant to the above-listed federal statutes, and (2) counterpart Laws and regulations promulgated or issued by any state or local Governmental Authority, specifically including the Pennsylvania Storage Tank and Spill Prevention Act of 1989 (35 Pa. C.S.A. § 6021.101 *et. seq.*).

"**EPA**" means the United States Environmental Protection Agency, or a successor Governmental Authority with substantially similar power and authority thereto.

"**Equipment and Machinery**" means (i) all the equipment, tangible personal property, machinery, office furniture and equipment, fixtures, tooling, spare maintenance or replacement parts, environmental testing equipment, and vehicles owned or leased by Seller (including all leases of such property), which are primarily used in the operation of the System, (ii) any rights of Seller to warranties applicable to the foregoing (to the extent assignable), and licenses received from manufacturers and Seller of any such item, and (iii) any related claims, credits, and rights of recovery with respect thereto, as set forth on Schedule 4.10.

"**Excluded Assets**" has the meaning specified in Section 2.02.

"**Excluded Liability**" or "**Excluded Liabilities**" means all liabilities other than Assumed Liabilities.

"**Files and Records**" means all files and records of Seller primarily relating to the System and the Acquired Assets, whether in hard copy, digital, or magnetic or other format including data, geographic information system data, plans, contracts and recorded knowledge relating to the Acquired Assets (including property records, related to the foregoing), customer and supplier records, customer lists (both current and prospective), customer billing records,

records of sales calls, manuals, books, files, records, engineering data, procedures, systems, instructions, drawings, blueprints, plans, designs, specifications, equipment lists, parts lists, equipment maintenance records, equipment warranty information, plant plans, specifications and drawings, sales and advertising material, and computer software, and records relating to the System, whether stored on-site or off-site.

"**Final Order**" means a Governmental Approval by a Governmental Authority as to which (a) no request for stay of the action is pending, no such stay is in effect and if any time period is permitted by statute or regulation for filing any request for such stay, such time period has passed, (b) no petition for rehearing, reargument or reconsideration of the action is pending and the time for filing any such petition has passed, (c) such Governmental Authority does not have action under consideration on its own motion and (d) no appeal to a court or administrative tribunal or a request for stay by a court or administrative tribunal of the Government Authority's action is pending or in effect and the deadline for filing any such appeal or request for stay has passed.

"**Governmental Approval**" means any consent, approval, authorization, notice, filing, registration, submission, reporting, order, adjudication or similar item of, to or with any Governmental Authority.

"**Governmental Authority**" or "**Governmental Authorities**" means any court, department, commission, board, bureau, municipality, municipal authority (established pursuant to the Municipal Authorities Act of the Commonwealth of Pennsylvania), agency or instrumentality of the United States, any state, county, city or political subdivision thereof, or any foreign governmental body, including without limitation, the PaPUC, the EPA, PaDEP and the Township Board.

"**Hazardous Materials**" means any solid, liquid, gas, odor, heat, sound, vibration, radiation or other substance or emission which is a contaminant, pollutant, dangerous substance, toxic substance, hazardous waste, residual waste, solid waste, hazardous material or hazardous substance which is or becomes regulated by applicable Environmental Laws or which is classified as hazardous or toxic under applicable Environmental Laws (including gasoline, diesel fuel or other petroleum hydrocarbons, polychlorinated biphenyls, asbestos and urea formaldehyde foam insulation).

"**Indemnified Party**" means any Buyer Indemnified Persons or Seller Indemnified Persons, as applicable, entitled to indemnification pursuant to Article VIII.

"**Indemnifying Party**" means a Party which is obligated to indemnify the Buyer Indemnified Persons or the Seller Indemnified Persons, as applicable, pursuant to Article VIII.

"**Knowledge**" means either (i) the actual knowledge of a Representative of Buyer and the knowledge that each such person would reasonably be expected to obtain in the course of diligently performing his or her duties for Buyer or (ii) the actual knowledge of a Representative of Seller, the knowledge that each such person would reasonably be expected to obtain in the course of diligently performing his or her duties for Seller, as applicable based on the context in which the term is used.

"**Land Development Agreement / Financial Security Agreement**" means any agreement between Seller and an applicant for subdivision and/or land development approval pursuant to the Pennsylvania Municipalities Planning Code, pursuant to which applicant is required to construct public improvements and required to post financial security, for the benefit of Seller, to secure applicant's obligations under such agreement.

"**Law**" means any applicable law, statute, regulation, ordinance, rule, order, judicial, administrative and regulatory decree, judgment, adjudication, consent decree, settlement agreement or governmental requirement enacted, promulgated, entered into, agreed or imposed by any Governmental Authority, as may be in effect at the relevant time or times in the context in which the term is used.

"**Liability Cap**" has the meaning specified in Section 8.05(c).

"**Lien**" means any lien in a fixed and ascertainable monetary sum, or any pledge, mortgage, deed of trust or security interest securing a fixed and ascertainable monetary sum, or any charge or claim in a fixed and ascertainable monetary sum. In addition, in connection with Real Property, any item otherwise falling within the definition of a "Lien" must be filed of record by the responsible Party in accordance with the terms of this Agreement.

"**Loss**" means any and all losses, liabilities, obligations, damages, penalties, interest, Taxes, claims, actions, demands, causes of action, judgments, reasonable attorneys', consultants' and other professional fees, and all other reasonable costs and expenses sustained or incurred in investigating, preparing or defending or otherwise incident to any such claim, action, demand, cause of action or judgment or the enforcement of a Party's rights under Article VIII; except that losses do not include punitive, incidental, consequential, special or indirect damages, including loss of future revenue or income, loss of business reputation or opportunity relating to the breach or alleged breach of this Agreement, or diminution of value or any damages based on any type of multiple, except in the case of fraud or to the extent actually awarded to a Governmental Authority or other third party in respect of a Third Party Claim.

"**Material Adverse Effect**" means any result, occurrence, fact, change, event or effect that has a materially adverse effect on the business, financial condition, physical condition or results of operations of the System, except that no effect arising out of or in connection with or resulting from any of the following is deemed, either alone or in combination, to constitute or contribute to a Material Adverse Effect: (i) general economic conditions or changes in those conditions; (ii) financial, banking, currency or capital markets fluctuations or conditions (either in the United States or any international market and including changes in interest rates); (iii) conditions affecting the real estate, financial services, construction, water utility or sewer utility industries generally; (iv) any existing event, circumstance, condition or occurrence of which Buyer has Knowledge as of the Effective Date; (v) any action, omission, change, effect, circumstance or condition contemplated by this Agreement or attributable to the execution, performance or announcement of this Agreement or the transactions contemplated hereby; and (vi) negligence, intentional misconduct or bad faith of Buyer or its Representatives.

"**Missing Easements**" means, as of any particular date, each material Easement that is for or used in connection with the operation of the System or to provide continuous and

unimpeded rights of way for the Acquired Assets (including access thereto) that either (a) has not been obtained by Seller as of such date or (b) if such Easement has been obtained by Seller as of such date, and such Easement is not sufficient to operate the System as currently conducted.

"**MS4 System**" or **"Municipal Separate Storm Sewer System**" means the current and any future assets and facilities, built, operated or maintained, or real property ("**MS4 System Real Property**") and Stormwater System Assets owned by Seller and used for the purpose of capturing, conveying and discharging stormwater separate from the System.

"**Outside Date**" means 365 days after the date the application to the PaPUC is accepted as complete by the PaPUC and the statutory 6-month consideration period is initiated.

"**PaDEP**" means the Pennsylvania Department of Environmental Protection, or any successor Governmental Authority with substantially similar powers thereto.

"**PaPUC**" means the Pennsylvania Public Utility Commission, or any successor Governmental Authority with substantially similar powers thereto.

"**Party**" means Buyer or Seller and the term "Parties" means collectively Buyer and Seller.

"**PCB Equipment**" means PCB equipment as defined in 40 C.F.R. Part 761.

"**Pending Development Plan**" means any subdivision or land development plan that has been submitted to Seller for approval pursuant to the Pennsylvania Municipal Planning Code, as updated prior to Closing.

"**Permitted Liens**" means (a) Liens for Taxes not yet due and payable or being contested in good faith by appropriate procedures; (b) easements, rights of way, zoning ordinances and other similar encumbrances affecting Real Property and Easements as set forth on Schedule 4.09; (c) other than with respect to Real Property owned by Seller, Liens arising under original purchase price conditional sales contracts and equipment leases with third parties entered into in the ordinary course of business; and (d) other imperfections of title or Liens, if any, that have not had, and would not have, a Material Adverse Effect.

"**Person**" means any individual (including, the heirs, beneficiaries, executors, legal representatives or administrators thereof), corporation, partnership, joint venture, trust, limited liability company, limited partnership, joint stock company, unincorporated association or other entity or a Governmental Authority.

"**Plan**" has the meaning specified in Section 7.10(a).

"**Purchase Price**" has the meaning specified in Section 3.01.

"**Real Property**" means those certain parcels of land, with the buildings, improvements, and Equipment and Machinery thereon or therein, that are part of the System and fee simple title to which is to be conveyed by Seller to Buyer as part of the Acquired Assets.

"**Regulated Asbestos Containing Material**" means regulated asbestos containing material as defined by 40 C.F.R. § 61.141.

"**Release**" means any actual or threatened spilling, leaking, pumping, pouring, injecting, emptying, discharging, emitting, escaping, leaching, dumping, disposal, or release or migration of Hazardous Materials into the Environment, including the abandonment or discarding of barrels, containers and other receptacles containing any Hazardous Materials.

"**Remedial Action**" means any and all actions to (a) investigate, clean up, remediate, remove, treat, contain or in any other way address any Hazardous Materials in the Environment, (b) prevent the Release or threat of Release or minimize the further Release of any Hazardous Materials so it does not migrate or endanger public health or welfare or the indoor or outdoor Environment, and (c) perform pre-remedial studies and investigations and post-remedial monitoring, maintenance and care. The term "**Remedial Action**" includes any action which constitutes (i) a "removal", "remedial action" or "response" as defined by Section 101 of CERCLA, 42 U.S.C. §§ 9601(23), (24), and (25); (ii) a "corrective action" as defined in RCRA, 42 U.S.C. § 6901 et seq.; or (iii) a "response" or "interim response" as defined in the Pennsylvania Hazardous Sites Cleanup Act, 35 P.S. §6020.103.

"**Representative**" means, with respect to any Person, any director, officer, employee, official, lender mortgagee, financier, provider of any financial instrument (or any agent or trustee acting on their behalf), partner, member, owner, agent, lawyer, accountant, auditor, professional advisor, consultant, engineer, contractor, other Person for whom such Person is at law responsible or other representative of such Person and any professional advisor, consultant or engineer designated by such Person as its "Representative."

"**Schedules**" means the disclosure schedules delivered by Seller and Buyer, respectively, concurrently with the execution and delivery of this Agreement, and as may be supplemented and updated pursuant to Sections 9.03 and 10.04. Any disclosure set forth on any particular Schedule is deemed disclosure in reference to all Schedules comprising the Schedules to which such disclosure is reasonably apparent.

"**Seller**" has the meaning specified in the Preamble of this Agreement.

"**Seller Fundamental Representations**" has the meaning specified in Section 8.01.

"**Seller Indemnified Persons**" has the meaning specified in Section 8.03.

"**Seller NPDES Permits**" means the National Pollutant Discharge Elimination System Permits/Water Quality Management Permits set forth on Schedule 4.12, each issued by PaDEP to Seller with respect to the System, including any revisions or amendments thereto. This definition does not include any permit issued and related to the Stormwater System Assets.

"**Service Area**" has the meaning specified in the Recitals to this Agreement.

"**Stormwater System Assets**" means all assets owned by Seller, and used exclusively in the operation or maintenance of the MS4 System, including (i) drains, pipes and collection basins and all other stormwater drainage assets used exclusively for stormwater collection, conveyance

and discharge; (ii) catch basins, inlets, pipes and all other stormwater lateral facilities (the "**Stormwater Lateral Facilities**") that connect surface stormwater drains to storm conveyances which discharge to surface waters; (iii) interest in real estate directly associated with (i) and (ii); and (iv) any related permits.

"**Supplies**" means all lubricants, spare parts, fuel, chemicals, raw materials, and other supplies and inventory, and all rights to warranties received from suppliers with respect to the foregoing, and related claims, credits, and rights of recovery with respect thereto that are necessary to operate the System.

"**System**" has the meaning specified in the Recitals to this Agreement and includes the Acquired Assets and excludes the Excluded Assets.

"**Taxes**" means any federal, state, local or foreign income, gross receipts, license, payroll, employment, excise, severance, stamp, occupation, premium, windfall profits, environmental, customs duties, permit fees, capital stock, franchise, profits, withholding, social security, unemployment, disability, real property, personal property, parking, sales, use, transfer, registration, value added, alternative or add-on minimum, estimated or other tax, levy, impost, stamp tax, duty, fee, withholding or similar imposition of any kind payable, levied, collected, withheld or assessed at any time, including any interest, penalty or addition thereto, whether disputed or not.

"**Third Party Claim**" has the meaning specified in Section 8.05(a).

"**Threshold Amount**" has the meaning specified in Section 8.05(a).

"**Title Commitment**" has the meaning specified in Section 6.01.

"**Title Company**" has the meaning specified in Section 6.01.

"**Title Policy**" has the meaning specified in Section 2.03.

"**Township Board**" the meaning specified in the Preamble of this Agreement.

"**Township Senior Staff**" means the Township Manager, Assistant Manager, Superintendent of Public Works and the Township Engineer.

"**UCC Search**" has the meaning specified in Section 6.04.

"**Unscheduled Real Property**" has the meaning specified in Section 6.06.

"**Utility Valuation Expert**" means an expert that was approved by the PaPUC and is currently, at the time of this Agreement, on the list of approved appraisers maintained by the PaPUC.

ARTICLE II.

TERMS OF PURCHASE AND ASSUMPTION OF LIABILITIES

Section 2.01. Purchase and Sale of Acquired Assets.

Subject to the terms and conditions set forth in this Agreement, at Closing, Buyer shall purchase from Seller and Seller shall sell, transfer, assign and deliver to Buyer, free and clear of all Liens except for Permitted Liens, all of Seller's right, title and interest in and to all assets, facilities, business, goodwill, properties and rights of Seller of every kind and description, whether tangible or intangible, real, personal or mixed, wherever situated, in each case used in, held for use in, or acquired or developed for use in, the System, or otherwise related to, or arising out of the operation or conduct of the System (whether or not any such assets have any value for accounting purposes or are carried or reflected on the books or financial records of Seller), including any of the foregoing in which Seller is entitled to acquire rights in the future pursuant to Pending Development Plans (other than the rights of Seller pursuant to Section 2.02(d)) or development plans approved pursuant to this Agreement, but in all cases other than the Excluded Assets (collectively referred to as the "Acquired Assets"), including:

(a) all real property and appurtenant interests, rights of way used in, or necessary for, the operation of the System, including without limitation (i) good and marketable fee simple title to the Real Property set forth on Schedule 4.09, and (ii) all Easements, including without limitation those set forth on Schedule 4.09;

(b) all sanitary wastewater related treatment, collection and conveyance facilities, including all collection system mains (whether gravity or force mains), laterals (from the collection system main to the edge-of-road or curb-line when the main is located within a public right-of-way or the edge of an easement where the main is located within private property), pumping stations, generators, manholes, and other related appurtenances and any billing and collections related assets necessary to own and operate the System;

(c) all contracts, licenses, and leases to which Seller is a party or beneficiary or payee, including without limitation, all construction contracts, surety bonds, operation and maintenance agreements, management agreements, reserved capacity agreements, architect agreements and consultant agreements, and agreements relating to vehicles and other items of personal property as set forth on Schedule 4.13 (the "Assigned Contracts");

(d) all Supplies;

(e) all personal property and fixed assets, including all Equipment and Machinery, auxiliary equipment and plant equipment, including without limitation those items set forth on Schedule 4.10;

(f) all expenses prepaid by Seller and security deposits paid by Seller;

(g) all Files and Records;

(h) all Authorizations and Permits of or held by Seller (to the extent transferrable to Buyer under Law), including all Authorizations and Permits which are environmental permits, Seller NPDES Permits other than those NPDES permits that relate to the Stormwater System Assets, other operating permits and those items set forth on Schedule 4.12; and

(i) all goodwill of the System.

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, THE SELLER MAKES NO EXPRESS OR IMPLIED REPRESENTATION OR WARRANTY REGARDING ANY REPRESENTATION REGARDING THE FUTURE PROFITABILITY OR FUTURE EARNINGS PERFORMANCE OF THE ACQUIRED ASSETS OR THE SYSTEM OR ANY FUTURE RATEMAKING THAT MAY BE ALLOWED BY THE PAPUC FOR ANY OF THE ACQUIRED ASSETS. NOTWITHSTANDING THE FOREGOING, ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE VALID UNTIL THE TIME OF CLOSING.

Section 2.02. Excluded Assets.

Notwithstanding anything herein to the contrary, the Acquired Assets do not include the following (the "Excluded Assets"):

(a) the Stormwater System Assets, including any related NPDES permits;

(b) all contracts, licenses and leases that are not Assigned Contracts;

(c) the seals, organizational documents, minute books, tax returns, books of account or other records having to do with the organization of Seller;

(d) cash and cash equivalents, including (i) accounts receivable and amounts earned by Seller but not yet billed attributable to services rendered by Seller as of or before the Closing Date and (ii) EDU fees owed to Seller at or before the Closing Date for any Pending Development Plan but not yet paid to Seller;

(e) all insurance policies of Seller and all rights to applicable claims and proceeds thereunder;

(f) all rights to any outstanding lien related to non-payment by a System customer existing at or before the Closing Date and all actions, suits or claims of any nature available to or being pursued by Seller, whether arising by way of counterclaim or otherwise;

(g) all assets, properties and rights used by Seller other than those which primarily relate to the operations of the System;

(h) the assets, properties and rights specifically set forth on Schedule 2.02(h);

(i) the MS4 System Real Property; and

(j) the rights which accrue or will accrue to Seller under this Agreement and any related agreement, exhibit or schedule.

Section 2.03. Sale Free of Liens.

After Buyer fulfills its obligations pursuant to Section 3.01(a), on the Closing Date, the Acquired Assets will be free and clear of all Liens other than Permitted Liens. Seller shall convey the Acquired Assets by appropriate special warranty or other deed (subject to Section 6.02(c)), bills of sale, endorsements, assignments and other instruments of transfer or conveyance described herein, and if not expressly described herein, then by transfer documents in form and substance reasonably acceptable to Buyer and Seller and their counsel in their reasonable, good faith discretion. At Closing, title to the Real Property must be good and marketable and insured by the Title Company, at the Title Company's filed rates, as good and marketable title, free and clear of all Liens and exceptions to coverage, except for the Permitted Liens, pursuant to an owner's policy of title insurance on the American Land Title Association's ("ALTA") Owner's Form 2006, subject to the terms of Section 6.02 (the "Title Policy").

Section 2.04. Assumption of Liabilities.

(a) On the terms and conditions set forth in this Agreement and excluding the Excluded Liabilities, Buyer shall assume and pay, perform and discharge when due any and all liabilities and obligations of Seller both (1) arising under Seller NPDES Permits (arising from, related to, or based on events or circumstances occurring on or after the Closing Date), and (2) arising out of or relating to the System or the Acquired Assets on or after the Closing, including the following:

(i) all liabilities and obligations under the Assigned Contracts and Authorizations and Permits resulting from events that occur or conditions that arise on or after the Closing;

(ii) any litigation initiated against Seller related to the System or the Acquired Assets resulting from events that occur on or after the Closing or conditions that arise on or after the Closing;

(iii) all liabilities and obligations for Taxes relating to the System, its operation, the Acquired Assets and the Assumed Liabilities attributable to the period after the Closing Date; and

(iv) all other liabilities and obligations arising out of or relating to Buyer's ownership or operation of the System and the Acquired Assets on or after the Closing (all of the aforementioned liabilities in this Section 2.04(a) are referred to as the "Assumed Liabilities").

(b) At the Closing, to the extent Seller is not released therefrom, Buyer shall indemnify Seller against any Loss relating to the Assumed Liabilities in accordance with Section 8.03.

(c) Buyer shall not assume or be liable to pay any liabilities or obligations relating to the Excluded Liabilities or any other liabilities or obligations that are not Assumed Liabilities.

Section 2.05. Further Assurances.

At any time and from time to time after the Closing Date, Seller shall, upon the request of Buyer, and Buyer shall, upon the request of Seller, at the cost of requesting Party, promptly execute, acknowledge and deliver, or cause to be executed, acknowledged and delivered, such other instruments of conveyance and transfer and other documents, and perform or cause to be performed such further acts, as may be reasonably required to evidence or effectuate, or more fully evidence or effectuate, (a) the sale, conveyance, transfer, assignment and delivery hereunder of the Acquired Assets to Buyer, (b) the assumption by Buyer of any of the Assumed Liabilities, (c) performance by the Parties of any of their other respective obligations under this Agreement, (d) the vesting in Buyer of all right, title and interest in the Acquired Assets and the System as specified in this Agreement, and (e) any other matters reasonably requested by a Party to carry out the provisions, purposes and intent of this Agreement.

Section 2.06. Certain Transfers; Assignment of Contracts.

(a) Notwithstanding anything to the contrary in this Agreement, and subject to the provisions of this Section 2.06(a) and Section 2.06(a), to the extent that the sale, transfer, assignment, conveyance and delivery, or attempted sale, transfer, assignment, conveyance and delivery, to Buyer of any Assigned Contract or other Acquired Asset would result in a violation of Law, or would require the consent, authorization, approval or waiver of any Person (other than the Parties), including any Governmental Authority, and such consent, authorization, approval or waiver shall not have been obtained before the Closing, this Agreement shall not constitute a sale, transfer, assignment, conveyance and delivery, or an attempted sale, transfer, assignment, conveyance and delivery, thereof (any such Acquired Asset, a "Nonassignable Asset"). Following the Closing, Seller and Buyer shall each use its commercially reasonable efforts (at the cost and expense of the Party that is responsible for compliance with such Law or obtaining such consent, authorization, approval or waiver), and shall cooperate with each other, to obtain any such required consent, authorization, approval or waiver, or any release, substitution, novation or amendment required to sell, transfer, assign, convey and deliver any such Nonassignable Asset to Buyer and in no event will Buyer be required to pay any additional consideration therefor. Once such consent, authorization, approval, waiver, release, substitution or amendment is obtained, Seller shall sell, transfer, assign, convey and deliver to Buyer the relevant Acquired Asset to which such consent, authorization, approval, waiver, release, substitution or amendment relates for no additional consideration. Any applicable sales, transfer and other similar Taxes in connection with such sale, transfer, assignment, conveyance and delivery shall be paid one-half (50%) by Buyer and one-half (50%) by Seller..

(b) Until such time as a Nonassignable Asset is transferred to Buyer pursuant to this Article II, Buyer and Seller shall cooperate in any commercially reasonable and economically feasible arrangements (such as subleasing, sublicensing or subcontracting) to provide to the Parties the economic and, to the extent permitted under Law, operational equivalent of the transfer of such Nonassignable Asset to Buyer at the Closing and the performance by Buyer of its obligations with respect thereto, and so long as Seller transfers and turns over all economic

and beneficial rights with respect to each such Nonassignable Asset, Buyer shall, to the extent permitted under Law and the terms of any applicable contract that is a Nonassignable Asset, as agent or subcontractor for Seller, pay, perform and discharge the liabilities and obligations of Seller thereunder from and after the Closing Date, but only to the extent that such liabilities and obligations would be Assumed Liabilities if the applicable consent or approval had been obtained on or before the Closing Date and such Nonassignable Asset had been assigned to Buyer at Closing. To the extent permitted under Law, Seller shall hold in trust for and pay to Buyer promptly upon receipt thereof, such Nonassignable Asset and all income, proceeds and other monies received by Seller with respect to such Nonassignable Asset in connection with the arrangements under this Article II.

(c) If, following the Effective Date and before the Closing, Buyer identifies any contract to which Seller is a party which is not set forth on Schedule 4.13, and Buyer reasonably determines such contract is necessary or useful to the operation of the System, Buyer shall notify Seller of such determination and Seller shall, promptly following receipt of such notice, deliver to Buyer an updated Schedule 4.13 reflecting the addition of such contract, and such contract will be an "Assigned Contract" for all purposes hereunder.

(d) If during the twelve (12) month period following the Closing, Buyer or Seller identifies any contract to which Seller was a party as of the Closing and which (i) was not set forth on Schedule 4.13 (as may be updated pursuant to (c)) and (ii) Buyer reasonably believes is necessary or useful to the operation of the System, Seller shall, promptly following Buyer's written request therefor, execute, acknowledge and deliver, or cause to be executed, acknowledged and delivered, such other instruments of conveyance and transfer and other documents, and perform or cause to be performed such further acts, as may be reasonably required to evidence or effectuate, or more fully evidence or effectuate the assignment of such contract to Buyer for no additional consideration, and upon such assignment, such contract is deemed an Assigned Contract for all purposes hereunder.

ARTICLE III.

PURCHASE PRICE

Section 3.01. Purchase Price.
The purchase price for the Acquired Assets is Seventeen Million Five Hundred Thousand Dollars ($17,500,000) (the "Purchase Price") which Buyer shall pay as follows at Closing:

(a) Buyer shall pay, subject to any adjustment pursuant to Section 3.01(b), and any amounts required to be deposited into the escrow fund pursuant to Section 6.05(e), to Seller by wire transfer of immediately available funds the Purchase Price to one or more accounts that Seller designates and provides to Buyer at least three (3) Business Days before the Closing Date; and

(b) Final Billing: The Buyer is entitled to all customer billings with respect to sanitary wastewater customers' services for the period on or after the Closing Effective Time, and Seller is entitled to all such billings for the period before the Closing Effective Time. The Parties shall cooperate to calculate an agreed upon proration of billing amounts and to the extent

that either Party collects billings that are attributable to service provided by the other Party, the Party holding the other Party's billing collections shall pay such amount to the other Party.

Section 3.02. Fair Consideration.

The consideration specified in this Article III represents fair consideration and reasonable equivalent value for the sale and transfer of the Acquired Assets and the transactions, covenants and agreements set forth in this Agreement, which consideration was agreed upon as the result of arm's-length good faith negotiations between the Parties and their respective Representatives.

Section 3.03. Transfer Taxes.

Any and all deed stamps or transfer Taxes which may be due the Commonwealth of Pennsylvania or any political subdivision in connection with the sale, transfer, assignment, conveyance and delivery hereunder of the Acquired Assets to Buyer (collectively, "Transfer Taxes"), shall be paid one- half (50%) by Buyer and one-half (50%) by Seller.

ARTICLE IV.

REPRESENTATIONS AND WARRANTIES OF SELLER

Seller makes only the representations and warranties which are set forth in this Article IV.

As a material inducement to Buyer to enter into this Agreement and to consummate the transactions contemplated by this Agreement, Seller represents and warrants, as of the Effective Date and as of the Closing Date (except to the extent any of the following representations and warranties specifically apply to or relate to another date, in which event such representations and warranties shall be true and correct as of such other date), as follows:

Section 4.01. Organization.

Seller is a body corporate and politic, organized and existing under the Second Class Township Code of the Commonwealth of Pennsylvania.

Section 4.02. Power and Authority.

Seller has (i) duly adopted an authorizing ordinance or resolution authorizing the transactions contemplated herein, which remains in full force and effect, (ii) duly authorized and approved the execution and delivery of this Agreement and (iii) duly authorized and approved the performance by Seller of its obligations contained in this Agreement. Seller has all requisite power and authority to own, lease and operate the Acquired Assets and the System and has the power and authority to enter into this Agreement and to do all acts and things and execute and deliver all other documents as are required hereunder to be done, observed or performed by it in accordance with the terms of this Agreement.

Section 4.03. Enforceability.

This Agreement has been duly authorized, executed and delivered by Seller and is a valid and legally binding obligation of Seller, enforceable against Seller in accordance with the terms hereof, subject only to applicable bankruptcy, insolvency and similar laws affecting the enforceability of the rights of creditors generally and to general principles of equity.

Section 4.04. No Conflict or Violation.

The execution and delivery of this Agreement by Seller, the consummation of the transactions contemplated by this Agreement and the performance by Seller of the terms, conditions and provisions hereof has not and will not contravene or violate or result in a breach of (with or without the giving of notice or lapse of time, or both) or acceleration of any material obligations of Seller under (i) any Law or (ii) any agreement, instrument or document to which Seller is a party or by which it is bound.

Section 4.05. Consents and Approvals.

Schedule 4.05 sets forth a list of each consent, waiver, authorization or approval of any Governmental Authority, or of any other Person, and each declaration to or filing or registration with any Governmental Authority required in connection with the execution and delivery of this Agreement by Seller or the performance by Seller of its obligations hereunder.

Section 4.06. Undisclosed Liabilities.

Except as set forth in Schedule 4.06, there are no liabilities or obligations of Seller, either accrued, absolute, contingent or otherwise, relating to the Acquired Assets, other than liabilities incurred in the ordinary course, that could not reasonably be expected to have a Material Adverse Effect on Buyer.

Section 4.07. Absence of Certain Changes or Events.

Except as set forth on Schedule 4.07, since December 31, 2017, there has not been any transaction or occurrence that has resulted or is reasonably likely to result in a Material Adverse Effect and Seller has operated and maintained the System since that date in the ordinary course.

Section 4.08. Tax Matters.

Except as set forth in Schedule 4.08 or as would not have a Material Adverse Effect, (i) Seller has timely paid all Taxes that may have been or may be due and payable by Seller on or before the Closing Date, arising from the ownership or operation of the Acquired Assets or the System on or before the Closing Date (ii) no taxing authority has asserted any claim against the Seller for the assessment of any additional tax liability or initiated any action or proceeding which could result in such an assertion; and (iii) the Seller has made all withholding of Taxes required to be made under all Laws and regulations, including without limitation, withholding with respect to compensation paid to employees, and the amounts withheld have been properly paid over to the appropriate taxing authorities.

Section 4.09. Real Property and Easements.

Schedule 4.09 sets forth all Real Property of Seller and separately identifies all Easements. Seller does not lease (as lessee) any real property that is used in the operation of the System. There are no pending condemnation proceedings relating to any of the Real Property or Easements nor has Seller actually received any written threats of any condemnation proceedings and, to the Knowledge of Seller, no such proceedings are threatened. Seller has not received any written notices of any violations of any Law from any Governmental Authority with respect to the Real Property or the Easements which has not been cured in all material respects and, to Seller's Knowledge, no such violations of Law exist. With respect to the Real Property, (i) there are no leases, options, rights of reversions or other rights of use or rights to acquire the Real Property held by third parties, (ii) Seller is in sole possession of the Real Property, and (iii) to Seller's Knowledge there are no encroachments either way across the boundary of the Real Property, nor any dispute with adjacent real property owners over the location of boundaries or potential claims adverse to title. With respect to each Easement, (i) there are no leases, options, rights of reversions or other rights of use or rights to acquire the Easement held by third parties, and (ii) to Seller's Knowledge there are no disputes with adjacent real property owners of the owners of the real property encumbered by the Easement over the location of boundaries or potential claims adverse to title.

Section 4.10. Equipment and Machinery.

All Equipment and Machinery included in the Acquired Assets is set forth on Schedule 4.10. Except as set forth in Schedule 4.10, Seller has good title, free and clear of all Liens (other than the Permitted Liens and Liens that will be released on or before Closing) to the Equipment and Machinery owned by Seller. Except as set forth on Schedule 4.10, all the Equipment and Machinery is owned by Seller, and none is leased or used under any conditional sales, title-retention, lease, license or similar arrangement.

Section 4.11. Environmental Compliance.

Except as set forth on Schedule 4.11 or that otherwise could not be expected to have a Material Adverse Effect:

(a) The System as currently operated by Seller and all operations and activities conducted by Seller with respect to the System are in compliance in all material respects with all applicable Environmental Requirements.

(b) Seller has generated, used, handled, treated, stored and disposed of all Hazardous Materials in (i) compliance in all material respects with all applicable Environmental Requirements and (ii) a manner that has not given, and could not reasonably be anticipated to give, rise to Environmental Liabilities.

(c) Seller has not received notice of any Environmental Claims related to the System that have not been fully and finally resolved, and to the Knowledge of Seller no claims of Environmental Liabilities have been threatened allegedly arising from or relating to the System that have not been fully and finally resolved.

(d) Hazardous Materials are not present at or on the System or Acquired Assets, there has been no Release of Hazardous Materials at, on or from any part of the System or the Acquired Assets, in each case in a manner that violates any Environmental Requirements or has resulted in, or could reasonably be anticipated to give rise to, Environmental Liabilities.

(e) No Lien or activity use limitation or institutional control has been recorded affecting any Acquired Assets by any Governmental Authority due to either the presence of any Hazardous Material on or off the Acquired Assets or a violation of any Environmental Requirement.

(f) There are no underground storage tanks on or at any of the Acquired Assets. Any underground storage tanks previously located at the Acquired Assets have been removed or otherwise closed, plugged and abandoned in compliance with applicable Environmental Requirements in effect at the time of such closure.

(g) No PCB Equipment is on or at any of the Acquired Assets. Any PCB Equipment that previously existed at the Acquired Assets has been flushed of polychlorinated byphenyls or has been removed and properly disposed of, in compliance with applicable Environmental Requirements, and any remaining PCB Equipment is labeled to the extent required under applicable Environmental Requirements and being managed in compliance with applicable Environmental Requirements.

(h) No Regulated Asbestos Containing Material exists in or on the Acquired Assets in an aggregate amount that would reasonably be expected to result in an Environmental Liability; and any Regulated Asbestos Containing Material is being managed in compliance with all applicable Environmental Requirements.

(i) Seller has delivered to Buyer (1) all material environmental site assessments or reasonable and accurate summaries thereof pertaining to the System, (2) all material compliance audits or compliance assurance reviews prepared within the previous five (5) years or reasonable and accurate summaries thereof relating to compliance with Environmental Requirements by the System, and (3) reasonable and accurate summaries of, or all material documents pertaining to, any known and unresolved Environmental Liabilities incurred in relation to the System, to the extent possessed by or under the reasonable control of Seller.

Section 4.12. Authorizations and Permits.

Schedule 4.12 sets forth the Authorizations and Permits of Seller that are currently in full force and effect; (ii) Seller has made true and complete copies of all Authorizations and Permits available to Buyer; and (iii) except as set forth on Schedule 4.12, Seller is in compliance with all terms, conditions and requirements of all Authorizations and Permits, except in each case where such violation or failure, individually or in the aggregate, would not have a Material Adverse Effect, and no proceeding is pending or, to the Knowledge of Seller threatened relating to the revocation or limitation of any of the Authorizations or Permits, other than those revocations or limitations which do not individually or in the aggregate have a Material Adverse Effect.

Section 4.13. System Contracts.

(a) Schedule 4.13 sets forth a complete and accurate list of all the Assigned Contracts.

(b) Seller has made available to Buyer true and complete copies of all of the Assigned Contracts.

(c) All of the Assigned Contracts set forth on Schedule 4.13 are in full force and effect. Seller has not, nor to the Knowledge of Seller has any other party thereto, breached any material provision of or defaulted under the material terms of, nor does any condition exist which, with notice or lapse of time, or both, would cause Seller, or to the Knowledge of Seller, any other party, to be in default under any Assigned Contract.

Section 4.14. Compliance with Law; Litigation.

(a) Seller has operated and is operating the System in compliance, in all material respects, with all Laws, Authorizations and Permits and is not in breach of any Law, Authorization or Permit that would have a Material Adverse Effect on the operations of the System or on Buyer. There are no Authorizations or Permits from any Governmental Authority necessary for the operation of the System as currently being operated except for those Authorizations and Permits set forth on Schedule 4.12.

(b) Except at set forth on Schedule 4.14, there are no facts, circumstances, conditions or occurrences regarding the System that could reasonably be expected to give rise to any environmental claims or governmental enforcement actions that could reasonably be expected to have a Material Adverse Effect, and there are no past, pending or threatened environmental claims or governmental enforcement actions against Seller that individually or in the aggregate could reasonably be expected to have a Material Adverse Effect.

(c) Except at set forth on Schedule 4.14, no action, suit or proceeding, at law or in equity, or before or by any Governmental Authority, is pending nor, to the Knowledge of Seller, threatened against Seller before or at the time of Closing that could reasonably be expected to have a Material Adverse Effect on the operations of the System. As of the Effective Date, no action, suit or proceeding, at Law or in equity, or before or by any Governmental Authority, is pending nor, to the Knowledge of Seller, threatened against Seller which could materially affect the validity or enforceability of this Agreement.

Section 4.15. Broker's and Finder's Fees.

No broker, finder, or Person is entitled to any commission or finder's fee by reason of any agreement or action of Seller in connection with this Agreement or the transactions contemplated by this Agreement. Seller shall pay when due the fees and expenses of their financial and technical advisors. Seller has employed Public Financial Management, Inc., as municipal advisor to provide transaction structuring advice and to provide Seller with municipal advice relating to the sale of the System. Seller shall pay all fees owed to Public Financial Management, Inc. in connection with the transactions contemplated by this Agreement.

Section 4.16. Title to the Acquired Assets; Sufficiency.

(a) Except as set forth on Schedule 4.16(a), Seller has good and marketable title to, all Real Property, and valid leasehold interest in or valid licenses or Easements to use and access, all of the Acquired Assets, free and clear of all Liens, other than Permitted Liens and Liens which will be fully and unconditionally released at or before Closing. The use of the Acquired Assets is not subject to any Liens, other than Permitted Liens, and such use does not encroach on the property or the rights of any Person.

(b) Except as set forth on Schedule 4.16(b), the Acquired Assets are sufficient for, and constitute all the assets, properties, business, goodwill and rights of every kind and description, and services required for, the continued conduct and operation of the System by Buyer in substantially the same manner as currently conducted and operated by Seller. Except for the Excluded Assets and except as set forth on Schedule 4.16(b), (i) the Acquired Assets, taken as a whole, comprise all the assets, properties, business, goodwill and rights of every kind and description used or held for use in, or useful or necessary to the operation of the System as currently operated by Seller, and (ii) there are no assets, properties, business, goodwill, rights or services used in the conduct or operation of the System that are owned by any Person other than Seller that will not be licensed or leased to Buyer under valid, current license arrangements or leases. None of the Excluded Assets are material to the System.

Section 4.17. Pending Development Plans.

Schedule 4.17 sets forth a full and complete list of all Pending Development Plans as of the Effective Date. Each Pending Development Plan, if consummated could result in the expansion of the Service Area. Seller provides no assurances whatsoever that any development or expansion of the Service Area associated with any Pending Development Plan will actually be undertaken or completed. The Parties expect that Schedule 4.17 will change from time to time between the Effective Date and Closing, and the Seller shall provide updates to Schedule 4.17 pursuant to Section 9.03.

Section 4.18. Land Development Agreements/Financial Security Agreements

Schedule 4.18 sets forth a list of all Land Development / Financial Security Agreements existing as of the Effective Date between Seller and any third party.

Section 4.19. Customer Laterals and Grinder Pumps. Seller does not own, nor does Seller have any responsibility for any grinder pumps or connecting facilities located in the area originating from Seller's terminus point of the collection facilities at the edge-of-road or curb-line when the facilities are located with a public right-of-way or the edge of an easement where the collection facilities are located within private property to and throughout the customer's property.

ARTICLE V. REPRESENTATIONS AND WARRANTIES OF BUYER

Buyer makes only the representations and warranties which are set forth in this Article V.

As a material inducement to Seller to enter into this Agreement and to consummate the transactions contemplated by this Agreement, Buyer represents and warrants to Seller, as of the Effective Date and as of the Closing Date (except to the extent any of the following representations and warranties specifically apply or relate to another date, in which event such representations and warranties will be true and correct as of such other date), as follows:

Section 5.01. Organization.

Buyer is duly organized, validly existing and in good standing under the laws of the state of its organization.

Section 5.02. Authorization and Validity of Agreement.

Buyer has the power and authority to enter into this Agreement and to do all acts and things and execute and deliver all other documents as are required hereunder to be done, observed or performed by it in accordance with the terms of this Agreement. This Agreement has been duly authorized, executed and delivered by Buyer and is a valid and legally binding obligation of Buyer, enforceable against it in accordance with the terms hereof, subject only to applicable bankruptcy, insolvency and similar laws affecting the enforceability of the rights of creditors generally and to general principles of equity.

Section 5.03. No Conflict or Violation.

The execution and delivery of this Agreement by Buyer, the consummation of the transactions contemplated hereby and the performance by Buyer of the terms, conditions and provisions hereof has not and will not contravene or violate or result in a material breach of (with or without the giving of notice or lapse of time, or both) or acceleration of any material obligations of Buyer under (i) any Law, (ii) any material agreement, instrument or document to which Buyer is a party or by which it is bound or (iii) the articles, bylaws or governing documents of Buyer.

Section 5.04. Consents and Approvals.

Schedule 5.04 sets forth a list of each consent, waiver, authorization or approval of any Governmental Authority, or of any other Person, and each declaration to or filing or registration with any Governmental Authority required in connection with the execution and delivery of this Agreement by Buyer or the performance by Buyer of its obligations hereunder.

Section 5.05. Broker's and Finder's Fees.

No broker, finder or third party is entitled to any commission or finder's fee in connection with this Agreement or the transactions contemplated by this Agreement.

Section 5.06. Financial Wherewithal.

Upon Closing, and after giving effect to the consummation of the transactions contemplated hereby and the incurrence of any indebtedness in connection therewith, Buyer shall have the financial ability and will have sufficient working capital for its needs and anticipated

needs to operate the System as a certificated public utility system regulated by the PaPUC, authorized, among things, to provide wastewater utility services to retail residential, commercial and industrial customers in the System.

Section 5.07. Sufficient Funds.

Buyer shall have sufficient funds available at Closing to consummate the transactions contemplated by this Agreement, to pay the Purchase Price in accordance with Article III and expenses related to the transactions contemplated by this Agreement, and on and after Closing, to generally provide ownership, operation and capital for the operations and capital needs of the System following the Closing, and assuring that the customers of the System will receive safe, adequate and reliable wastewater service equal to or better than such customers would have received without the transactions contemplated by this Agreement and at all times consistent with the provisions of the Pennsylvania Public Utility Code, 66 Pa. C. S. § 101 *et seq*, and Law.

Section 5.08. Independent Decision.

Except as expressly set forth in this Agreement, or any of the related agreements, Buyer acknowledges that (a) neither Seller nor any other Person has made any representation or warranty, express or implied, as to the accuracy or completeness of the System or information provided to Buyer, and (b) neither Seller nor any other Person shall have or be subject to any liability to Buyer or any other Person resulting from the distribution to Buyer, or Buyer use of, any information regarding the System or Acquired Assets that has been furnished or made available to Buyer and its Representatives.

Section 5.09. Scheduled Matters.

Buyer acknowledges that: (a) the inclusion of any matter on any Schedule is not an admission by Seller that such listed matter is material or that such listed matter has or could have a material adverse effect or constitutes a material liability with respect to the Acquired Assets; (b) matters reflected in the Schedules are not necessarily limited to matters required by this Agreement to be reflected in such Schedules; and (c) such additional matters are set forth for informational purposes only and do not necessarily include other matters of a similar nature.

Section 5.10. Independent Investigation.

Buyer acknowledges that it has conducted an independent investigation of the financial condition, assets, liabilities, properties and projected capital needs and operations of the System in making its determination as to the propriety of the transaction contemplated by this Agreement and, in entering into this Agreement and related agreements, has relied solely on the results of its investigation and on the representations and warranties of Seller expressly contained in Article IV of this Agreement.

Section 5.11. Litigation.

Buyer is not in breach of any Law that could have a material adverse effect on the operations of the System or Buyer. Neither Buyer nor any Affiliate of Buyer is listed on any of the following lists maintained by the Office of Foreign Assets Control of the United States

Department of the Treasury, the Bureau of Industry and Security of the United States Department of Commerce or their successors, or on any other list of Persons with which Seller may not do business under Law: the Specially Designated Nationals List, the Denied Persons List, the Unverified List, the Entity List and the Debarred List. Except as set forth on Schedule 5.11, no action, suit or proceeding, at law or in equity, or before or by any Governmental Authority, is pending nor, to the Knowledge of Buyer, threatened against Buyer before or at the time of Closing, which will have a material adverse effect on (i) the transactions contemplated by this Agreement or (ii) the validity or enforceability of this Agreement.

ARTICLE VI.

TITLE TO REAL PROPERTY; EASEMENTS

Section 6.01. Evidence of Title.

Subject to Section 6.06, with respect to all Real Property, Buyer shall obtain at its sole cost and expense a commitment for a Title Policy (the "Title Commitment"), issued by a title insurance company selected by Buyer and licensed to insure title to real property by the Commonwealth of Pennsylvania (the "Title Company"). Promptly following the Effective Date, Buyer shall order the Title Commitment from the Title Company and shall provide Seller evidence of the order. Notwithstanding anything to the contrary in Section 6.02(a), a purported Objection Notice is void with respect to any parcel of Real Property if, within thirty (30) Business Days after the Effective Date, Buyer has not ordered the Title Commitment from the Title Company for such parcel of Real Property and provided Seller with evidence of the order.

Section 6.02. Objections to Title.

(a) Notice of Objections. Within thirty (30) Business Days of Buyer's receipt of the Title Commitment for any of the parcels of Real Property, Buyer shall deliver to Seller a true, correct and complete copy of the Title Commitment and true, correct, complete and legible copies of all exception documents listed in the Title Commitment, along with Buyer's notice to Seller of any exceptions to title set forth on Schedule B of the Title Commitment to which Buyer objects (the "Objection Notice"). The exceptions listed in the Title Objection Notice are referred to as the "Title Objection Items." None of the following are Title Objection Items: (a) Permitted Liens, (b) items that pertain to Buyer or any requirements, conditions or obligations of Buyer, (c) matters of record that are set forth in the Title Commitment and adversely restrict or prevent the use of the Real Property in the operation of the System and (d) standard Title Company exceptions (such as the "survey" exception). Any Objection Notice which does not include a true, correct and complete copy of the Title Commitment and true, correct, complete and legible copies of any and all exception documents listed in the Title Commitment is void. If Buyer provides Seller with an Objection Notice, Seller shall use its commercially reasonable efforts to have all of the Title Objection Items cured, satisfied or released of record, or bond over, by the Title Company ("Cure" or "Cured") before or as of the Closing. At or before the Closing, Seller shall deliver written evidence to Buyer, in form and substance reasonably satisfactory to Buyer and at Seller's cost and expense, evidencing that Seller has Cured all Title Objection Items.

(b) Liens. Without limiting Seller's obligations pursuant to Section 6.02(a), before or as of the Closing, Seller shall, at its sole cost and expense, Cure any Lien encumbering the Real Property which can be Cured by the payment of money (other than Permitted Liens).

(c) Title Endorsements/Survey. Buyer shall pay for any endorsements required by Buyer or any mortgagee of Buyer to the Title Policy. If any survey is required by Buyer or its mortgagee, either as a condition to any endorsement or otherwise, Buyer shall pay to obtain the survey and all related costs and expenses. If Buyer obtains a survey of any Real Property and wants the deed to contain the legal description based on a survey, if the same is not identical to the legal description contained in Seller's deed of record, Seller is not obligated to include the same in the deed to Buyer unless the survey is certified to Seller and such description is included in the deed on a "quitclaim" basis only and without warranty of title.

(d) License at Closing. Seller shall provide Buyer with a license agreement granting Buyer a license in all of Seller's rights to access Real Property in order to allow Buyer to operate and maintain the System until such time as Buyer is provided title to such Real Property as provided for in this Agreement. For the avoidance of doubt, Seller shall provide such title as soon as reasonably practicable in accordance with Section 6.01.

(e) Insurable Claims. To the extent any Claim for Losses under Article VIII is an Insurable Claim, Buyer shall assert and pursue with reasonable diligence the Insurable Claim against the Title Company (which includes commencing litigation and diligently prosecuting the Insurable Claim to judgment) before pursuing a Claim for Losses under Article VIII. Following a non-favorable judgment that substantially denies the relief sought by Buyer from the Title Company in connection with the Insurable Claim (each a "Non-Favorable Judgment"), Buyer may, following such Non-Favorable Judgment, pursue Seller with a Claim for Losses under Article VIII (any Claim against Seller following an attempted Insurable Claim against the Title Company is a "Residual Title Claim"). Notwithstanding anything to the contrary in Article VIII, Buyer must assert a Claim for Losses based upon a Residual Title Claim within sixty (60) day of the Non-Favorable Judgment. For purposes of this Section 6.02(d), an "Insurable Claim" means a Claim that: (i) arises out of Buyer's discovery of a title defect or encumbrance with respect to any of the Real Property following the Closing Date that materially restricts or prevents the use of such Real Property in the operation of the System; and (ii) is a claim against the Title Company under the Title Policy. Buyer acknowledges that any Claims that it could otherwise bring as a breach of a covenant of title under the special warranty deed to the Real Property is included within the Claim for Losses under Article VIII and is subject to the terms of this Section 6.02(d) of first pursuing the same as an Insurable Claim.

Section 6.03. Title Expenses.

Irrespective of whether Closing occurs, Buyer shall pay all costs and expenses for obtaining the Title Commitment, Title Policy and any survey. Seller shall pay for all expenses to release, satisfy or bond over any Liens, and to effect the Cure of any Title Objection Items that Seller undertakes to Cure, including the cost of any title endorsement to insure Buyer against any adverse effect of such Title Objection Items.

Section 6.04. UCC Search; Releases.

Not later than sixty (60) Business Days after the Effective Date, Buyer shall obtain at its sole cost and expense a Uniform Commercial Code search against Seller covering any of the personal property or fixtures included among the Acquired Assets from the Office of the Secretary of the Commonwealth of Pennsylvania and the Recorder of Chester County, Pennsylvania (the "UCC Search"). On or before the Closing, Seller shall obtain at its sole cost and expense releases of any and all security interests in any of the Acquired Assets which are not Permitted Liens. Seller shall provide the form of the releases of any security interests to Buyer on or before the Closing Date.

Section 6.05. Easements.

(a) Promptly after the Effective Date and before the Closing, Seller shall, at its sole cost and expense, cause an abstractor selected by Seller and reasonably acceptable to Buyer and the Title Company (the "Abstractor") to perform a search of the public land records of Chester County, based on Seller's records and plans of the System (and such other sources of information as are reasonably related thereto), by means of searching the grantee index in the names of Seller and such other searches as the Abstractor may reasonably make, to (i) identify and provide Buyer with title information on all recorded Easements, and (ii) together with Seller, identify all Missing Easements. During this process, as the Abstractor provides written search results to Seller (including updated versions of the Abstractor search result chart), Seller will promptly provide the same to Buyer for its review, and Seller shall, or shall cause the Abstractor to, provide Buyer with periodic updates (which shall occur no less frequently than bi-weekly) on the status of the activities set forth in the previous sentence. Within thirty (30) Business Days after the Effective Date, Seller shall engage an engineer to develop a map of all collection pipes, services, pump stations, manholes of the System and identify each parcel within the Service Area that Seller's sanitary wastewater conveyance facilities encroaches upon private property ("Easement Map"). The Easement Map will be used in connection with the Abstractor's report to identify the Missing Easements Seller is obligated to obtain under Section 6.05. Promptly after the Effective Date, Seller shall engage an engineer to develop a map of all collection pipes, services, pump stations, manholes of the System and identify each parcel within the Service Area that Seller's sanitary wastewater conveyance facilities encroaches upon private property for use in connection with the Abstractor's report to identify the Missing Easements.

(b) Notice of Objections. Within forty five (45) days of Buyer's receipt from the Seller (or the Abstractor or an engineer) of the information described in subsection 6.05(a), Buyer shall deliver to Seller written notice identifying the encumbrances on the Easements that, in Buyer's reasonable opinion, could materially and adversely restrict or prevent the use of the Easements in the operation of the System, (an "Easement Objection Notice"). Buyer shall not be permitted to include in its Easement Objection Notice any encumbrances that: (a) are Permitted Liens, (b) pertain to the Buyer or any requirements, conditions or obligations of the Buyer, or (c) are matters of record and set forth in the Abstractor's search results that do not, in Buyer's reasonable opinion, materially and adversely restrict or prevent the use of the Easements in the operation of the System (specifically including mortgages or other instruments securing indebtedness incurred by the owner of the land burdened by the Easement) (such exceptions objected to in the Objection Notice, the "Easement Objection Items." If Buyer provides the

Seller with an Easement Objection Notice, the Seller shall use commercially reasonable efforts to have the Easement Objection Items Cured, prior to or as of the Closing. If Seller is unable to Cure any Easement Objection Item, Seller shall grant Buyer a license, pursuant to Section 6.05(d), in all of Seller's rights necessary to access Easements and operate and maintain the System until such time as Buyer is provided title to such Easement as provided for in this Agreement.

(c) If during the process of Abstractor's review and investigation of the Chester County land records, Seller determines that there is a Missing Easement, Seller shall take any and all actions (including the use of its power of condemnation) to obtain any Missing Easements so that the same may be sold, assigned, transferred and conveyed to Buyer at the Closing pursuant to the terms and conditions of this Agreement. All costs and expenses incurred in connection with obtaining each Missing Easement (including any payment to a landowner in connection with condemnation, in lieu of condemnation or otherwise) shall be paid by Seller and no additional consideration is payable by Buyer for any Missing Easement. If Seller has not obtained all Missing Easements by the date that is sixty (60) Business Days after the date that Abstractor has completed its review of the County land records and delivered the last results to Seller (the "Abstract Completion Date"), then, no later than thirty (30) Business Days after the Abstract Completion Date (but in any event no later than thirty (30) days before the Closing), Seller shall commence and file in the Court of Common Pleas, Chester County, a condemnation or eminent domain proceeding to obtain any and all such Missing Easements. For the purposes of clarity, upon obtaining each Missing Easement (including upon the final resolution of a condemnation proceeding), each Missing Easement that has been acquired or obtained by Seller will be considered an Easement.

(d) License at Closing. Seller shall provide Buyer with a license agreement granting Buyer a license in all of Seller's rights to access Easement in order to allow Buyer to operate and maintain the System until such time as Buyer is provided title to such Easement as provided for in this Agreement.

(e) Escrow at Closing for Missing Easements. For all of the Missing Easements listed on attached Schedule 6.05(e) as of the Closing Date, Seller will have additional time following the Closing Date to secure and assign and transfer the Missing Easements to Buyer. Seller shall diligently pursue and deliver the Missing Easements on or before the third (3rd) anniversary of the Closing Date, subject to any extension as permitted by Escrow Agreement, in the form attached as Exhibit C, that will require, among other things, the funding of an escrow account in the amount of Two Thousand Dollars ($2,000) per Missing Easements listed on attached Schedule 6.05(e) as of the Closing Date to secure the Seller's obligations under this Agreement and the Escrow Agreement.

Section 6.06. Unscheduled Property.

The Parties acknowledge that Seller may own interests in or have the legal right to use or occupy the Real Property and Easements that is necessary or essential to the operation of the System and that is not set forth on Schedule 4.09 (the "Unscheduled Real Property"). If the Parties discover before or after the Closing Date, one or more parcels of Unscheduled Real Property, the discovering Party shall notify the non-discovering Party of the discovery. In

addition to its obligations in Section 2.03, Seller shall convey, assign or otherwise transfer any rights to each parcel of Unscheduled Real Property, without additional consideration payable by Buyer, in such a manner as to provide Buyer with reasonable assurances that Buyer may use or occupy the Unscheduled Real Property as it was used by Seller as of the Effective Date.

ARTICLE VII.

OTHER AGREEMENTS

Section 7.01. Taxes.

Seller shall pay any and all Taxes, if any, arising out of the ownership of the Acquired Assets and out of the operation of the System before the Closing.

Section 7.02. Cooperation on Tax Matters.

Seller shall furnish or cause to be furnished to Buyer, as promptly as practicable, whether before or after the Closing Date, such information and assistance relating to the System as is reasonably necessary for the preparation and filing by Buyer of any filings relating to any Tax matters.

Section 7.03. Rates.

(a) Rates. Buyer shall implement the Seller's sanitary wastewater base rates then in effect at Closing, as set forth on Schedule 7.03(a) (the "Base Rate") as Buyer's effective sanitary wastewater base rates, provided that the rates set forth on Schedule 7.03(a) (at Closing) shall not be lower than those in effect on the Effective Date. Buyer shall not propose to increase Base Rates until after the second anniversary of the Closing Date. Buyer intends to bill customers on a monthly basis instead of annual billing, which Buyer will prorate accordingly. At and after the Closing, Buyer shall charge and collect its then-existing miscellaneous fees and charges and apply its then-existing rules and regulations for wastewater service in the Buyer's tariff (or rules and regulations), as amended from time to time, within the Service Area.

(b) PaPUC Approval. The Buyer shall include the rate provisions of Sections 7.03(a) in its requested PaPUC Governmental Approval.

Section 7.04. Buyer Taxpayer.

From and after the Closing Date, Buyer acknowledges that, upon conveyance of the Acquired Assets to Buyer, Buyer will be subject to, among other Taxes, real estate Taxes, which Buyer shall pay when due.

Section 7.05. PaPUC Approval.

(a) Promptly after the Effective Date, Buyer shall timely initiate and faithfully prosecute the necessary proceedings to obtain from the PaPUC (i) the issuance of certificates of public convenience to Buyer to provide wastewater services in the Service Area and (ii) the approval of the acquisition of the System by Buyer under terms and conditions that are

reasonably acceptable to Seller and Buyer. Seller shall cooperate with and assist Buyer in proceedings before the PaPUC.

(b) Buyer and Seller hereby agree that the procedures for determining fair market value of the System and Acquired Assets outlined in subsection (a) of Section 1329 of Title 66 of the Pennsylvania Consolidated Statutes ("Section 1329") shall be utilized and filed with the PaPUC as contemplated by Section 1329.

(c) The fees and expenses related to engaging the licensed engineer for such Section 1329 determination shall be paid one-half (50%) by Buyer and one-half (50%) by Seller.

(d) Buyer, in Buyer's first base rate proceeding with respect to the System following the Closing, shall propose the use of statutory and regulatory mechanisms available to benefit the Buyer's acquired customers for ratemaking purposes.

Section 7.06. Remedies for Breach of Article VII Agreements.

If Buyer breaches any of the covenants and agreements set forth in this Article VII following Closing, in addition to all other rights and remedies available at law or in equity, including specific performance and/or injunctive relief, Seller may commence proceedings before the PaPUC seeking enforcement of such covenants and agreements.

Section 7.07. Operation and Maintenance of the MS4 System.

Subject to Law, Seller, shall at all times maintain ownership of its MS4 System and Stormwater System Assets. Seller will maintain any NPDES permits related to the Stormwater System Assets.

Section 7.08. Utility Valuation Experts.

Buyer and Seller shall each be responsible for the costs associated with their respective Utility Valuation Expert for the preparation and completion of their respective Utility Valuation Expert's appraisal report and any additional work by their respective Utility Valuation Expert necessary to assist in the processing and prosecution of the application to the PaPUC in regard to this transaction under Section 1329.

Section 7.09. EDU Allocations.

In connection with EDU allocations, Buyer shall at all times act in compliance with Seller's ordinances, including those with respect to zoning and land use, the Seller's Act 537 plan and the Seller's comprehensive plans.

Section 7.10 Act 537 Plan.

(a) Buyer acknowledges that Seller previously drafted and committed to an Act 537 Plan under the Pennsylvania Sewage Facilities Act (the "Plan"), which has been made available to Buyer and which may be amended pursuant to Section 12.08 hereunder. Buyer understands that the Plan contains obligations and commitments, as more fully set forth in the Plan to

complete certain improvements and upgrades to the System (the "System Improvements"). Buyer shall accept and complete all of the System Improvements as Seller agreed to complete under the Plan.

(b) Buyer acknowledges that Seller has jurisdiction over sewage facilities planning and sewer service through the Plan and its Act 537 planning program, zoning, subdivision and land development ordinances and comprehensive land use planning policies. Buyer and Seller shall cooperate with respect to current and future sewage facilities planning and sewer service consistent with the provisions of this Section 7.10.

(c) Subject to PaPUC approval of the Service Area as specified in Section 7.05, Buyer shall extend sewer lines and provide sewage collection and treatment services to properties within the Service Area in a manner consistent with the Plan and the Buyer's Tariff. Pursuant to Section 12.08, Seller will confer with Buyer concerning any amendment to the Plan that would affect the provision of sewage collection and treatment services within the Service Area. Seller will not propose or adopt any amendment to the Plan that would reduce the Service Area or divert wastewater flows generated from properties located within the Service Area from being served by the System without the approval of Buyer.

(d) Buyer will not request, pursue, or implement expansions of the System within the Seller's border beyond the current Service Area (that would trigger a Plan amendment) without the prior written approval of Seller and the PaDEP. Seller shall promptly notify and confer with Buyer, and consider Buyer's comments, concerning any proposed Plan amendment (including any sewage facilities planning module) that would involve the provision of sewage collection and treatment services by the System to areas or properties outside of the Service Area. With respect to any such potential Plan amendment, Seller and Buyer shall cooperate in evaluating alternatives for provision of sewage services to such areas consistent with the requirements of 25 Pa Code Ch. 71, including consideration of the technical feasibility, economic feasibility and cost effectiveness, consistency with the objectives and policies of plans and requirements of 25 Pa. Code Ch. 71.21(a)(5), consistency with municipal land use plans and ordinances, subdivision ordinances and other ordinances and plans for controlling land use and development, technically and administratively able to be implemented, and other factors required under Act 537 or under Buyer's Tariff.

(e) If Seller and Buyer each determine that the provision of sewage collection and treatment services by the System to certain areas or properties outside of the Service Area is technically feasible, economically feasible and cost effective, and meets all of the requirements set forth in Act 537 and 25 Pa. Code Ch. 71, the Seller shall amend the Plan to include such identified areas and properties in the Service Area. If Seller amends the Plan pursuant to this subsection and such amendment is approved by PaDEP, (i) Buyer shall request that the modified Service Area be approved by PaPUC; and (ii) subject to PaPUC approval of the inclusion of such modified Service Area, Buyer shall extend sewer lines and provide sewage collection services to properties within such Service Area in a manner consistent with the Plan and Buyer's Tariff.

Section 7.11 Compliance and Operational Reports.

After the Effective Date and through the Closing Date, Seller shall provide Buyer with a periodic report to the person designated by Buyer, disclosing any and all material compliance or operational deficiencies that occurred during the previous month.

Section 7.12 Governance Matters.

Beginning on the Closing Date, Seller shall:

(i) provide Buyer with all financial information and other reports or communications received by Seller from the Valley Forge Sewer Authority within two (2) Business Days of receipt of such information by Seller from the Valley Forge Sewer Authority; and

(ii) subject to Seller's consent (which consent shall not be unreasonably withheld, delayed or conditioned), appoint, as Seller representative, the person identified by Buyer to the joint board pursuant to the Valley Forge Sewage Treatment Plant Agreement and any successor to any subsequent term.

ARTICLE VIII.

INDEMNIFICATION

Section 8.01. Survival.

All representations and warranties contained in this Agreement survive until twelve (12) months following the Closing Date, except that (a) the representations and warranties of Seller set forth in Section 4.01 (Organization), Section 4.02 (Power and Authority), Section 4.03 (Enforceability) and Section 4.15 (Brokers' and Finders' Fees) (collectively, the "Seller Fundamental Representations") survive the Closing indefinitely or until the latest date permitted by Law, and (b) the representations and warranties of Buyer set forth in Section 5.01 (Organization), Section 5.02 (Authorization and Validity of Agreement), and Section 5.05 (Brokers' and Finders' Fees) (collectively, the "Buyer Fundamental Representations") survive the Closing indefinitely or until the latest date permitted by Law. The covenants and agreements of the Parties contained in this Agreement survive the Closing indefinitely or for the shorter period explicitly specified therein, except that for those covenants and agreements that survive for a shorter period, breaches thereof survive indefinitely or until the latest date permitted by Law. Notwithstanding the preceding sentences, (x) any breach of representation, warranty, covenant or agreement in respect of which indemnity may be sought under this Agreement survives the time at which it would otherwise terminate pursuant to the preceding sentences, if notice of the inaccuracy or breach thereof giving rise to such right of indemnity has been given to the Party against whom such indemnity may be sought before such time, and (y) nothing contained in this Section 8.01 limits in any way any rights a Party may have to bring claims grounded in fraud, intentional misrepresentation or willful misconduct, which rights survive the Closing indefinitely.

Section 8.02. Indemnification by Seller.

To the maximum extent permitted by Law and subject to the terms and conditions of this Article VIII, Seller shall indemnify, defend and hold harmless, Buyer and its successors and Affiliates and their respective employees, officers, directors, trustees and agents (the "Buyer Indemnified Persons"), from and against any and all claims for Losses arising from or relating to: (a) any misrepresentation as to, or any material inaccuracy in, any of the representations and warranties of Seller contained in this Agreement or in any exhibit, schedule, certificate or other instrument or document furnished or to be furnished by Seller before the Closing pursuant to this Agreement (without regard to any materiality, Material Adverse Effect or related qualifications in the relevant representation or warranty (except where such provision requires disclosure of lists of items of a material nature or above a specified threshold)); (b) any material breach or nonfulfillment of any of the covenants or agreements of Seller contained in this Agreement or in any exhibit, schedule, certificate or other instrument or document furnished or to be furnished by Seller before the Closing pursuant to this Agreement; or (c) any Excluded Liability or Excluded Asset.

Section 8.03. Indemnification by Buyer.

To the maximum extent permitted by Law and subject to the terms and conditions of this Article VIII, Buyer shall defend, indemnify and hold harmless Seller and its successors and Affiliates and each of their respective employees, officers, directors and agents (the "Seller Indemnified Persons") from and against any and all claims for Losses arising from or relating to: (a) any material misrepresentation as to, or any material inaccuracy in, any of the representations and warranties of Buyer contained in this Agreement or in any exhibit, schedule, certificate or other instrument or document furnished or to be furnished by Buyer pursuant to this Agreement; (b) any material breach of any of the covenants or agreements of Buyer contained in this Agreement or in any exhibit, schedule certificate or other instrument or document furnished or to be furnished by Buyer pursuant to this Agreement; (c) any Assumed Liability as and when payment and performance is due, including without limitation any liability related to any claims by any Governmental Authority; (d) Buyer's actions involving Environmental Laws, Hazardous Materials or environmental claims from and after the Closing Date; or (e) the ownership, operation or control of the Acquired Assets or the System from and after the Closing Date.

Section 8.04. Indemnification Procedure.

(a) Third Party Claims. If any Indemnified Party receives notice of the assertion or commencement of any action, suit, claim or other legal proceeding made or brought by any Person who is not a Party or an Affiliate of a Party or a Representative of a Party (a "Third Party Claim") against such Indemnified Party with respect to which the Indemnifying Party may be obligated to provide indemnification under this Agreement, the Indemnified Party shall promptly notify the Indemnifying Party thereof. The failure to give such prompt notice does not, however, relieve the Indemnifying Party of its indemnification obligations, except and only to the extent that the Indemnifying Party forfeits material rights or material defenses by reason of such failure. Such notice by the Indemnified Party shall describe the Third Party Claim in reasonable detail and shall indicate the estimated amount, if reasonably practicable, of the Loss that has been or may be sustained by the Indemnified Party. The Indemnifying Party may participate in, or by

giving notice to the Indemnified Party (and subject to the other requirements herein) to assume the defense of any Third Party Claim at the Indemnifying Party's expense and by the Indemnifying Party's own counsel (which counsel must be reasonably acceptable to the Indemnified Party), so long as (i) the Indemnifying Party notifies the Indemnified Party, within ten (10) Business Days after the Indemnified Party has given notice of the Third Party Claim to the Indemnifying Party (or by such earlier date as may be necessary under applicable procedural rules in order to file a timely appearance and response) that the Indemnifying Party is assuming the defense of such Third Party Claim, and if the Indemnifying Party assumes control of such defense it must first agree and acknowledge in such notice that the Indemnifying Party is fully responsible (with no reservation of any rights other than the right to be subrogated to the rights of the Indemnified Party) for all Losses relating to such Third Party Claim, (ii) the Indemnifying Party conducts the defense of the Third Party Claim actively and diligently and at its own cost and expense, and (iii) the Third Party Claim (A) does not involve injunctive relief, specific performance or other similar equitable relief, any claim in respect of Taxes, any Governmental Authority, any criminal allegations, or any potential damage to the goodwill, reputation or overriding commercial interests of Buyer or its Affiliates, (B) is not one in which the Indemnifying Party is also a party and joint representation would be inappropriate or there may be legal defenses available to the Indemnified Party which are different from or additional to those available to the Indemnifying Party, or (C) does not involve a claim which, upon petition by the Indemnified Party, the appropriate court rules that the Indemnifying Party failed or is failing to vigorously prosecute or defend. The Indemnified Party shall reasonably cooperate in good faith in such defense. If the Indemnifying Party assumes the defense of any Third Party Claim, subject to Section 8.04(b), it may take such action as it deems necessary to avoid, dispute, defend, appeal or make counterclaims pertaining to any such Third Party Claim in the name and on behalf of the Indemnified Party. The Indemnified Party may, at its own cost and expense, participate in the defense of any Third Party Claim with counsel selected by it subject to the Indemnifying Party's right to control the defense thereof. If the Indemnifying Party elects not to compromise or defend such Third Party Claim or fails to promptly notify the Indemnified Party in writing of its election to defend as specified in this Agreement, the Indemnified Party may, subject to Section 8.04(b), pay, compromise, and defend such Third Party Claim and seek indemnification for any and all Losses based upon, arising from or relating to such Third Party Claim. Seller and Buyer shall reasonably and in good faith cooperate with each other in all reasonable respects in connection with the defense of any Third Party Claim, including making available records relating to such Third Party Claim and furnishing, without expense (other than reimbursement of actual out-of-pocket expenses) to the defending party or management employees of the non-defending party as may be reasonably necessary for the preparation of the defense of such Third Party Claim.

(b) Settlement of Third Party Claims. Notwithstanding any other provision of this Agreement, the Indemnifying Party shall not enter into settlement of any Third Party Claim without the prior written consent of the Indemnified Party (which consent shall not be unreasonably withheld or delayed), except as specified in this Section 8.04(b). If a firm offer is made to settle a Third Party Claim without leading to liability or the creation of a financial or other obligation on the part of the Indemnified Party and provides, in customary form, for the unconditional release of each Indemnified Party from all liabilities and obligations in connection with such Third Party Claim and the Indemnifying Party desires to accept and agree to such

offer, the Indemnifying Party shall promptly notify the Indemnified Party. If the Indemnified Party fails to consent to such firm offer within fifteen (15) days after its receipt of such notice, the Indemnified Party may continue to contest or defend such Third Party Claim and in such event, the maximum liability of the Indemnifying Party as to such Third Party Claim shall not exceed the amount of such settlement offer. If the Indemnified Party fails to consent to such firm offer and also fails to assume defense of such Third Party Claim, the Indemnifying Party may settle the Third Party Claim upon the terms set forth in such firm offer to settle such Third Party Claim. If the Indemnified Party has assumed the defense pursuant to Section 8.04(a), it shall not agree to any settlement without the written consent of the Indemnifying Party (which consent shall not be unreasonably withheld or delayed).

(c) Direct Claims. Any claim by an Indemnified Party with respect to any Loss which does not arise or result from a Third Party Claim (a "Direct Claim") must be asserted by the Indemnified Party giving the Indemnifying Party prompt notice thereof. The failure to give such prompt notice does not, however, relieve the Indemnifying Party of its indemnification obligations, except and only to the extent that the Indemnifying Party forfeits material rights or material defenses by reason of such failure. Such notice by the Indemnified Party must describe the Direct Claim in reasonable detail and indicate the estimated amount, if reasonably practicable, of the Losses that have been or may be sustained by the Indemnified Party. The Indemnifying Party shall have thirty (30) days after its receipt of such notice to respond in writing to such Direct Claim. During such thirty (30) day period, the Indemnified Party shall reasonably cooperate and assist the Indemnifying Party in determining the validity and amount of such Direct Claim. If the Indemnifying Party does not so respond within such thirty (30) day period, by delivery of notice disputing the basis or amount of the Direct Claim, the Indemnifying Party shall be deemed to have rejected such claim, in which case the Indemnified Party shall be free to pursue such remedies as may be available to the Indemnified Party on the terms and subject to the provisions of this Agreement. If the Indemnifying Party has timely disputed its indemnity obligation for any Losses with respect to such Direct Claim, the Parties shall proceed in good faith to negotiate a resolution of such dispute and, if not resolved through negotiations, such dispute may be resolved by litigation in an appropriate court of jurisdiction determined pursuant to this Agreement.

Section 8.05. Limitations on Indemnification Obligations.

(a) Subject to the other limitations contained in this Section 8.05, neither Buyer nor Buyer Indemnified Persons shall seek indemnification pursuant to Section 8.02(a) (other than for an intentional breach of any agreement or covenant contained in this Agreement or for breach of Seller's Fundamental Representations) unless the aggregate amount of Losses incurred by Buyer and Buyer Indemnified Persons under this Agreement exceeds one percent (1%) of the Purchase Price in the aggregate (the "Threshold Amount"), in which case Seller will then be liable only for Losses in excess of the Threshold Amount, except that the limitations contained in this Section 8.05(a) do not apply to any claims for indemnification based on fraud, intentional misrepresentation or willful misconduct.

(b) Subject to the other limitations contained in this Section 8.05 neither Seller nor the Seller Indemnified Persons shall seek indemnification pursuant to Section 8.03(a) (other than for an intentional breach of any agreement or covenant contained in this Agreement) unless the

aggregate amount of Losses incurred by Seller and Seller Indemnified Persons under this Agreement exceeds the Threshold Amount, in which case Buyer will then be liable only for Losses in excess of the Threshold Amount, except that the limitations contained in this Section 8.05(a) do not apply to any claims for indemnification based on fraud, intentional misrepresentation or willful misconduct.

(c) Except in the case of fraud, intentional misrepresentation or willful misconduct (for which all applicable legal and equitable remedies will be available to Buyer), the Buyer Indemnified Parties shall only be entitled to assert claims under Section 8.02(a) (other than claims with respect to breaches of any of the Seller Fundamental Representations, which are not limited by this Section 8.05(c)) up to the aggregate amount of five percent (5%) of the Purchase Price (the "Liability Cap"), which represents the sole and exclusive remedy of Buyer and the other Buyer Indemnified Parties for any such claims under Section 8.02(a) (other than claims with respect to breaches of any of the Seller Fundamental Representations or in the case of fraud, intentional misrepresentation or willful misconduct which are not subject to the Liability Cap, but is capped at the Purchase Price).

(d) Payments by an Indemnifying Party pursuant to Section 8.02 or Section 8.03 in respect of any Loss is limited to the amount of any liability or damage that remains after deducting therefrom any insurance proceeds and any indemnity, contribution or other similar payment received or reasonably expected to be received by the Indemnified Party in respect of any such claim. The Indemnified Party shall use its commercially reasonable efforts to recover under insurance policies or indemnity, contribution or other similar agreements for any Losses before seeking indemnification under this Agreement.

(e) Payments by an Indemnifying Party pursuant to Section 8.02 or Section 8.03 in respect of any Loss will be reduced by an amount equal to any Tax benefit realized or reasonably expected to be realized as a result of such Loss by the Indemnified Party.

(f) Each Indemnified Party shall take, and cause its Affiliates to take, all reasonable steps to mitigate any Loss upon becoming aware of any event or circumstance that would be reasonably expected to, or does, give rise thereto, including incurring costs only to the minimum extent necessary to remedy the breach that gives rise to such Loss.

(g) Subject to the provisions of Sections 3.01, 7.06, 15.11 and any other provisions for equitable relief and/or specific performance, the Parties' sole and exclusive remedy with respect to any and all claims for any breach of any representation, warranty, covenant, agreement or obligation set forth herein or otherwise relating to the subject matter of this Agreement, the Parties shall pursue pursuant to the indemnification provisions set forth in this Article VIII. Each Party hereby waives, to the fullest extent permitted under Law, any and all rights, claims and causes of action for any breach of any representation, warranty, covenant, agreement or obligation set forth herein or otherwise relating to the subject matter of this Agreement it may have against the other Party and their Affiliates and each of their respective Representatives arising under or based upon any Law, except pursuant to the indemnification provisions set forth in this Article VIII. Nothing in this Section 8.05(g) limits any Party's right to seek and obtain any equitable relief and/or specific performance pursuant to this Agreement.

Section 8.06. Knowledge of Breach.

Neither Party shall be liable for any Losses based upon or arising out of any inaccuracy in or breach of any representations or warranties of such Party contained in this Agreement if the Party claiming such Losses had Knowledge of such inaccuracy or breach before the Closing.

ARTICLE IX.

PRE-CLOSING COVENANTS OF SELLER

Section 9.01. Operation of the System.

Except as otherwise expressly permitted by this Agreement, as required by Law or with the prior written consent of Buyer (which consent shall not be unreasonably withheld, delayed or conditioned), from the Effective Date until the Closing, Seller shall (i) operate and manage the System only in the ordinary course of business in accordance with past practices and procedures, (ii) collect accounts receivable and pay accounts payable in the ordinary course and in a manner consistent with its past practices, (iii) comply in all material respects with all Laws and Authorizations and Permits, (iv) use its commercially reasonable efforts to maintain and preserve intact the business and assets of the System and preserve the rights, franchises, goodwill and relationships of Seller and the System and its customers, lenders, suppliers, regulators, and others having business relationships with Seller and the System, (iv) continue to collect EDU Fees, and sewer rents in a manner consistent with past practice, without discounting such EDU Fees, and sewer rents, (v) perform all of its obligations under all Assigned Contracts, and (vi) not take any action, or omit to take any action, that would cause to occur a fact, circumstance, condition or occurrence regarding the System or any of the Acquired Assets that could reasonably be expected to have a Material Adverse Effect.

Section 9.02. Cooperation.

Seller shall reasonably cooperate with Buyer and its employees, attorneys, accountants and other agents and, generally, act in reasonably good faith to timely effectuate the purposes of this Agreement and the consummation of the transactions contemplated by this Agreement.

Section 9.03. Supplements and Updates.

Seller shall promptly deliver to Buyer any supplemental information and reports updating the information set forth in the representations and warranties set forth in Article IV of this Agreement so that such representations and warranties as supplemented by such information will be true and correct as of the Closing Date (or such other date as specified in such representations and warranties) as if then made. Within ten (10) Business Days of having Knowledge of the same, but in no event later than three (3) Business Days before the Closing, Seller shall promptly advise Buyer of any facts which would be a breach of a representation or warranty as of the date made or a default in a covenant contained herein.

Section 9.04. Consents and Approvals.

Promptly after the Effective Date, or as required by Law, except as otherwise expressly specified in this Agreement, Seller shall file all applications and reports that are required to be filed by Seller with any Governmental Authority necessary to undertake and consummate the transactions contemplated in this Agreement as set forth on Schedule 4.05. Seller shall also promptly provide all information that any Governmental Authority may require in connection with any such application or report. Seller shall use its commercially reasonable efforts to obtain each consent, waiver, authorization or approval of any kind from any Person in connection with the transactions contemplated by this Agreement. All authorizations of any Governmental Authority necessary to consummate the transactions contemplated by this Agreement will be in form and content reasonably satisfactory to Buyer and Seller before Closing and is final and non-appealable. If a party to the PaPUC proceeding appeals PaPUC authorization of the transaction, Buyer and Seller may mutually agree to proceed to consummate the transaction.

Section 9.05. Pending Development Plan Agreements / Future Developments.

Seller shall enforce all of its rights and the counterparties' obligations under any agreements relating to Pending Development Plans in existence as of the Effective Date, which shall not be amended without notice to and the consent of Buyer, which consent shall not be unreasonably withheld and Buyer shall provide such consent to Seller within fifteen (15) days of notice from Seller or this consent requirement is deemed waived by Buyer after such date. After the Effective Date, Seller shall not enter into any new agreements (including Land Development Agreements and Financial Security Agreements) with landowners regarding the construction of any sewer facilities which, upon completion of construction, will be transferred to Buyer pursuant to Section 2.01 without notice to and the consent of Buyer, which consent shall not be unreasonably withheld and Buyer shall provide such consent to Seller within fifteen (15) days of notice from Seller or this consent requirement is deemed waived by Buyer after such date. For the avoidance of doubt, any attempt by Buyer to withhold consent for entry into any amendment or new agreement by Seller pursuant to this Section 9.05 that is, in the opinion of Seller's solicitor, required pursuant to the Pennsylvania Municipal Planning Code is deemed unreasonable. Prior to Closing, Seller shall complete the dedication of all Acquired Assets.

ARTICLE X.

PRE-CLOSING COVENANTS OF BUYER

Section 10.01. Actions Before the Closing Date.

Buyer shall not take any action which shall cause it to be in breach of any representation, warranty, covenant or agreement contained in this Agreement or cause it to be unable to perform in any material respect its obligations hereunder, and Buyer shall use its commercially reasonable efforts (subject to any conditions set forth in this Agreement) to perform and satisfy all conditions to Closing to be performed or satisfied by Buyer under this Agreement, including action necessary to obtain all consents and approvals from any Person required to be obtained by Buyer to effect the transactions contemplated by this Agreement.

Section 10.02. Governmental Approvals.

Promptly after the execution of this Agreement, or as required by Law, except as otherwise expressly specified in this Agreement, Buyer shall file all applications and reports that are required to be filed by Buyer with any Governmental Authority as set forth on Schedule 5.04. Buyer shall also promptly provide all information that any Governmental Authority may reasonably require in connection with any such application or report.

Section 10.03. Cooperation.

Buyer shall reasonably cooperate with Seller and their employees, attorneys, accountants and other agents and, generally, do such other acts and things in good faith as may be reasonable to timely effectuate the purposes of this Agreement and the consummation of the transactions contemplated in accordance with the provisions of this Agreement.

Section 10.04. Supplements and Updates.

Buyer shall promptly deliver to Seller any supplemental information updating the information set forth in the representations and warranties set forth in Article V of this Agreement so that such representations and warranties as supplemented by such information will be true and correct as of the Closing Date (or such other date as specified in such representations and warranties) as if then made. At least three (3) Business Days before the Closing Date, Buyer shall advise Seller of any facts which would be a breach of a representation or warranty as of the date made or a default in a covenant contained herein.

ARTICLE XI.

CONDITIONS PRECEDENT TO OBLIGATIONS OF SELLER

The obligation of Seller to consummate the transactions provided for in this Agreement is subject to the satisfaction, at or before the Closing, of the following conditions, any one or more of which may be waived in writing by Seller in its sole discretion:

Section 11.01. Consents and Approvals.

Receipt of all required material, consents, waiver, authorizations or approvals of any Governmental Authority, or of any other Person and any other approvals necessary to consummate the transactions contemplated by this Agreement set forth in Schedule 5.04, including without limitation all required EPA and PaDEP approvals and all such Authorizations and Permits and Governmental Approvals must be final (and not subject to any appeal and any applicable appeal period having expired).

Section 11.02. Representations and Warranties of Buyer.

The representations and warranties made by Buyer in Article V which are (a) not qualified by materiality must be true and correct in all material respects on and as of the Closing Date (except for representations or warranties that speak of a specific date or time other than the Closing Date which must be true and correct in all material respects as of such specified date)

and (b) qualified by materiality must be true and correct in all respects on and as of the Closing Date (except for representations or warranties that speak of a specific date or time other than the Closing Date which must be true and correct in all respects as of such specified date), and Seller must have received a certificate to that effect from a duly authorized officer of Buyer dated as of the Closing Date.

Section 11.03. PaPUC Approval.

PaPUC must have issued a Final Order approving the acquisition of the System under terms and conditions that are reasonably acceptable to Seller and Buyer. If a party to the PaPUC proceeding appeals or files a petition for reconsideration of PaPUC authorization of the transaction, Buyer and Seller may mutually agree to proceed to consummate the transaction.

Section 11.04. No Injunctions.

Neither Seller nor Buyer are subject to any injunction, preliminary restraining order or other similar decree of a court of competent jurisdiction prohibiting the consummation of the transactions contemplated by this Agreement.

Section 11.05. Performance of the Obligations of Buyer.

Buyer must have performed in all material respects all obligations required under this Agreement to be performed by Buyer on or before the Closing Date, and Seller must have received a certificate to that effect from Buyer dated the Closing Date.

Section 11.06. Deliveries by Buyer.

Buyer must have made delivery to Seller of the documents and items specified in Section 13.03 herein.

Section 11.07. No Material Adverse Effect.

There must not have occurred any event or condition which gives rise to a Material Adverse Effect with respect to the Acquired Assets or the System.

ARTICLE XII.

CONDITIONS PRECEDENT TO OBLIGATIONS OF BUYER

The obligation of Buyer to consummate the transactions provided for in this Agreement is subject to the satisfaction, at or before the Closing, of the following conditions, any one or more of which may be waived in writing by Buyer in its sole discretion:

Section 12.01. Consents and Approvals.

Receipt of all required material, consents, waivers, authorizations or approvals of any Governmental Authority, or of any other Person and any other approvals necessary to consummate the transactions contemplated by this Agreement set forth in Schedule 4.05,

including without limitation all required EPA and PaDEP approvals and all such Authorizations and Permits and Governmental Approvals must be final (and not subject to any appeal and any applicable appeal period having expired).

Section 12.02. Representations and Warranties of Seller.

The representations and warranties made by Seller in Article IV this Agreement (disregarding all "materiality" and "Material Adverse Effect" or similar qualifications contained therein) must be true and correct on and as of the Closing Date (except for representations and warranties expressly stated to relate to a specific date, in which case each such representation and warranty must be true and correct as of such earlier date), with only such exceptions as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect, and Buyer must have received a certificate to that effect from Seller dated as of the Closing Date.

Section 12.03. PaPUC Approval.

PaPUC must have issued a Final Order approving the acquisition of the System under terms and conditions that are reasonably acceptable to Seller and Buyer. If a party to the PaPUC proceeding appeals PaPUC authorization of the transaction, Buyer and Seller may mutually agree to proceed to consummate the transaction.

Section 12.04. No Injunctions.

Neither Seller nor Buyer are subject to any injunction, preliminary restraining order or other similar decree of a court of competent jurisdiction prohibiting the consummation of the transactions contemplated by this Agreement.

Section 12.05. No Material Adverse Effect.

There must not have occurred any event or condition which gives rise to a Material Adverse Effect with respect to the Acquired Assets or the System.

Section 12.06. Deliveries by Seller.

Seller must have made delivery to Buyer of the documents and items specified in Section 13.02 herein.

Section 12.07. Performance of the Obligations of Seller.

Seller must have performed in all material respects all obligations required under this Agreement to be performed by Seller on or before the Closing Date, and Buyer must have received a certificate to that effect from Seller dated the Closing Date.

Section 12.08. Act 537 Plan.

The Seller must have obtained PaDEP approval of all Act 537 Plan revisions or updates (i) required by PaDEP in order to allow acquisition of the System by Buyer or (ii) otherwise required to address other outstanding deficiencies with respect to existing Act 537 Plan, upon

terms and conditions satisfactory to Buyer in its reasonable discretion. Notwithstanding the previous sentence, Buyer shall be responsible for the costs of preparing and submitting any necessary revisions to the Act 537 Plan required to allow acquisition of the System by Buyer. Seller and Buyer shall cooperate regarding the Act 537 Plan submission and PaDEP approval process.

ARTICLE XIII.

CLOSING

Section 13.01. Closing Date.

The Closing will take place at a place in Pennsylvania that is mutually agreed upon by the Parties, at 10:00 a.m. Eastern Standard Time on the earliest agreed upon date or within twenty (20) Business Days after the date upon which all the conditions precedent to Closing described in this Agreement have been fulfilled or waived and Buyer and Seller receive the last of the required consents, waivers, authorizations and approvals from the Governmental Authorities, in each case, for the transactions contemplated by this Agreement, or at such other place and time, by such other method, or on such other date, as may be mutually agreed to by the Parties (the "Closing Date"). The Closing will be effective at 12:01 a.m., Willistown Township, PA time, on the Closing Date (the "Closing Effective Time").

Section 13.02. Deliveries by Seller.

At the Closing, Seller shall deliver or cause to be delivered to Buyer executed copies of the following agreements, documents and other items:

(a) A Bill of Sale transferring all of the Acquired Assets comprising personal property, in the form attached as Exhibit A;

(b) Possession of the Acquired Assets, including without limitation, the Real Property, the Easements and an interest in the Missing Easements, including a license from Seller to Buyer;

(c) A duly executed counterpart to an Assignment and Assumption Agreement with respect to the Assumed Liabilities (the "Assignment and Assumption Agreement"), in the form attached as Exhibit B;

(d) The consents to transfer all of the Assigned Contracts and Authorizations and Permits (including environmental Authorizations and Permits), to the extent required hereunder;

(e) One or more special warranty or other deeds in recordable form reasonably acceptable to Buyer transferring fee simple title of Real Property;

(f) Copies or originals of all Files and Records, materials, documents and records in possession of Seller relating to the Real Property or the Assigned Contracts;

(g) Certificate of Seller pursuant to Section 12.02 of this Agreement;

(h) Certificate of Seller pursuant to Section 12.07 of this Agreement;

(i) Any documents duly executed by Seller required by the Title Company to issue final owner's title policies in accordance with the provisions of Article VI;

(j) A duly executed counterpart to the Escrow Agreement; and

(k) All such other instruments of conveyance or other documents as shall, in the reasonable opinion of Buyer and its counsel, be necessary to transfer to Buyer the Acquired Assets in accordance with this Agreement or to carry out the terms of this Agreement, duly executed and acknowledged by Seller, if necessary, and in a recordable form.

Section 13.03. Deliveries by Buyer.

At the Closing, Buyer shall deliver or caused to be delivered to Seller the following agreements, documents and other items:

(a) Payment in full of the Purchase Price;

(b) A duly executed counterpart to the Assignment and Assumption Agreement;

(c) Certificate of Buyer pursuant to Section 11.02 of this Agreement;

(d) Certificate of Buyer pursuant to Section 11.05 of this Agreement;

(e) Evidence of PaPUC approval as specified in Section 12.03;

(f) A duly executed counterpart to the Escrow Agreement; and

(g) All such other instruments of assumption as shall, in the reasonable opinion of Seller and its counsel, be necessary for Buyer to assume the Assumed Liabilities in accordance with this Agreement.

ARTICLE XIV.

TERMINATION

Section 14.01. Events of Termination.

This Agreement may be terminated and abandoned at any time before the Closing:

(a) By the mutual consent of Seller and Buyer;

(b) By either Seller or Buyer, upon notice, if:

(i) the Closing does not occur on or before the Outside Date, except Buyer has the one-time right, upon notice to Seller, to extend the Outside Date for up to ninety (90) days if, in the Buyer's sole discretion, any such amount of time up to ninety (90) days is necessary to obtain a required Governmental Approval; or

(ii) any Governmental Authority issues an order, decree or ruling or taken any other action, in each case permanently restraining, enjoining or otherwise prohibiting the material transactions contemplated by this Agreement and such order, decree, ruling or other action becomes final and non-appealable;

(c) By Seller (if Seller is not then in material breach of any provision of this Agreement) if a material breach of any covenant or agreement to be performed or complied with by Buyer pursuant to the terms of this Agreement or of any representation or warranty of Buyer contained in this Agreement, which breach (i) has continued without cure for a period of sixty (60) days following notice thereof by Seller to Buyer or if such breach cannot be cured and (ii) would result in a condition to Closing set forth in Article XI of this Agreement not being satisfied (which condition has not been waived by Seller in writing); or

(d) By Buyer (if Buyer is not then in material breach of any provision of this Agreement) if a material breach of any covenant or agreement to be performed or complied with by Seller pursuant to the terms of this Agreement or of any representation or warranty of Seller contained in this Agreement, which breach (i) has continued without cure for a period of sixty (60) days following notice thereof by Buyer to Seller or if such breach cannot be cured and (ii) would result in a condition to Closing set forth in Article XII of this Agreement not being satisfied (which condition has not been waived by Buyer in writing).

This Agreement may not be terminated after the Closing.

Section 14.02. Effect of Termination.

If this Agreement is terminated by Seller or Buyer pursuant to Section 14.01, notice thereof will be given promptly to the other and all further obligations of the Parties terminate without further action by either Party and without liability or other obligation of either Party to the other Party hereunder, except that no Party will be released from liability hereunder if this Agreement is terminated and the transactions abandoned by reason of any willful breach of this Agreement.

Section 14.03. Damages for Willful Breach.

If this Agreement is terminated as a result of willful breach by either Party as described in Section 14.02, the Party who willfully breached the Agreement is liable for Losses incurred by the non-breaching Party as a result of the breach in accordance with Article VIII.

ARTICLE XV.

MISCELLANEOUS

Section 15.01. Confidentiality.

Except as and to the extent required by Law (including but not limited to the Pennsylvania Right-To-Know Act at 65 Pa § 67.101) or pursuant to an order of a court of competent jurisdiction and as required hereunder to obtain any and all required Governmental Approvals, neither Party shall, directly or indirectly, disclose or use (and no Party shall permit its

Representatives to disclose or use) any Confidential Information with respect to the other Party furnished, or to be furnished, by such other Party or its Affiliates, or Representatives to the other Party or its Affiliates or Representatives in connection herewith at any time or in any manner other than in connection with the completion of the transactions contemplated by this Agreement and related transactions.

Section 15.02. Public Announcements.

Subject to Law or listing rules of an exchange on which Buyer's parent corporation's stock is listed, and except as otherwise set forth herein, the initial public announcement relating to the transactions contemplated herein will be mutually agreed upon and jointly made by the Parties. Subsequent public announcements related to the sale of the System by one Party shall be provided to the other Party as soon as reasonably practicable before issuance.

Section 15.03. Notices.

All notices, other communications and approvals required or permitted by this Agreement must be in writing, must state specifically that they are being given pursuant to this Agreement and must be addressed as follows:

in the case of Seller:

Willistown Township
688 Sugartown Road
Malvern, PA 19355
Attention: Manager

with a copy to:

Timothy F. Sullivan, Esq.
116 W. Baltimore Avenue
Media, PA 19063

in the case of Buyer:

Aqua Pennsylvania Wastewater, Inc.
762 W. Lancaster Avenue
Bryn Mawr, PA 19010
Attention: Marc A. Lucca, President
malucca@aquaamerica.com

with a copy to:

Aqua Pennsylvania Wastewater, Inc.
762 W. Lancaster Avenue
Bryn Mawr, PA 19010
Attention: Frances Orth, Esq., Vice President, Senior Managing Counsel
fporth@aquaamerica.com

or such other persons or addresses as a Party may from time to time designate by notice to the other Party. A notice, other communication or approval is deemed to have been sent and received (i) on the day it is delivered, or if such day is not a Business Day or if the notice is received after ordinary office hours (time or place of receipt), the notice, other communication or approval is deemed to have been sent and received on the next Business Day, or (ii) on the fourth Business Day after mailing if sent by United States registered or certified mail.

Section 15.04. Headings.

The article, section and paragraph headings in this Agreement are for reference purposes only and do not affect the meaning or interpretation of this Agreement.

Section 15.05. Severability.

If any term, provision, covenant or restriction contained in this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions contained in this Agreement remains in full force and effect and are in no way affected, impaired or invalidated.

Section 15.06. Entire Agreement.

This Agreement is the entire agreement between the Parties pertaining to the subject matter hereof and supersedes all prior agreements, negotiations, discussions and understandings, written or oral, between the Parties. There are no representations, warranties, conditions or other agreements, whether direct or collateral, or express or implied, that form part of or affect this Agreement, or that induced any Party to enter into this Agreement or on which reliance is placed by any Party, except as specifically set forth in this Agreement. The Parties acknowledge and agree that (i) each has substantial business experience and is fully acquainted with the provisions of this Agreement, (ii) the provisions and language of this Agreement have been fully negotiated and (iii) no provision of this Agreement may be construed in favor of any Party or against any Party by reason of such provision of this Agreement having been drafted on behalf of one Party rather than the other Party.

Section 15.07. Amendments; Waivers.

The Parties may amend this Agreement only by the Parties' written agreement that identifies itself as an amendment to this Agreement. Any waiver of, or consent to depart from, the requirements of any provision of this Agreement will be effective only if it is in writing and signed by the Party giving it, and only in the specific instance and for the specific purpose for which it has been given. No failure on the part of any Party to exercise, and no delay in exercising, any right under this Agreement will operate as a waiver of such right. No single or partial exercise of any such right will preclude any other or further exercise of such right or the exercise of any other right.

Section 15.08. Parties in Interest; Third Party Beneficiary.

This Agreement is not intended to and may not be construed to create upon any Person other than the Parties any rights or remedies hereunder.

Section 15.09. Anti-Assignment; Successors and Assigns.

Neither Party to this Agreement may assign any right or delegate any performance under this Agreement without the prior written consent of the other Party. A purported assignment or purported delegation without prior written consent is void. This agreement is binding upon, and inures to the benefit of, the Parties and their permitted respective successors and assigns.

Section 15.10. Governing Law; Jurisdiction.

The laws of the Commonwealth of Pennsylvania (without giving effect to its conflicts of law principles) govern all matters arising and relating to this Agreement, including torts. The Parties irrevocably agree and consent to the jurisdiction of the United States District Court for the Eastern District of Pennsylvania and the Court of Common Pleas of Chester County, Pennsylvania, for the adjudication of any matters arising under or in connection with this Agreement. Any action initiated in court must be filed and litigated (including all discovery proceedings) exclusively in the United States District Court for the Eastern District of Pennsylvania and the Court of Common Pleas of Chester County, Pennsylvania, and each Party irrevocably submits to the exclusive jurisdiction of such courts in any such suit, action or proceeding. Service of process, summons, notice or other document by mail to such Party's address set forth herein is effective service of process for any suit, action or other proceeding brought in any such court. EACH PARTY ACKNOWLEDGES AND AGREES THAT ANY CONTROVERSY WHICH MAY ARISE UNDER THIS AGREEMENT OR THE OTHER TRANSACTION DOCUMENTS IS LIKELY TO INVOLVE COMPLICATED AND DIFFICULT ISSUES AND, THEREFORE, EACH SUCH PARTY IRREVOCABLY AND UNCONDITIONALLY WAIVES ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY LEGAL ACTION ARISING OUT OF OR RELATING TO THIS AGREEMENT, THE OTHER TRANSACTION DOCUMENTS OR THE TRANSACTIONS CONTEMPLATED HEREBY OR THEREBY. EACH PARTY TO THIS AGREEMENT CERTIFIES AND ACKNOWLEDGES THAT (A) NO REPRESENTATIVE OF ANY OTHER PARTY HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PARTY WOULD NOT SEEK TO ENFORCE THE FOREGOING WAIVER IN THE EVENT OF A LEGAL ACTION, (B) SUCH PARTY HAS CONSIDERED THE IMPLICATIONS OF THIS WAIVER, (C) SUCH PARTY MAKES THIS WAIVER VOLUNTARILY, AND (D) SUCH PARTY HAS BEEN INDUCED TO ENTER INTO THIS AGREEMENT BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION.

Section 15.11. Specific Performance.

Irreparable damage would occur if any provision of this Agreement were not performed in accordance with the terms hereof and that the Parties may seek specific performance of the terms hereof, in addition to any other remedy to which they are entitled at law or in equity if the other Party has performed in accordance with the terms hereof.

Section 15.12. Counterparts; Electronic Mail; Facsimile Execution.

This Agreement may be executed in any number of counterparts which, taken together, is one and the same agreement. This Agreement becomes effective when it has been executed by

each Party and delivered to both Parties. To evidence the fact that it has executed this Agreement, a Party may send a copy of its executed counterpart to the other Party by electronic mail or facsimile transmission. Such Party is deemed to have executed and delivered this Agreement on the date it sent such electronic mail or facsimile transmission. In such event, such Party shall forthwith deliver to the other Party an original counterpart of this Agreement executed by such Party.

[THIS SPACE INTENTIONALLY LEFT BLANK;

SIGNATURES NEXT PAGE]

IN WITNESS WHEREOF, the Parties have executed, or caused to be executed by their duly authorized Representatives, this Agreement as of the Effective Date.

TOWNSHIP OF WILLISTOWN, CHESTER COUNTY

By: _____

Printed: William R. Shoemaker

Its: Chairman

ATTEST:

By: _____

Printed: Sally Slook

Title: Township Manager

AQUA PENNSYLVANIA WASTEWATER, INC.

By: _____

Printed: Marc A. Lucca

Its: President

ATTEST:

By: _____

Printed: _____

Title: _____

IN WITNESS WHEREOF, the Parties have executed, or caused to be executed by their duly authorized Representatives, this Agreement as of the Effective Date.

TOWNSHIP OF WILLISTOWN, CHESTER COUNTY

By: _____

Printed: William R. Shoemaker

Its: Chairman

ATTEST:

By: _____

Printed: Sally Slook

Title: Township Manager

AQUA PENNSYLVANIA WASTEWATER, INC.

By: _____

Printed: Marc A. Lucca

Its: President

ATTEST:

By: _____

Printed: HEIDI H. MCINTYRE

Title: Asst Secretary

Execution Version

ASSET PURCHASE AGREEMENT

By and Between

Township of Willistown, Chester County,

As Seller

and

Aqua Pennsylvania Wastewater, Inc.,

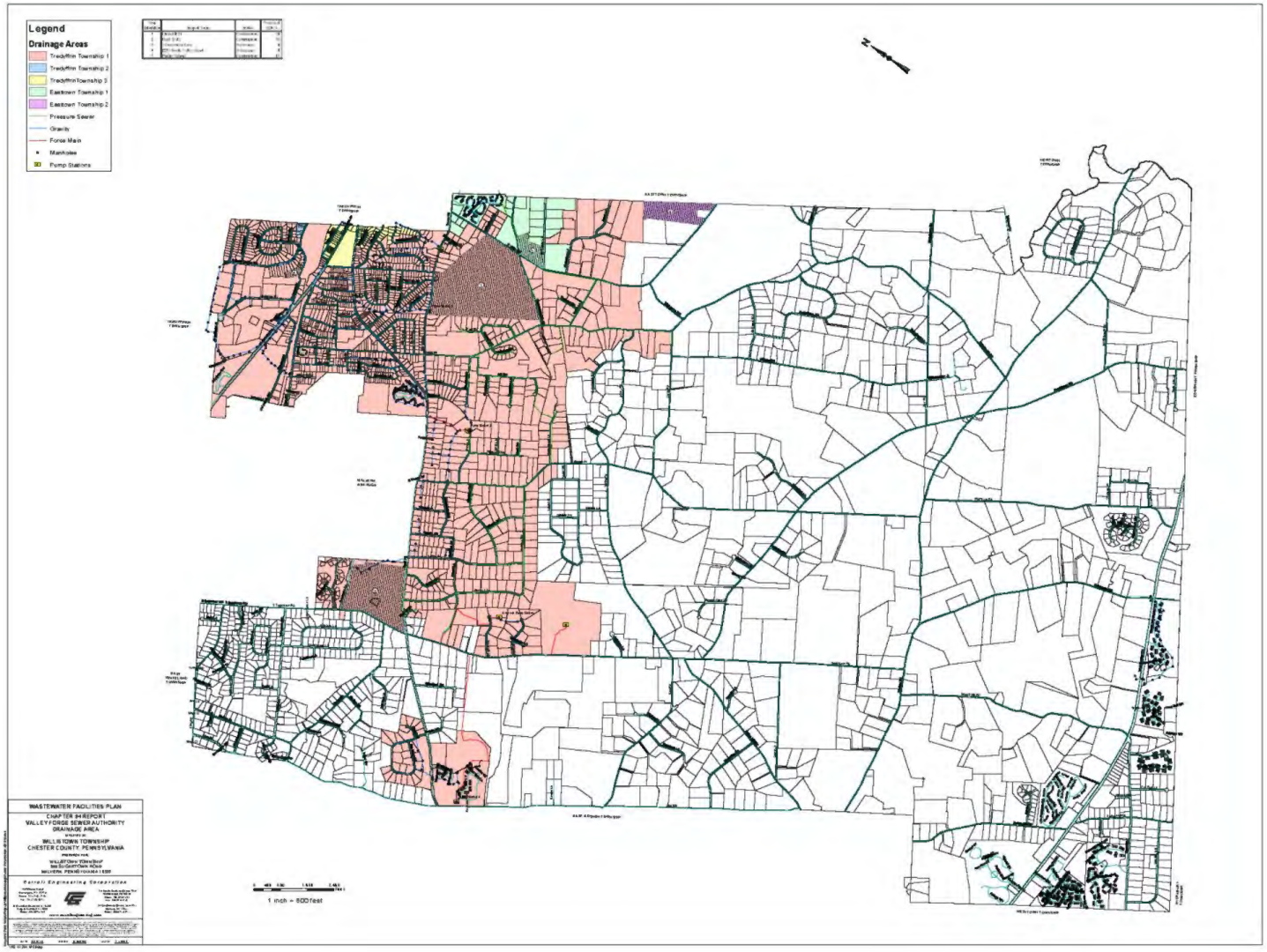
As Buyer

SCHEDULES AND EXHIBITS

Capitalized terms used in the Schedules which are not otherwise defined herein shall have the respective meanings ascribed to such terms in the Agreement. The Schedules are to be read in their entirety. Nothing in the Schedules is intended to broaden the scope of any representation or warranty in the Agreement. The disclosure of any item, explanation, exception or qualification in any Schedule is disclosure of that item for all purposes for which disclosure is required under the Agreement when it is reasonably apparent from the context that such item, explanation, exception or qualification also relates to another Schedule irrespective of whether any cross reference is made or no Schedule is provided with respect to a representation. Other than as expressly set forth herein or when the Schedules reference agreements or other matters not documented in a separate writing, all descriptions of agreements, written materials or other matters appearing herein, are summary in nature and are qualified by reference to the complete documents, which have been supplied to the Buyer or its counsel.

SCHEDULE A

Service Area



Schedule 2.02(h)

Excluded Assets

None.

Schedule 4.05

Consents and Approvals

1. Pennsylvania Public Utility Commission ("PaPUC") Approval of Transaction

2. PaPUC Approval of Consent to Assignment and Amendment to Sewer Service Agreements and Related Amendments

3. Pennsylvania Department of Environmental Protection ("PaDEP") Approval of Sanitary Sewer Collection and Conveyance System Act 537 Plan recognizing transfer of wastewater collection system from Seller to Buyer

4. PaDEP Approval of Transfer of all NPDES and WQM Permits

Schedule 4.06

Undisclosed Liabilities

None.

Schedule 4.07

Events Having a Material Adverse Effect

None.

Schedule 4.08

Tax Matters

None.

Schedule 4.09

Real Property and Easements; Liens[1]

Deed of Dedication and Grant of Easements - Sewage Treatment System for Phase 1 between Township of Willistown, Okehocking Associates and Quakers Sewage, Inc. dated December 11, 1999.

☐ § 105-91 **Acceptance of dedication.**

Willistown Township hereby accepts the continuing offer of dedication of Quaker Sewer, Inc., a Pennsylvania corporation, and, thereby, Willistown Township acquires ownership of the easements more fully described in the Sanitary Sewage Cross-Easement Agreement recorded in Chester County in Deed Book 3528, Page 2258 et seq., as amended by the First Addendum recorded in Chester County in Deed Book 4181, Page 133 et seq., and legal title to the improvements, to a certain community sewage collection and disposal system more fully described in Appendix A appended hereto,[1] made a part hereof and incorporated herein by reference (the "community sewage system"); which community sewage system serves or will serve some 202 townhouse units, more or less, made a part of a certain residential land development known as Willistown Chase/Penns Preserve.

[1] *Editor's Note: Appendix A is on file in the Township offices.*

Pump Stations 1, 2 and 3 and Booster Pump Station 1 are on Willistown owned parcels.

[1]Additional easement and real property information to be provided.

Schedule 4.10

Equipment and Machinery

Equipment

ICOM3 Software

Vehicles

Vehicle Type	VIN	Year	Make	Title Number
Video Pipe Inspection Trailer	56VBE1013FM621482	2015	RC	76467781701
Jet Truck	1HTWCAAR4FH709273	2015	International	74331292701

Schedule 4.11

Environmental Compliance

Sanitary System Overflow (SSO) Reporting for Operating Years 2018 through 2020:

- Pursuant to the Chapter 94 Municipal Wasteload Management Annual Report for Calendar Year 2018, there were six (6) SSOs reported.
    - Five (5) were dry weather overflows, including three (3) resulting from the collapsed sewer.
    - One (1) SSO occurred in a private sewer system connected to the Township's sewer system.
    - The one (1) wet weather overflow also was a result of the collapsed sewer.
- Pursuant to the Chapter 94 Municipal Wasteload Management Annual Report for Calendar Year 2019, there was no reported sanitary system overflow within the Willistown Township wastewater collection and conveyance system.
- To date, there has been one (1) SSO reported in 2020, which was caused by tree roots in the line.

Schedule 4.12

Authorizations and Permits

537 Plan:

- Act 537 Plan Update for Willistown Township, as prepared by Yerkes Associates, dated November 2001.
- Regional Act 537 Plan for Valley Forge Sewer Authority, as prepared by Buchart Horn, Inc, and Gannett Fleming, dated November 2006.
- Act 537 Plan Supplement for Wilson Road Force Main, as prepared by CH2M Hill, Inc., dated July 2016.

NPDES Permits[2]

WQM Permits

Pump Station	**WQM Permit Number**
Pump Station No. 1	#PA 1505406
Pump Station No. 2	#PA 1505406
Pump Station No. 3	#PA 1505406
Pump Station No. 4 (Penns Preserve)	#PA 1505406[3]
Dovecote Pump Station	

[2] To be provided

[3] To confirm

Schedule 4.13

Assigned Contracts

Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Agreement	Willistown Township East Whiteland Township East Whiteland Municipal Authority	September 14, 1993	Transmission of sewage from 114 apartments in East Whiteland Township within the Woodview Apartments from East Whiteland to the collection system in Willistown (which will then go through the Valley Creek Trunkline to the Valley Forge Sewage Treatment Plant).
Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Valley Forge Sewer Treatment Plant Agreement	Schuylkill Township East Pikeland Township Charlestown Township East Whiteland Township	November 1, 1970	Transmission and treatment of sewage from the municipalities to the Valley Forge Sewage Treatment Plant ("VFSTP"),

	East Whiteland Municipal Authority Tredyffrin Township Tredyffrin Municipal Authority Willistown Township Easttown Township Easttown Municipal Authority Malvern Borough Malvern Municipal Authority Valley Forge Sewer Authority ("VFSA")		including charges for maintenance and repairs to the VFSTP.

Name of Contract	Parties to Contract	Date of Contract	Subject
Composite Amendment No. 1	Schuylkill Township East Pikeland Township Charlestown Township East Whiteland Township Tredyffrin Township Willistown Township Easttown Township Malvern Borough East Whiteland Municipal Authority Tredyffrin Municipal Authority Easttown Municipal Authority Malvern Municipal Authority Valley Forge Sewer Authority ("VFSA")	December 18, 1974	This amendment amends portions of (and specifically Section 2.03 and certain Exhibits) of the Valley Creek Trunk line Agreement, the East Whiteland Trunk line Agreement and the Valley Forge Sewer Treatment Plant Agreement to address the construction by and reimbursement of Tredyffrin Authority by the other municipalities for its construction of the portion of the Valley Creek Trunk Sewer located in Valley Forge State Park. Also addresses the award of and credit for certain grants from the EPA

			to each of the authorities for the respective collection systems.
Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Amendment to Valley Forge Sewage Treatment Agreement	Schuylkill Township East Pikeland Township Charlestown Township East Whiteland Township East Whiteland Municipal Authority Tredyffrin Township Tredyffrin Municipal Authority Willistown Township Easttown Township Easttown Municipal Authority Malvern Borough Malvern Municipal Authority Valley Forge Sewer Authority ("VFSA")	January 1, 1983	This amendment changed the interest rates for late payments.

Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Supplement to Valley Forge Sewage Treatment Agreement for the Purpose of Complying with the United States Environmental Protection Agency Regulations	Schuylkill Township East Pikeland Township Charlestown Township East Whiteland Township East Whiteland Municipal Authority Tredyffrin Township Tredyffrin Municipal Authority Willistown Township Easttown Township	December 2, 1985	This supplement includes requirements that the municipalities, in order to comply with EPA regulations, enact ordinances to include monitoring, reporting and other requirements for industrial users and it gives VFSA authority to inspect, charge, fine, etc. industrial users and act on behalf of each municipality if necessary.

	Easttown Municipal Authority Malvern Borough Malvern Municipal Authority Valley Forge Sewer Authority ("VFSA")		
Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Addendum to Valley Forge Sewage Treatment Agreement for the Purpose of Permitting and administering the Sale of Reserved Capacity among the Parties	Schuylkill Township East Pikeland Township Charlestown Township East Whiteland Township East Whiteland Municipal Authority Tredyffrin Township Tredyffrin Municipal Authority Willistown Township Easttown Township	October 1994	This addendum addresses disparities between the reserved capacities of the various municipalities by allowing for the permanent sale of unused reserved capacity between the municipalities, with the consent of VFSA and pursuant to certain offer and sale procedures.

	Easttown Municipal Authority Malvern Borough Malvern Municipal Authority Valley Forge Sewer Authority ("VFSA")		
Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Wastewater Conveyance Agreement	Aqua Resources, Inc. Schuylkill Township East Pikeland Township Charlestown Township East Whiteland Township Tredyffrin Township Willistown Township Easttown Township Easttown Municipal Authority Malvern Borough	November 2018	The transmission of sewage from the municipalities through the Valley Creek Trunkline (owned by Aqua) to be treated at Valley Forge Sewer Treatment Plant ("VFSTP"). The VFSA agrees to accept, treat and dispose of such sewage pursuant to this Agreement and the Valley Forge Sewage Treatment

	Tredyffrin Township Municipal Authority Valley Forge Sewer Authority ("VFSA")		Plant Agreement.
Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Inter-municipal Sewer Line Extension Agreement	Willistown Township Borough of Malvern	May 17, 1988	Concerns service to border customers of Malvern and Willistown via inter-municipal sewer line extensions and service from the other municipality. Any new sewer line extension requires a new inter-municipal agreement. Each municipality bills and sets fees for the customers located in its jurisdiction and then the "transporting" municipality compensates the "receiving" municipality.

			Compensation was originally the sewer rent of the receiving municipality, but the August 1996 Amendment changed the billing to provide that the flow from the transporting municipality is subtracted from the flows of the receiving municipality for VCTS and VFSTP reporting.
Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Inter-municipal Sewer Line Connection and Use Agreement	Willistown Township Borough of Malvern	August 20, 1996	Covers extension of a Willistown line to the Tidewater development (80 townhouses) located in Malvern Borough. This amendment revises the billing procedures for the Tidewater development and all other future sewer

			line extensions to provide that flow from the transporting municipality (Malvern) is subtracted from the flows of the receiving municipality (Willistown) for reporting to VCTS and VFSTP. All flow is measured by a flow meter, to be installed, maintained and read by transporting municipality. Transporting municipality pays receiving municipality a quarterly charge per EDU, which may be updated no more frequently than every 2 years.

Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Inter-municipal Sewer Agreement – Village at Pennwyck	Willistown Township Borough of Malvern	August 11, 2000	Covers extension of a Willistown line to 12 homes in the Village of Pennwyck development located in Malvern Borough (access road and certain other public improvements are located in Willistown). The collection system (Pennwyck Sanitary Sewer System) in Malvern discharges the flow into sewage gravity mains in Willistown. Malvern collects all fees directly from the customers located in its municipality. Sewer rental is based off

			water meter readings obtained at the sole cost and expense of Malvern. For billing purposes, flow from the Pennwyck homes is subtracted from Willistown's flow for purposes of reporting to VCTS and VFSTP. A fee is also payable to Willistown upon connection to the system and then on a quarterly basis.
Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Sewage Treatment Agreement	Willistown Township East Goshen Township East Goshen Municipal Authority	December 23, 1996	Concerns 1 home (59 Line Road, Malvern PA) in Willistown Township connected to the East Goshen system. Sewage from this home is received by East Goshen

			for treatment in the Ridley Creek Sewage Plant. Willistown bills the customer and East Goshen bills Willistown on a quarterly basis at the regular residential sewer rental rates according to the East Goshen sewer rate ordinance. Agreement provides that East Goshen is responsible for all repairs to the system, including the portion within Willistown Township.
Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Sewage Treatment Agreement	Willistown Township East Goshen Township East Goshen Municipal Authority	October 11, 1988	Hunter's Run is a subdivision with lots in East Goshen, Westtown and Willistown Townships. Three of the lots are located in Willistown. All Hunter's

			Run lots are connected to the East Goshen sewage collection system and served by the West Goshen sewage treatment plant. Willistown bills the customers and East Goshen bills Willistown on a quarterly basis at the regular residential sewer rental rates according to the East Goshen sewer rate ordinance. Agreement provides that each party is responsible for the parts of the system in its own boundaries.
Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Sewage Treatment Agreement	Willistown Township East Goshen Township	2003 (not dated or signed)	Concerns 1 home (79 Line Road, Malvern PA) in Willistown Township connected to the East

	East Goshen Municipal Authority		Goshen system. Sewage from this home is received by East Goshen for treatment in the Ridley Creek Sewage Plant. Willistown bills the customer and East Goshen bills Willistown on a quarterly basis at the regular residential sewer rental rates according to the East Goshen sewer rate ordinance. Agreement provides that East Goshen is responsible for all repairs to the system, including the portion within Willistown Township.
Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Sewage Treatment Agreement	Willistown Township East Goshen Township	December 23, 1996	Willow Pond is a subdivision with lots in East Goshen and Willistown

	East Goshen Municipal Authority		Townships. 14 lots are located in Willistown and 14 lots are located in East Goshen. All lots are connected to the East Goshen system and such sewage is treated at the Ridley Creek Treatment Plant in East Goshen. Willistown bills the customers and East Goshen bills Willistown on a quarterly basis at the regular residential sewer rental rates according to the East Goshen sewer rate ordinance. Agreement provides that the portions of the Willow Pond collection system located in each township are dedicated to each such township, but

			that East Goshen is responsible for all repairs to the system, including the portion within Willistown Township.
Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Sewage Treatment Agreement	Willistown Township Easttown Township Easttown Municipal Authority	December 1999	Easttown and Willistown each have customers near the township boundaries who cannot connect to the system of the municipality in which the customers are located, so such customers connect to the other municipality's system. Each municipality will bill customers within their own boundaries. For each such customer, before a connection is made to the receiving municipality, the transporting

			municipality will initially pay the receiving municipality an amount equal to receiving municipality's tapping fee, connection charge, and inspection fee, if any. As a fee for conveyance of the wastewater, the transporting municipality will pay quarterly to the receiving municipality an amount equal to the usual sewer rental charges imposed from time to time by the receiving municipality upon its users located in the receiving municipality. Daily sewage flow from each dwelling shall be determined on an EDU basis.

Name of Contract	Parties to Contract	Date of Contract	Subject
Purchase of Sewer Capacity Agreement	Willistown Township The Devereux Foundation	August 3, 2009	Devereux purchased 64 EDUs of sewage capacity from Willistown in order to connect to the Willistown sewer system. Devereux's connection was also via a pump station to be located on the Devereux property and a force main and piping to be installed within the public right-of-way of Sugartown Road to connect to an existing force main located in the vicinity of Sugartown Road and School Lane (the "Sewer Project"). The agreement sets forth the purchase price for the EDUs and additional fees and costs paid to Willistown for connection,

			and the timeframe for connection and payment of sewer rentals. The pump station on the Devereux property is owned, operated and maintained by Devereux, but is subject to a continuing offer of dedication to Willistown. The force main and associated piping within the Sugartown Road right-of-way shall be subject to a continuing offer of dedication to Willistown, provided that Devereux agrees to the design for a possible future connection to the "Laurel Circle Area" and Devereux shall grant an easement to Willistown to service the Laurel Circle Area.

Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Sewer Construction and Maintenance Agreement	Willistown Township The Devereux Foundation	August 3, 2009	This agreement sets forth the specifications of the Sewer Project described in Purchase of Sewer Capacity Agreement between Devereux and Willistown Twp as well as Devereux's obligations and the timeframe for construction of the Sewer Project. It also addresses Devereux's obligations as to the continued maintenance of the Sewer Project (if and until it is dedicated to Willistown).
Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Deed of Dedication and Grant of Easements – Sewage Treatment	Willistown Township Okehocking Associates Quaker Sewer, Inc.	December 11, 1999	Dedicates sewer improvements for Quaker Farms (Penns Preserve and Willistown

System for Phase 1			Chase) from the owner of the tract on which the improvements are located (Okehocking) and the owner and general contractor of the improvements (Quaker) to Willistown Twp. The agreement provides that, if a portion of the tract involving the spray irrigation fields is not utilized for a period of 2 continuous years for the purpose of spray irrigation or other sewage treatment involving land application, that portion shall automatically be released from the easement and Willistown's rights will be extinguished and all property rights and easements

			will revert to the original owner.
Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Pump Station, Operation and Maintenance Agreement	Willistown Township Devereux Foundation - Mapleton Campus ("Owner")	September 8, 2020	Addresses the construction, operation and maintenance by Owner of a pump station and force main that will convey waste water from Owner's facility located at 655 Sugartown Road to Willistown's collection system. All construction required to be in accordance with permit granted by DEP. Township has access to the pump station at all times for inspection. Owner is required to make all repairs determined upon inspection and if it fails to, or in the event of an emergency, Willistown may make

			such repairs at Owner's expense.
Name of Contract	**Parties to Contract**	**Date of Contract**	**Subject**
Sanitary Sewage Cross Easement Agreement	Okehocking Associates Quaker Real Estate	March 18, 1993	Establishes cross easements between property owned by Okehocking on the side of West Chester Pike and property owned by Quaker on the South side of West Chester Pike, which each require certain common sewage facilities (the Spray Irrigation System). The easements were granted to facilitate the installation, operation, maintenance, repair and replacement of the Spray Irrigation System. Pursuant to the agreement, the Spray Irrigation System has subsequently

			been dedicated to the Township, pursuant to the Deed of Dedication described above.

Schedule 4.14

Seller Litigation

None.

Schedule 4.16(a)

Exception to Title to Acquired Assets

None.

Schedule 4.16(b)

Sufficiency

None.

Schedule 4.17

Pending Development Plans

Service Area	Project	Status	Projected EDUs	YoY New EDU Projections				
				2020	2021	2022	2023	2024
VFSA Service Area	Troutbeck Farm	Preliminary	38	-	-	10	10	10
	314 South Valley Road	Preliminary	1	1	-	-	-	-
	57 Grubb Road	Preliminary	1	1	-	-	-	-
	107 Central Avenue	Preliminary	1	1	-	-	-	-
	1 Wildwood Drive	Preliminary	1	1	-	-	-	-
	620 Sugartown Road	Preliminary	1	-	1	-	-	-
	1 Greenbriar Lane	Preliminary	4	-	-	-	-	-
	2291 South Valley Road	Preliminary	4	-	1	1	1	1
East Goshen	None	N/a	-	-	-	-	-	
Penn's Preserve	None	N/a	-	-	-	-	-	

Schedule 4.18

Land Development/Financial Security Agreements

None.

Schedule 5.04

Buyer Consents and Approvals

1. Pennsylvania Public Utility Commission (the "PaPUC") Approval of Transaction

2. PaPUC Approval of Consent to Assignment and Amendment to Sewage Treatment Agreements and Related Amendments

3. Pennsylvania Department of Environmental Protection (the "PaDEP") Approval of Sanitary Sewer Collection and Conveyance System Act 537 Plan recognizing transfer of wastewater collection system from Seller to Buyer

4. PaDEP transfer of all NPDES and WQM Permits

Schedule 5.11

Buyer Litigation

To be addressed by Buyer.

Schedule 6.05(e)

Missing Easements

To be provided upon further review of due diligence.

Schedule 7.03(a)

Rates

A. Gravity Sewer Customers, Valley Forge Sewer System

Base Rate:	$124.66 per quarter/$41.55 per month
Quarterly Consumption Based on Usage:	$0.00552 per gallon

B. Low Pressure Sewer Customers, Valley Forge System – Including But Not Limited to the Sugartown Road – School Lane Sewer District, The East Central Sewer District, and The Acres Sewer District

Base Rate:	$124.66 per quarter/$41.55 per month
Quarterly Pump Maintenance Fee:	$50.00
Quarterly Consumption Based on Usage:	$0.00552 per gallon

C. Penns Preserve Sewer

Base Rate:	$187.96 per quarter/$62.65 per month

D. East Goshen Sewer

Base Rate:	$153.87 per quarter/$51.29 per month

East Goshen customers will be billed and responsible for payment of the prorated portion of the quarterly sewer payment due to East Goshen Township and/or East Goshen Municipal Authority.

JEROME C. WEINERT
Principal & Director

8555 West forest Home Avenue, Suite 201
Greenfield, WI 53228
414-529-5755 • Tel
414-698-8371 • Cell
weinertj@auswest.net

June 1, 2021

Ms. Sally Slook
Township Manager
Willistown Township
688 Sugartown Road
Malvern, PA 19355

Re: Willistown Township Wastewater Collection System Fair Market Value Appraisal

Dear Ms. Slook:

AUS Consultants is please to respond to Scott Shearer's (PFM Financial Advisors, LLC) request for a proposal for a valuation of Willistown Township's wastewater collection system. We understand the nature and purpose of the request is to determine the fair market value of the Township's wastewater collection property and its operation for compliance with Title 66 (Public Utilities) of the Pennsylvania Consolidated Statues Section 1329 of the "Valuation of Acquired water and wastewater systems" collectively referred to as Act 12 of the Commonwealth of Pennsylvania's 2016 legislative session. AUS Consultants is a Utility Valuation Expert (UVE) as designated by the Pennsylvania Public Utility Commission (PUC) Docket No. A-2016-2566251 Entity Code 9919181 renewed January 12, 2021. Our appraisal assumes an investor-owned utility as the purchaser and that the purchaser would be successful in establishing the purchase price, assumed to be the appraised value, as rate-base for regulatory purposes under Section 1329 of the Public Utility Code of Pennsylvania.

Our response to this request will include the scope of our services, a list of AUS Consultants staff and their qualifications, an initial listing of data required to perform the appraisal and a range of project costs through the completion of the appraisal report; activities subsequent to the delivery of our final report will be billed at our hourly per diems defined below. The appraisal will be prepared under the 2020-2021 edition of the Uniform System of Professional Appraisal Practices (USPAP) which has been extended through 2022.

Before addressing the proposal requirements, it is important to understand the valuation concepts and parameters as they would apply to this project which will be subject to consideration of issues regarding to recent Commission decisions and settlements entered into between the Pennsylvania Office of Consumer Advocate (OCA) and the participants (Aqua Pennsylvania and Pennsylvania American) in other recent Act 12 cases.

Valuation Study

AUS Consultants understands the purpose of the valuation study is to determine the fair market of the Township's wastewater collection system assets and their operation. Fair market value is defined as:

> "The most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under conditions requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress." The Appraisal of Real Estate, 13th Edition, page 23

Our conclusion will represent the fair market value as a going concern, in this case an operating wastewater collection system and not an amount that would be realized from a liquidation of those assets.

Valuation Methodologies

The valuation of the Township's wastewater collection assets, as part of a going concern, will the three (3) generally accepted valuation methodologies: the cost, income and market approaches.

The primary valuation method that will be utilized is the **cost approach.** In preparing the cost approach we will rely on the "Engineer's Assessment" inventory prepared for the Township and the Purchaser per the Pennsylvania PUC's (Act 12) Final Implementation Order M-2016-2543993. In order for the Engineer's Assessment to be of maximum use to the UVEs it should detail the property by account, type and size of property and or equipment, its date of

installation and its original cost. It should be noted that Section 1329 does not restrict the property to be appraised in any fashion so all property of the Township subject to the sale whether Township constructed and/or developer contributed is subject to the appraisal. The cost approach will give consideration to the Township's wastewater collection plant and equipment's replacement cost adjusted for appraisal depreciation. The replacement cost new will be developed using either trending the property's investment by account and installation year or by application of appraisal date unit costs to property's inventory by account and installation year. Next, appraisal depreciation, physical, function and economic, will be assessed and deducted from the replacement cost new. The physical and functional depreciation will be determined based on the age-life depreciation methods using aging from the Engineer's Assessment, the service lives applicable to wastewater industry depreciation lives and a physical inspections of the property.

The property subsequent to its acquisition, will be regulated by the Pennsylvania PUC utilizing a rate base/rate of return regulation. This form regulation allows for the fair return on and of the Company's capital invested for the provision of wastewater services. The last step in the Cost Approach's we will consider the property's economic returns under PUC regulation in order to determine if economic obsolescence exits in the preliminary Cost Approach conclusion discussed above. We will use the results of Income and Market Approaches (discussed below) in making this determination.

The **income approach** provides an indication of value by evaluation the future returns of the operation of the property as wastewater collection system. There are two commonly used methods of the income approach: the discounted cash flow (DCF) approach and the capitalized income approach. Both procedures discount the future returns of the property using a recognized cost of capital for the wastewater industry.

In the DCF, the expected or future cash flows of the operation of the property are discounted to the appraisal date (present value) using a recognized cost of capital for the wastewater industry. Future cash flows are based on historical results from operation in terms of revenues and expenses as the basis forecast of future operations. The projected cash flow levels must provide for additional cash investment and working capital additions, as well as reflect the specific growth potential of the system being valued.

In the capitalize income approach the property's future returns are consolidated into a single estimate for all future periods. The capitalized income approach to value is determined by the direct capitalization of the estimated income using an adjusted cost of capital removing future growth from the cost of capital rate.

The discount rate used in the income approaches will be developed from a market analysis of debt and equity reflecting the risks associated with a rate regulated water and wastewater companies regulated by the Pennsylvania PUC.

The **market approach** looks to market sales of similar water and wastewater utility properties (companies). There are two methods which are commonly utilized to estimate the market approach: actual market sales and market multiples based on wastewater industry comparables based on financial performance as reported in Value Line Investment Surveys for the water/wastewater industry.

The **final appraised value** will consider each of the three approaches to value both individually and collectively.

AUS Consultants Professional Staff

AUS Consultants' professional staff has extensive nationwide experience in preparing business enterprise valuations for water and wastewater systems.

Jerome C. Weinert, Professional Engineer (PE), Accredited Senior Appraiser (ASA), Certified Depreciation Professional (CDP)

- 49 years in Appraisal and Depreciation Consulting
- BS in Mechanical Engineering – Milwaukee School of Engineering (1972)
- Master's in Business Administration – Marquette University (1988)
- Testimony Experience:
  - Regulatory (Depreciation and Rate Base)
  - Courtroom (Valuations – ad valorem taxation and eminent domain and rate of return)

Michael J. Diedrich, PE, ASA, CDP, Certified General Appraiser

- 38 years in Appraisal and Depreciation Consulting
- BS in Architectural Engineering Technology – Milwaukee School of Engineering (1981)
- Master's in Business Administration – Marquette University (1991)
- Testimony Experience:

Courtroom (Valuations ad valorem taxation and eminent domain)

David Weiler

- 36 years in Valuations of Business Enterprises, Closely-held common Stock, Cost of Capital Studies and Valuations of Intangible Property
- Bachelor of Science in Finance-Drexel University (1978)

David A. Sheffer

- 39 years in Regulatory Consulting (Depreciation, Rate Base, Cost of Service, Valuations and Original Cost Studies)

Elizabeth A Weinert

- 19 years in Appraisal and Depreciation Consulting
- B Bachelor of Science in Mechanical Engineering – Milwaukee School of Engineering (2001)
- Master's in Aeronautical Engineering – University of Alabama (2015)

First Request for Data

In order to expedite the project upon the East Whiteland Township's acceptance of our proposal, AUS Consultants needs the following data:

Inventory of property plant and equipment. Ultimately this inventory needs to be provided by the firm preparing the "Engineer's Assessment" for both the Township and the Purchaser. As stated above:

> "In order for the Engineer's Assessment to be of maximum value use it should detail the property by account, type and size of equipment, its date of installation and its original cost. It should be noted that Section 1329 does not restrict the property to be appraised in any fashion so all property whether municipally constructed and/or developer contributed is subject to the appraisal."

Township's financial information related to the operation of the wastewater collection system over each of the last four to six years.

Customer information for the last four years

This data request is not intended to be all inclusive of the information required. There will be follow-up questions and additional requests for data.

AUS Consultants would like to perform a physical inspection of the Township's wastewater system and schedule interviews, as appropriate, with township personnel familiar with the wastewater collection system's operation.

Fee Estimate

AUS Consultants would offer a professional fee range of $25,000 to $27,000 plus expenses to complete a valuation study. Expenses billed at our cost will include travel and living, report preparation, and Fed X as necessary.

For activities subsequent to our final report the following table of hourly per diems plus expenses:

Consultant	Hourly Per Diems ($s/hr.)
Jerome C. Weinert	275
Michael J Diedrich	250
Earl Robinson	200
David A. Sheffer	200
David Weiler	170
Elizabeth A. Weinert	150
Susan Macchia	70

These activities typically include responding to interrogatories (Commission staff, OCA, Small Business Advocate, and/or other possible intervenors), reviewing the testimony of participating parties, preparing testimony (direct, cross, and possibly sur-rebuttal), attending Commission hearings. If expert testimony is required, Jerome C. Weinert will be the witness and attend any hearings which is required.

Closure

AUS Consultants appreciates the opportunity to respond to Willistown Township's request for our services. Should you have any questions regarding our response, please contact the undersigned.

Respectfully submitted,
Jerome C. Weinert
AUS Consultants
Principal & Director

Jerome C Weinert

Date: June 1, 2021

Accepted by:

Willistown Township, PA
Date: 7/9/21

VIA E-MAIL

July 20, 2021

Thomas S. Wyatt
Obermayer Rebmann Maxwell & Hippel LLP
1500 Market Street
Suite 3400
Philadelphia, PA 19102-2101

RE: Aqua Pennsylvania Wastewater, Inc. – Willistown Township, Section 1329 Fair Market Value Application

Dear Mr. Wyatt:

Enclosed please find a list of items concerning utility valuation expert ("UVE") appraisals for applications to the Pennsylvania Public Utility Commission under Section 1329, 66 Pa. C.S. § 1329, that should be reviewed by the UVEs in the development of their Fair Market Value appraisals.

Please provide the enclosed list to your client, Willistown Township ("Township"), and to the UVE that your client engages. In accordance with Aqua Pennsylvania Wastewater, Inc.'s ("Aqua") prior settlement agreements under Section 1329, Aqua will not be able to support, in whole or in part, UVE appraisals that do not comply with the enclosed list.

If you have any questions concerning the enclosed list, please contact me at 610-645-1130.

Sincerely,

Alexander R. Stahl
Regulatory Counsel

Enclosure

Aqua – Willistown 1329 FMV Application

Requirements from Prior Commission Orders for Utility Valuation Experts:

1. Market Approach

    a. If "comparable acquisitions" are used as a factor in determining market value, the purchase price for each "comparable acquisition" shall be based on the actual amount paid for the assets at the time of purchase and future capital improvements shall not be included;

    b. If the number of customers is used as a factor in determining market value, the actual, unadjusted number of customers shall be used rather than projected future number of customers. This applies to the number of customers for both the system being acquired and any "comparable acquisitions" being used in the determination.

    c. Speculative growth adjustments will not be used, consistent with *New Garden* (Order pp. 52-53). U.S. Census Data and relevant and applicable regional planning commission reports may be used as a basis to determine growth in a subject area. OCA reserves the right to challenge the specific use of the data in each case.

    d. The proxy group used for calculating market value should not be limited to only companies which engage in Pennsylvania fair market value acquisitions. Aqua agrees that it will provide the terms of this agreement to any UVE prior to engaging the UVE.

    e. Comparable sales used to establish the valuation should not be limited to those that the UVE previously appraised. Aqua agrees that it will provide the terms of this agreement to any UVE prior to engaging the UVE.

2. Income Approach

    a. The rate base/rate of return methodology is not an appropriate methodology for calculating fair market value.

    b. Calculations done under the Income Approach will clearly describe the basis for discount rate(s) in the report rather than only in the exhibits. The following information should be provided about the discount rate(s) used:

        i. The capital structure used in the analysis with an explanation as to why the capital structure was selected. If Company's actual capital structure was not used, explain why not.

        ii. The cost of equity used in the analysis, and the basis for the cost of equity.

iii. The cost of debt used in the analysis. If Company's actual cost of debt was not used, explain why not.

c. Additionally, if a capitalization rate is used, the calculation of the capitalization rate and the basis for the growth rate will be disclosed and fully explained.

3. Cost Approach

a. If the reproduction cost methodology is used, valuation of the collection mains will not be treated differently or as a special circumstance unless reasonably justified;

b. Future capital projects shall not be considered in determining the cost approach result;

c. The cost of land, if included, shall not be adjusted by the ENR index.

d. Aqua and the OCA reserve the right to present adjustments and oppose other methodologies, inputs and assumptions in appraisals in future cases and proceedings, including methodologies, inputs and assumptions that were present in this case but not challenged by the OCA or that were accepted by the Commission.

4. Other Appraisal Considerations:

a. The "going value," "provision for erosion on return," and "overhead cost" add-ons will not be adopted or included in the appraisals.

***

Jerry Weinert

From: Wyatt, Thomas <thomas.wyatt@obermayer.com>
Sent: Tuesday, July 20, 2021 10:07 AM
To: Jerry Weinert
Cc: Farmer, Kimberley; Olesh, Matthew; Melillo, Sydney; Wyatt, Thomas
Subject: FW: Willistown UVE Requirements
Attachments: Willistown UVE Requirements Letter - Willistown.pdf

Jerry- fyi

From: Alexander Stahl <AStahl@aquaamerica.com>
Date: Tuesday, July 20, 2021 at 11:06 AM
To: "Wyatt, Thomas" <thomas.wyatt@obermayer.com>, Kimberley Farmer <kimberley.farmer@obermayer.com>
Subject: Willistown UVE Requirements

Tom,

Please see the attached letter concerning Utility Valuation Expert requirements for the Willistown Township Appraisal. Please forward to the Township's UVE.

If you have any questions please contact me.

Thanks,
Alex

Alexander R. Stahl
Regulatory Counsel
762 W. Lancaster Ave., Bryn Mawr, PA 19010
O: 610.645.1130 (ext: 51130)
M: 267.353.9291

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Current cost of Easements

Activity	Engineer	Legal	Fees	Total
Determine the facilities for which a Easment is need	1	0	0	
Locate the Land owner for the property needing a easement	1	1	0	
Develop a diagram o the Property, the facilities, and the easement	2	0	0	
Develop the easement document	1	1	0	
Visit the property owner to obtain permission for the easement and sign the easment documentation	4	0	0	
Register the easement with the Municipal Clerk	0	1	250	
Total	9	3	250	
Labor Costs per Hour	54	100		
Total Cost	486	300	250	1,036