

**Application of Pennsylvania-American Water Company for Acquisition of
the Wastewater Assets of Valley Township
66 Pa. C.S. § 1329
Application Filing Checklist – Water/Wastewater
Docket No. A-2020-3020178**

5. Provide copies of two independent appraisals by separate utility valuation experts for use in establishing the fair market value of the Selling Utility.

RESPONSE: See enclosed appraisals performed by Jerome C. Weinert, P.E., Principal and Director for AUS Consultants on behalf of PAWC at **Appendix A-5.1** and by Harold Walker III, Manager – Financial Studies for Gannett Fleming on behalf of Valley at **Appendix A-5.2**.

Jerome C. Weinert

Principal & Director

AUS Consultants

Depreciation and Valuation

8555 West Forest Home Avenue

Suite 201

Greenfield, WI 53228

Telephone 414-529-5755

Fax 414-529-5750

E-Mail weinertj@auswest.net

August 9, 2020

Mr. Scott D. Fogelsanger
Senior Manager - Business Development
Pennsylvania-American Water Company
852 Wesley Drive
Mechanicsburg, PA 17055

RE: UVE Market Value Appraisal of Valley Township's Wastewater Collection System

Enclosed is AUS Consultants' fair market value appraisal report for Valley Township's wastewater collection system (System) as of December 17, 2019 prepared for Pennsylvania American Water Company (PAWC). 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 Statutes (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 Pennsylvania American Water Company and the Pennsylvania Public Utility Commission.

Based on our appraisal the Fair Market Value of Valley Township's wastewater collection system's property, plant, and equipment operating as a Pennsylvania rate regulated wastewater utility is \$19,081,059 determined based on the cost, income, and market approaches to value, as detailed in the following table:

**Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Fair Market Value Appraisal

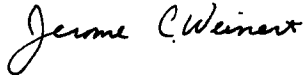

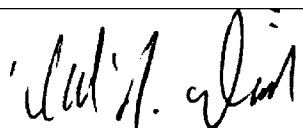

| Appraisal Approach | Investor-owned Utility | Weight | Wtd Valuation Indications |
|--|---------------------------|--------|------------------------------|
| Cost Approach | | | |
| Inventory of Assets (7-2019) | | | |
| Original Cost (\$OC) | 13,389,110 | | |
| Depreciated Original Cost (\$OCLD) | 9,214,738 | | |
| Replacement Cost (9-30-2019) | | | |
| Replacement Cost New (COR) | 31,729,237 | | |
| Depreciated Replacement Cost New (CORLD) | \$ 19,252,333 | | |
| Cost Approach Conclusion | 19,252,333 | 50% | 9,626,166 |
| Income Approach | | | |
| Required Rate Increases: 20% period 3, 15% period 6, and 6% every 3rd year beginning in period 9 (Input 6) | | | |
| | 19,154,327 | | |
| Income Approach Conclusion | 19,154,327 | 40% | 7,661,731 |
| Market Approach | | | |
| Market Comparables (to) | | | |
| OCLD | 18,429,476 | | |
| CORLD | 17,931,623 | | |
| Customers | 11,650,800 | | |
| Cash Flows (EBITDA) | 15,086,845 | | |
| Market Financials (to) | | | |
| OCLD | 19,443,097 | | |
| Market Approach Conclusion | 17,931,623 | 10% | 1,793,162 |
| Appraisal Conclusion | \$ 19,081,059 | 100% | 19,081,059 |
| Conclusion (cost approach) | \$ 19,252,333 | | |

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 Valley Township's wastewater collection system's property, plant and equipment the appraisal's conclusion of \$19,081,059 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
 August 9, 2020

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

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**Valley Township's (Pennsylvania) Wastewater Collection
System**

**Fair Market Value Appraisal Report
As of December 17, 2019
for
Pennsylvania American Water Company**

**AUS Consultants
Depreciation and Depreciation
8555 West Forest Home Avenue Suite 201
Greenfield, Wisconsin 53228
Office: 414-529-5755
Cell: 414-698-8371
E-Mail: weinertj@auswest.net**

AUS CONSULTANTS

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 Bureau of Technical Utility Services – Pennsylvania Public Utility Commission

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PAWC – AUS CONSULTANTS UVE CONTRACT

August 9, 2020

Pennsylvania American Water Company
Mechanicsburg, Pennsylvania

AUS Consultants
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8555 West Forest Home Avenue
Suite 201
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RE: UVE Market Value Appraisal of Valley Township's Wastewater Collection System

Enclosed is AUS Consultants' fair market value appraisal report of the Valley Township's (Pennsylvania) wastewater collection system (System) as of December 17, 2019 prepared for our client Pennsylvania American Water Company (PAWC). 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) Statutes 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 Pennsylvania American Water Company and the Pennsylvania Public Utility Commission.

Based on our appraisal, the Fair Market Value of the Valley Township's (Pennsylvania) wastewater collection system's property, plant, and equipment operating as Pennsylvania rate regulated wastewater utility is \$19,081,059 determined based on the cost, income, and market approaches to value, as detailed in the following table:

AUS CONSULTANTS

**Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Fair Market Value Appraisal

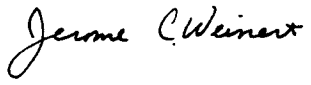

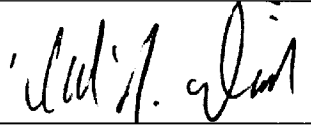
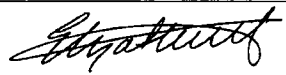
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| Cost Approach | | | |
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| Appraisal Conclusion | \$ 19,081,059 | 100% | 19,081,059 |
| Conclusion (cost approach) | \$ 19,252,333 | | |

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 Valley Township's wastewater collection system's property, plant and equipment this appraisal's conclusion of \$19,081,059 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
 August 9, 2020

By:

| | |
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|  |  |
| 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 |

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AUS CONSULTANTS

APPRAISAL CERTIFICATION
for the Fair Market Appraisal of
The Valley Township Pennsylvania's Wastewater Collection System
As of December 17, 2019
Prepared for
Pennsylvania American Water Company

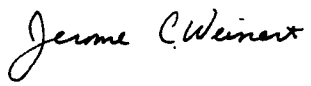

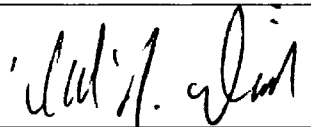
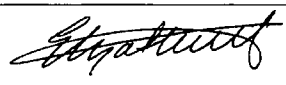
AUS Consultants, Depreciation & Valuation, certifies that, to the best of its knowledge and belief:

- 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 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 has 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 Fogelsanger of Pennsylvania American Wastewater Company provided assistance in obtaining information and data from the Valley Township, Pennsylvania 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
August 9, 2020

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 Valley Township's wastewater collection system (System) for our client Pennsylvania American Water Company (PAWC). 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 Statutes 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 Pennsylvania American Water Company 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, Valley 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 at December 17, 2019 (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:

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
December 17, 2019

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

| (1) Account Number | (2) Description | (3) | | | | (3e) Reproduction to Replacement Cost Factor AUS Input |
|--------------------------|---|---|---------------|------------------------|----------------|--|
| | | (3a) Costing Parameters Index Series | (3b) Table | (3c) Line Reference | (3d) Lookup | |
| 353.20 | Land & Land Rights - Original Basin | 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 | Structures & Improvements - Pumping | HW | W-1 | 8.00 | HWW-18 | 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 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | HW | W-1 | 45.00 | HWW-145 | 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 | 44.00 | HWW-144 | 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 |
| 365.20 | Flow Measuring Installations Meter Pits | HW | W-1 | 40.00 | HWW-140 | 1.00 |
| 364.40 | Flow Measuring Devices - WWTP | HW | W-1 | 40.00 | HWW-140 | 1.00 |

Using the trended original cost method, the System's investment in plant, property and equipment of \$13,389,110 was determined to have a reproduction cost new of \$31,729,237 as summarized in the following table:

Replacement Cost New (RCN)

| (1) | (2) | (3) | (9) | (10) | (13) | (14) | (15) | (16) |
|-------------|-------------|--|---------------|-------------------|-----------------|-----------------------------|---|----------------------------|
| Account | Account | Asset Description | Original Cost | Coating Parameter | Cost Translator | Reproduction Cost New (RCN) | Reproduction Cost New (RCN) to Replacement Cost New (COR) | Replacement Cost New (COR) |
| Input | Input | Input | OC \$s | | | RCN \$s | COR \$s / RCN \$s | COR \$s |
| Eng Assmnt | AUS Input | Fee Schedule, Inc. - Valley Wastewater Engineering Agreement | 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 - Original Basin | 3,368 | USBLS1 | 5.86 | 19,749 | 1.00 | 19,749 |
| 353.30 | 353.30 | Land & Land Rights - Pumping | 3 | USBLS1 | 1.84 | 6 | 1.00 | 6 |
| 354.30 | 354.30 | Structures & Improvements - Pumping | 1,712,310 | HW-18 | 1.66 | 2,843,619 | 1.00 | 2,843,619 |
| 355.30 | 355.30 | Generating Equipment - Pumping | 21,547 | USBLS4 | 1.71 | 36,781 | 1.00 | 36,781 |
| 360.21 | 360.21 | Collection Sewers - Force - Mains | 1,187,519 | HW-144 | 1.67 | 1,986,812 | 1.00 | 1,986,812 |
| 360.23 | 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 20,733 | HW-145 | 1.22 | 25,356 | 1.00 | 25,356 |
| 361.21 | 361.21 | Collection Sewers - Gravity - Mains | 6,263,231 | HW-144 | 2.87 | 17,984,560 | 1.00 | 17,984,560 |
| 361.22 | 361.22 | Collection Sewers - Gravity - Mains Relining | 52,870 | HW-144 | 1.11 | 58,580 | 1.00 | 58,580 |
| 361.23 | 361.23 | Collection Sewers - Gravity - Manholes | 2,183,510 | HW-145 | 2.08 | 4,533,510 | 1.00 | 4,533,510 |
| 363.20 | 363.20 | Service Laterals | 1,934,160 | HW-139 | 2.17 | 4,198,363 | 1.00 | 4,198,363 |
| 365.20 | 365.20 | Flow Measuring Installations Meter Pits | 9,859 | HW-140 | 4.25 | 41,901 | 1.00 | 41,901 |
| Grand Total | Grand Total | Grand Total | 13,389,110 | | 2.37 | 31,729,237 | 1.00 | 31,729,237 |

Replacement Cost New Less Depreciation - The replacement cost described above reflects the cost of new property; however, Valley 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 or 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.

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.

Based on our experience in regard to water and wastewater depreciation studies and our analysis of Valley Township's wastewater collection system operating performance; we found that the Valley 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 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 studies which are summarized in the following table:

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
December 17, 2019**

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

| (1) | (2) | (4) | (4b) | (5) | (6) | (6b) |
|----------------|---|----------------------------------|---------------------------|----------------------------------|------------------------|-------|
| Account Number | Description | Iowa Survivor / Retirement Curve | Normal Service Life years | Economic Obsolescence % of CORLD | Tax Depreciation Table | Life |
| 353.20 | Land & Land Rights - Original Basin | 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 | Structures & Improvements - Pumping | R4.0 | 45.00 | 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 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 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 | 45.00 | 0.00% | MACRS | 25.00 |
| 365.20 | Flow Measuring Installations Meter Pits | S2.0 | 30.00 | 0.00% | MACRS | 25.00 |
| 364.40 | Flow Measuring Devices - WWTP | S2.0 | 30.00 | 0.00% | MACRS | 25.00 |

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:

$$\text{Depreciation (\%)} = \frac{\text{Age (years)} \times 100\%}{\text{Service Life (years)}}$$

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

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 \$31,729,237 the resultant COR less normal depreciation (CORLD) was found to be \$19,252,353 detailed as follows:

Replacement Cost New less Depreciation (RCNLD)

| (18) | (19) | (21) | (22) | (23) | (24) | (28) | (29) | (30) | (31) |
|-----------|--|---|----------------------------|--------------------------------|---------------------------|-----------------------|-----------------------|-------------|--|
| Account | Description | Age at December 17, 2018 Appraisal Date | Replacement Cost New (COR) | Retirement Dispersion low-type | Normal Service Life (NSL) | Normal Remaining Life | Total Life Expectancy | Condition | Preliminary Cost Approach (COR less Normal Depreciation) |
| Input | Input | years | COR \$s | Input | years | years | years | % of COR | CORLD \$s |
| Eng Assmt | Perkins & Coles, Inc.'s Valley Wastewater Engineers Assessment | Calculation | Calculation | Input | Input | Calculation | Calculation | Calculation | Calculation |
| Account | Description | Age | RCN | lowe | NL | Rem Life | Total Life | Condition | CORLD |
| 353.20 | Land & Land Rights - Original Basin | 46.50 | 19,749 | 2NonDep | - | - | - | 1.00 | 19,749 |
| 353.30 | Land & Land Rights - Pumping | 26.76 | 6 | 2NonDep | - | - | - | 1.00 | 6 |
| 354.40 | Structures & Improvements - Pumping | 16.38 | 2,843,619 | R4.0 | 45.00 | 28.99 | 45.37 | 0.64 | 1,821,032 |
| 355.30 | Generating Equipment - Pumping | 29.50 | 36,781 | R3.0 | 35.00 | 10.11 | 39.61 | 0.26 | 9,388 |
| 360.21 | Collection Sewers - Force - Mains | 18.79 | 1,986,812 | R3.0 | 75.00 | 57.14 | 75.93 | 0.75 | 1,498,282 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 11.50 | 25,356 | R3.0 | 75.00 | 64.04 | 75.54 | 0.85 | 21,496 |
| 361.21 | Collection Sewers - Gravity - Mains | 34.90 | 17,984,560 | R2.5 | 80.00 | 49.57 | 84.48 | 0.59 | 10,631,978 |
| 361.22 | Collection Sewers - Gravity - Mains Relining | 5.50 | 58,580 | R2.5 | 60.00 | 54.94 | 60.44 | 0.91 | 53,249 |
| 361.23 | Collection Sewers - Gravity - Manholes | 28.68 | 4,533,510 | R2.5 | 80.00 | 54.71 | 83.39 | 0.66 | 2,995,110 |
| 363.20 | Service Laterals | 23.77 | 4,198,363 | R3.0 | 45.00 | 24.29 | 48.05 | 0.52 | 2,195,757 |
| 360.21 | Flow Measuring Installations Meter Pits | 49.50 | 41,901 | S2.0 | 30.00 | 4.50 | 54.00 | 0.15 | 6,285 |
| Grand | | | | | | | | | |
| Total | Grand Total | 29.82 | 31,729,237 | | 71.71 | 45.48 | 75.27 | 0.61 | 19,252,333 |

The preliminary cost approach to value of Valley Township's wastewater system property was found to be \$19,252,353.

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 Valley 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 Valley Township's wastewater system's operations were evaluated based on an analysis of historical operating performances over the period 2015 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 Valley 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 on 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 2020 (1-1-2020)**

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 | | 26% | Market | 3.23% | Market | 28.89% | 71.11% | 0.60% |
| Equity | | 74% | Market | 9.90% | Market | 0.0% | 100.0% | 7.33% |
| Total Capital r | | 100.0% | | | | | | 7.93% |
| Growth (g) | | | | | | | | 1.82% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | | 6.00% |

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

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Potential Purchaser: Investor-Owned Utility
As of December 17, 2019
Discounted Cash Flow Analysis**

| Discount Rate: | | 7.53% | | | | | | | | | | | |
|---|------|------------|--------------|------------------|---------------------------|---|----------------------------------|----------------------|---------------------------|----------------------|----------------------------------|----------------|-----------------------------|
| Capitalization Rate: | | 6.03% | | | | | | | | | | | |
| (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 @ 28.85% | Capital Expenditures | Change in Working Capital | Net Cash Flows | Period Present Worth Factor (PW) | PW of Cashflow | Accumulated PW of Cashflows |
| | | | | | (3)-(4) | (5)-(6) | (7) *28.85% | | | (3)-(4)-(8)-(9)-(10) | | (11)*(12) | Sum (13) |
| 1 | 0.5 | 2,857,439 | 3,122,464 | 561,733 | (265,025) | (826,258) | (238,706) | 127,144 | 5,956 | (159,419) | 0.963 | (153,520) | (153,520) |
| 2 | 1.5 | 2,870,157 | 3,183,345 | 565,173 | (211,788) | (776,361) | (224,464) | 129,051 | 6,195 | (123,570) | 0.892 | (109,332) | (262,852) |
| 3 | 2.5 | 3,645,912 | 3,246,645 | 509,249 | 439,267 | (129,982) | (37,552) | 130,987 | 38,542 | 207,290 | 0.826 | 253,822 | (9,030) |
| 4 | 3.5 | 3,833,891 | 3,310,589 | 573,465 | 523,302 | (50,163) | (14,492) | 132,951 | 7,991 | 396,852 | 0.766 | 303,989 | 294,959 |
| 5 | 4.5 | 3,987,810 | 3,375,807 | 577,824 | 612,008 | 34,184 | 9,876 | 134,945 | 8,312 | 458,875 | 0.709 | 325,342 | 620,301 |
| 6 | 5.5 | 4,730,060 | 3,438,275 | 582,329 | 1,291,785 | 709,456 | 204,962 | 136,970 | 40,081 | 909,772 | 0.657 | 597,720 | 1,218,021 |
| 7 | 6.5 | 4,900,956 | 3,502,149 | 589,917 | 1,398,807 | 808,890 | 233,688 | 150,021 | 9,229 | 1,005,869 | 0.609 | 612,574 | 1,830,595 |
| 8 | 7.5 | 5,078,027 | 3,567,447 | 595,037 | 1,510,580 | 915,543 | 264,500 | 152,162 | 9,362 | 1,084,356 | 0.564 | 611,577 | 2,442,172 |
| 9 | 8.5 | 5,566,177 | 3,634,194 | 600,317 | 1,931,983 | 1,331,666 | 384,718 | 154,334 | 76,360 | 1,366,571 | 0.523 | 714,717 | 3,156,889 |
| 10 | 9.5 | 5,767,282 | 3,702,414 | 605,760 | 2,064,868 | 1,459,108 | 421,536 | 156,537 | 10,859 | 1,475,936 | 0.484 | 714,353 | 3,871,242 |
| 11 | 10.5 | 5,975,653 | 3,772,132 | 611,373 | 2,203,521 | 1,592,148 | 459,971 | 158,775 | 11,252 | 1,573,523 | 0.449 | 706,512 | 4,577,754 |
| 12 | 11.5 | 6,550,091 | 3,843,175 | 617,158 | 2,706,716 | 2,089,558 | 603,673 | 161,044 | 31,019 | 1,910,980 | 0.416 | 794,968 | 5,377,722 |
| 13 | 12.5 | 6,786,745 | 3,916,168 | 623,118 | 2,870,577 | 2,247,459 | 649,291 | 163,347 | 17,781 | 2,045,158 | 0.385 | 787,386 | 6,160,108 |
| 14 | 13.5 | 7,031,948 | 3,990,540 | 629,257 | 3,041,409 | 2,412,152 | 696,871 | 165,684 | 13,241 | 2,165,613 | 0.357 | 773,124 | 6,933,232 |
| 15 | 14.5 | 7,707,929 | 4,066,518 | 635,951 | 3,641,411 | 3,005,830 | 868,384 | 168,055 | 36,502 | 2,568,470 | 0.331 | 850,164 | 7,783,396 |
| 16 | 15.5 | 7,985,008 | 4,147,305 | 634,884 | 3,637,903 | 3,003,019 | 867,572 | 168,959 | 4,162 | 2,607,210 | 0.306 | 797,806 | 8,581,202 |
| 17 | 16.5 | 7,862,858 | 4,229,296 | 641,243 | 3,633,562 | 2,992,319 | 864,461 | 161,344 | 4,204 | 2,605,533 | 0.284 | 738,403 | 9,320,605 |
| 18 | 17.5 | 8,413,758 | 4,313,124 | 647,794 | 4,130,134 | 3,452,340 | 997,381 | 163,764 | 29,722 | 2,999,267 | 0.263 | 765,137 | 10,085,742 |
| 19 | 18.5 | 8,497,391 | 4,398,670 | 654,541 | 4,098,771 | 3,444,730 | 995,038 | 166,720 | 4,543 | 2,932,970 | 0.244 | 715,645 | 10,801,387 |
| 20 and beyond | 19.5 | 8,582,165 | 4,485,819 | 661,489 | 4,096,546 | 3,435,057 | 992,388 | 168,711 | 4,589 | 2,930,856 | 2.850 | 8,452,940 | 19,154,327 |
| | | | | | | | | 3,041,007 | | | | | |
| Age | | | | 19.5 | | | | | | | | | |
| PW(Age) = 1/(1+Discount Rate) ^{Age} | | | | 0.226 | | | | | | 10,175,851 | | | |
| PW to Perpetuity = 1/Capitalization Rate | | | | 17.610 | | | | | | (1,548,965) | | | |
| PW(20and beyond) = PW to Perpetuity * PW Factor(19.5) | | | | 2.850 | | | | | | 8,626,886 | 0.226 | 1,949,676 | 12,751,063 |
| Rate Base | | | | | | | | | | | | | |
| Annual Plant Construction Inflation Rate | | | | | | | | | | 0.0422 Input | | | |
| Plant Inflation over 19.5 years | | | | | | | | | | 19,718,571 | 0.226 | 4,456,397 | 15,257,784 |
| PP | | 13,950,000 | | | | | | | | | | | |
| OCLD | | 3,214,738 | | | | | | | | | | | |
| PP/OCLD | | 1.514 | | | | | | | | | | | |
| RCNLD | | 19,752,333 | | | | | | | | | | | |
| RCNLD/PP | | | | | | | | | | 1.380095529 | | | |
| | | | | | | | | | | 11,905,927.12 | 0.226 | 2,690,740 | 14,492,127 |
| Average | | | | | | | | | | | | | 15,163,825 |

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 \$19,154,327. 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 10, 2020).

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 Valley Township's wastewater collection 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:

| RowID | Approximate Date | Buyer | Seller | County | Type of Facility | Initial Purchase Price | Final Purchase Price ¹ | Number of Total Customers | OCA Market Value per customer | Relationship to the passage of Section 1329 | Average Purchase Price per Customer |
|-------|------------------|-------------------|--------------------------|------------|---|------------------------|-----------------------------------|---------------------------|-------------------------------|---|-------------------------------------|
| 16 | 4/1/2014 | Aqua PA | Penn Township | Chester | | 3,700,000 | 3,700,000 | 801 | 4,619 | Prior | |
| 17 | 12/1/2015 | PA American Water | Fairview Township | York | | 16,800,000 | 16,800,000 | 3,912 | 4,294 | Prior | Average |
| 18 | 10/1/2016 | PA American Water | New Cumberland Borough | Cumberland | | 23,000,000 | 23,000,000 | 3,100 | 7,419 | Prior | 5,354 |
| 19 | 12/1/2016 | PA American Water | Scranton Sewer Authority | Lackawanna | | 158,788,456 | 158,788,456 | 31,229 | 5,085 | Prior | |
| 20 | 6/1/2016 | PA American Water | City of McKeesport | Allegheny | Wastewater Collection and Treatment | 180,000,000 | 159,000,000 | 21,953 | 7,197 | Post | 7,242.75 |
| 21 | 8/1/2016 | Aqua PA | New Garden Twp. SA | Chester | Wastewater Collection and Owned Treatment | 29,500,000 | 29,500,000 | 2,106 | 14,008 | Post | 14,007.60 |
| 22 | 12/1/2017 | Aqua PA | Limerick Township | Montgomery | | 64,373,000 | 64,373,000 | 5,434 | 11,846 | Post | 9,264 |
| 23 | 12/10/2017 | Aqua PA | East Bradford Township | Chester | Wastewater Collection and paid for treatment Capacity | 5,000,000 | 5,000,000 | 1,248 | 4,006 | Post | 4,006.41 |
| 24 | | SUEZ | Mahoning | Carbon | Water Treatment and Distribution System | 4,734,800 | 4,734,800 | 2,806 | | Post | |
| 25 | | SUEZ | Mahoning | Carbon | Wastewater Collection and Treatment | 4,765,200 | 4,765,200 | 2,806 | | Post | |
| 26 | 6/1/2018 | Aqua PA | Cheltenham | Montgomery | Wastewater Collection | 50,250,000 | 50,250,000 | 10,500 | | Post | 4,785.71 |
| 27 | 11/14/2018 | PA American Water | Steelton | Dauphin | Water Distribution and Treatment Wastewater | 22,500,000 | 21,750,000 | 2,325 | | Post | 9,354.84 |
| 28 | | PA American Water | Sadsbury | Chester | Wastewater Collection | 9,250,000 | 8,600,000 | 998 | | Post | 8,617.23 |
| 29 | 5/28/2018 | PA American Water | Exeter | Berks | Wastewater Treatment and Collection | 96,000,000 | 96,000,000 | 9,000 | | Post | 10,666.67 |
| 30 | 10/29/2018 | Aqua PA | East Norriton | Montgomery | Wastewater Collection | 21,000,000 | 21,000,000 | 4,950 | | Post | 4,242.42 |
| 31 | 9/30/2018 | PA American | Kane | McKean | Wastewater Collection and Treatment | 17,560,000 | 17,560,000 | 2,006 | | Post | 8,753.74 |

Notes:

1 Final Purchase Price reflects the agreed upon purchase price achieved to settled the acquisition application

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 (CORLD) (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 2020) 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:

| | | | | | |
|---|----------------|----------------|--|-----------------------------------|------------|
| Pennsylvania American Water Company Valley Township Wastewater System Wastewater Collection System Investor-Owned Utility As of December 31, 2019 | | | | | |
| Comparable Sales Approach | | | | | |
| Market Sales Data | | | | | |
| Central Tendency and Reliability Analysis | | | | | |
| Market Sales Analysis - PP/OCLD | | | Market Sales Analysis - PP/CORLD | | |
| | Simple | Weighted | | Simple | Weighted |
| Mean | 2,082 | 1,909.2 | Mean | 0,613 | 0,928 |
| Standard Deviation | 0,8807 | 0,6038 | Standard Deviation | 0,2852 | 0,3186 |
| Median | 1,928 | 1,5538 | Median | 0,600 | 0,5637 |
| Mode | Not Applicable | 1,5621 | Mode | Not Applicable | 0,9919 |
| Conclusion | | 2,000 | AUS Input | | 0,9314 |
| | | | Cost Approach - | | |
| Valley Township Wastewater System | OCLD | 9,214,738 | Valley Township Wastewater System | CORLD | 19,252,331 |
| Market Value Indication | | | Market Value Indication | | |
| 18,429,476 | | | 17,931,623 | | |
| Market Sales Analysis - PP/Customer | | | Financial Basis¹ | | |
| | Simple | Weighted | Market Value per Share to Book Value per Share | | |
| Mean | 7.441 | 9.357 | Market to Book (equity) | | |
| Standard Deviation | 4.031 | 3.158 | Market to Book (equity and debt) | | |
| Median | 6.221 | 6.812 | Use (equity and debt) | | |
| Mode | Not Applicable | 7.825 | 2.11 | | |
| Forecast | 7.293 | | AUS Input | | |
| Conclusion | | 7,300 | Valley Wastewater info | | |
| | | | Cost Approach - | | |
| Valley Township Wastewater System | Customers | 1,596 | AUS Input | Valley Township Wastewater System | OCLD |
| Market Value Indication | | | Market Value Indication | | |
| 11,650,800 | | | 19,443,097 | | |
| Market Sales Analysis - PP/Cash Flows (EBITDA) | | | | | |
| | Simple | Weighted | | | |
| Mean | 22.35 | 21.58 | | | |
| Standard Deviation | 11.60 | 8.02 | | | |
| Median | 20.93 | 13.00 | | | |
| Mode | Not Applicable | Not Applicable | | | |
| Forecast | | | | | |
| Conclusion | | 22.00 | AUS Input | | |
| | | | Income Approach | | |
| Valley Township Wastewater System | Cash Flows | 15,086,845 | | | |
| Market Value Indication | | | | | |
| 15,086,845 | | | | | |
| Summary of Market Analyses | | | | | |
| Indicators | | | | | |
| OCLD | 18,429,476 | | | | |
| CORLD | 17,931,623 | | | | |
| Customers | 11,650,800 | | | | |
| Cash Flows | 15,086,845 | | | | |
| Value Line | 19,443,097 | | | | |
| Mean | 16,508,368 | | | | |
| Median | 17,931,623 | | | | |
| Conclusion | 17,931,623 | | | | |

The market approach conclusion of this appraisal was determined to be \$17,931,623.

Cost Approach Revisited – Before concluding this appraisal's fair market value, the preliminary cost approach conclusion of \$19,252,333 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 \$19,154,327 and the market approach conclusion of \$17,931,623 for the Valley Township's future wastewater system compared to the preliminary cost approach conclusion of \$19,252,333 indicates no significant external obsolescence exists in the cost approach conclusion of \$19,252,333 detailed as follows:

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

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019

Fair Market Value

| (36) | (37) | (39) | (40) | (41) |
|------------|---|--|--|--|
| Account | Description | Preliminary Cost Approach CORLD \$s | Economic Obsolescence % of Preliminary Cost Approach Input AUS Economic Obsolescence Analysis | Fair Market Value Appraisal Date Value \$s |
| Input | Input | Calculation | Input | Calculation |
| Eng Assmnt | Eng Assmnt | Col (31) | | (39) * [1.00-Col (40)] |
| Account | Description | Prelim CORLD | EO% | FMV |
| 353.20 | Land & Land Rights - Original Basin | 19,749 | 0.00% | 19,749 |
| 353.30 | Land & Land Rights - Pumping | 6 | 0.00% | 6 |
| 354.30 | Structures & Improvements - Pumping | 1,821,032 | 0.00% | 1,821,032 |
| 355.30 | Generating Equipment - Pumping | 9,388 | 0.00% | 9,388 |
| 360.21 | Collection Sewers - Force - Mains | 1,498,282 | 0.00% | 1,498,282 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 21,496 | 0.00% | 21,496 |
| 361.21 | Collection Sewers - Gravity - Mains | 10,631,978 | 0.00% | 10,631,978 |
| 361.22 | Collection Sewers - Gravity - Mains Relining | 53,249 | 0.00% | 53,249 |
| 361.23 | Collection Sewers - Gravity - Manholes | 2,995,110 | 0.00% | 2,995,110 |
| 363.20 | Service Laterals | 2,195,757 | 0.00% | 2,195,757 |
| 365.20 | Flow Measuring Installations Meter Pits | 6,285 | 0.00% | 6,285 |
| Grand | | | | |
| Total | Grand Total | 19,252,333 | 0.00% | 19,252,333 |

Value Conclusion

The Fair Market Value of the Valley Township's wastewater collection system's property, plant and equipment and its operation was determined to be \$19,081,059 as follows:

**Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Fair Market Value Appraisal

| Appraisal Approach | Investor-owned Utility | Weight | Wtd Valuation Indications |
|--|---------------------------|-------------|------------------------------|
| Cost Approach | | | |
| Inventory of Assets (7-2019) | | | |
| Original Cost (\$OC) | 13,389,110 | | |
| Depreciated Original Cost (\$OCLD) | 9,214,738 | | |
| Replacement Cost (9-30-2019) | | | |
| Replacement Cost New (COR) | 31,729,237 | | |
| Depreciated Replacement Cost New (CORLD) \$ | 19,252,333 | | |
| Cost Approach Conclusion | 19,252,333 | 50% | 9,626,166 |
| Income Approach | | | |
| Required Rate Increases: 20% period 3, 15% period 6, and 6% every 3rd year beginning in period 9 (Input 6) | | | |
| | 19,154,327 | | |
| Income Approach Conclusion | 19,154,327 | 40% | 7,661,731 |
| Market Approach | | | |
| Market Comparables (to) | | | |
| OCLD | 18,429,476 | | |
| CORLD | 17,931,623 | | |
| Customers | 11,650,800 | | |
| Cash Flows (EBITDA) | 15,086,845 | | |
| Market Financials (to) | | | |
| OCLD | 19,443,097 | | |
| Market Approach Conclusion | 17,931,623 | 10% | 1,793,162 |
| Appraisal Conclusion | \$ 19,081,059 | 100% | 19,081,059 |
| Conclusion (cost approach) | \$ 19,252,333 | | |

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 Valley Township's property, plant and equipment this appraisal's conclusion of \$19,081,059 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 Valley 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 Statutes (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 Pennsylvania American Water Company 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) Valley Township (Pennsylvania) wastewater collection operational financial statements cover the period 2015 through 2019.
- The Pennoni Associates, Inc.'s Engineer's Assessment and inventory of the Valley Township's wastewater system's property at May 28, 2020.
- 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, 2020, 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
VALLEY TOWNSHIP'S WASTEWATER COLLECTION SYSTEM FACILITIES

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.

Valley Township's Wastewater Collection System Facilities, its Property and Operations⁸

Valley Township, Chester County, PA borders West Brandywine and West Caln Townships to the north; East Fallowfield Township and the Borough of South Coatesville to the south; the City of Coatesville and Caln Township to the east; and Sadsbury Township to the west.

The wastewater system in the Township consists of approximately 39 miles of gravity collectors and interceptors ranging in size from 8 to 18 inches diameter, approximately 3,260 LF of low pressure sewer piping ranging in size from 1-1/2 to 2 inches diameter, approximately 5 miles of force mains ranging in size from 2 to 10 inches diameter, six Township-owned sewage pumping stations, and one undedicated pumping station that is permitted to the Township. With the exception of the pumping station that is undedicated, the wastewater systems are owned and maintained by Valley Township. The Township contracts M&B Environmental Inc. to provide licensed operations of the six Township-owned sewage pumping stations. All wastewater is conveyed to PAWC's Wastewater Treatment Plant (WWTP) in South Coatesville.

A map of the Township's three sewage system drainage basins is located in Appendix A. There are approximately 3,275 EDUs connected to the Township's sewer system as direct customers of Valley Township. There are also three intermunicipal connections in which wastewater is conveyed through the Township's sewer system via intermunicipal conveyance agreements with PAWC. The average annual flow for the Township in 2019, excluding intermunicipal flows, was 0.930 MGD, well within the Township's allocation at the PAWC WWTP of 1.140 MGD.

System Drainage Basins

The Rock Run Basin covers roughly the northern third of the Township. Three Township-owned pump stations – Rock Run Pump Station, Highlands Corporate Center Pump Station #1, and Country Ridge Pump Station – are located in this basin. Two of the intermunicipal connections are also located within the Rock Run Basin – the Coatesville

⁸ Extracted from Engineer's Assessment page 4

Country Club and the Marriott (aka OTP Corporation) Hotel & Restaurant. All of the basin's wastewater flows are conveyed into the Rock Run Pump Station, where they are metered and then pumped into PAWC's system.

The Hayti Basin covers roughly the central third of the Township. The two Township-owned Round Hill Pump Stations are located in this basin. All flows are conveyed through a gravity interceptor along W. Lincoln Hwy to the Charles Street Meter Pit, where flows are metered prior to flowing into PAWC's system.

The Westwood Basin covers roughly the southern third of the Township. All flows are conveyed through a gravity interceptor along Valley Road to the Valley Road Meter Pit, where flows are metered prior to flowing into PAWC's system. The third intermunicipal connection, from the Strasburg. The third intermunicipal connection, from the Strasburg Hunt subdivision in East Fallowfield Township, is located within this basin.

APPRAISAL PROCEDURES AND RESULTS

The purpose of this appraisal of the Valley Township's wastewater collection system is the determination of the fair market value of the wastewater's property plant and equipment as of December 17, 2019. 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 Statutes (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 Pennsylvania American Water Company 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) Valley Township's wastewater system's operational financial statements cover the period 2015 through 2019.
- The Pennoni Associates Inc.'s Engineer's Assessment of the Valley Township's wastewater system inventory and original cost study dated May 28, 2020.
- 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, 2020, 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 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 time.”¹¹ In the trended original cost method, the System's investment in wastewater

⁹ The Appraisal of Real Estate, 13th Edition. Page 385

¹⁰ ibid

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

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) at December 17, 2019 (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:

Pennsylvania American Water Company
 Valley Township Wastewater System
 Wastewater Collection System
 Investor-Owned Utility
 December 17, 2019

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

| (1) | (2) | (3) | | | (3d) | (3e) |
|----------------|---|--------------------|-------|----------------|---------|---|
| Account Number | Description | Costing Parameters | | Line Reference | Lookup | Reproduction to Replacement Cost Factor |
| | | Index Series | Table | | | AUS Input |
| 353.20 | Land & Land Rights - Original Basin | 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 | Structures & Improvements - Pumping | HW | W-1 | 8.00 | HWW-18 | 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 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | HW | W-1 | 45.00 | HWW-145 | 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 | 44.00 | HWW-144 | 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 |
| 365.20 | Flow Measuring Installations Meter Pits | HW | W-1 | 40.00 | HWW-140 | 1.00 |
| 364.40 | Flow Measuring Devices - WWTP | HW | W-1 | 40.00 | HWW-140 | 1.00 |

The following table presents the development of the cost approach for the Rock Run portion of the Valley wastewater service area this example will be used to describe the entire cost approach process:

| (1) | (2) | (3) | (4) | (5) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
|-----------------|------------|--|-------------------------|--------------------------|--------------------------|----------------------------|--|--|-----------------|-----------------------------|---|----------------------------|
| Account | Account | Asset Description | Average Year Installed | Average Year Installed | 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) |
| Input | Input | Input | Input | Input | Input | Input | Input | Input | Calculation | Calculation | Input | Calculation |
| Eng Assmnt | AUS Input | Asset Description | Eng Assmnt Service Date | AUS Input Year Installed | Eng Assmnt Original Cost | AUS Input Cost Index Table | Cost Index Lookup Code (10) & Year Index | Cost Index Lookup Code (10) & Study YR APPCost Index | Cor (12) / (11) | Cor (9) * (13) | AUS Input COR / RCN Factor | Cor (14) * (15) |
| NARUC Code | NARUC Code | Asset Description | Service Date | Year Installed | Original Cost | Cost Index Table | Year Index | APPCost Index | Translator | RCN | COR / RCN Factor | COR |
| Rock Run | | | | | | | | | | | | |
| 361 21 | 361 21 12 | Asbestos Cement 742 LF | 1972 | 1972 | 17,411.11 | HWW-144 | 97.5 | 616.2 | 6.320 | 110,038 | 1.000 | 110,038 |
| 361 21 | 361 21 8 | Asbestos Cement 10094 LF | 1972 | 1972 | 157,904.53 | HWW-144 | 97.5 | 616.2 | 6.320 | 997,957 | 1.000 | 997,957 |
| 361 23 | 361 23 | Manholes 61 EA | 1972 | 1972 | 38,169.91 | HWW-145 | 94.6 | 581.0 | 5.940 | 226,729 | 1.000 | 226,729 |
| 360 21 | 360 21 | 6" CIP Force Main - Original Installation (partially abandoned) 927 LF | 1972 | 1972 | 17,931.25 | HWW-144 | 97.5 | 616.2 | 6.320 | 113,326 | 1.000 | 113,326 |
| 360 21 | 360 21 10' | 10" HDPE Force Main - Replacement 1834 LF | 1997 | 1997 | 190,699.34 | HWW-144 | 291 | 616.2 | 2.117 | 403,711 | 1.000 | 403,711 |
| 360 21 | 360 21 10' | 10" DIP Force Main - Replacement 350 LF | 2003 | 2003 | 18,820.86 | HWW-144 | 341 | 616.2 | 1.807 | 34,009 | 1.000 | 34,009 |
| 360 21 | 360 21 | Rock Run PS Replacement - 10" DIP Force Main 724 LF | 2004 | 2004 | 257,729.80 | HWW-144 | 367 | 616.2 | 1.699 | 434,485 | 1.000 | 434,485 |
| 354 17 | 354 1 | Rock Run PS Replacement - Structural 0 | 2004 | 2004 | 510,496.80 | HWW-18 | 420 | 719 | 1.709 | 536,468 | 1.000 | 536,468 |
| 354 30 | 354 3 | Rock Run PS Replacement - Mechanical 0 | 2004 | 2004 | 357,873.40 | HWW-18 | 420 | 719 | 1.709 | 611,606 | 1.000 | 611,606 |
| 354 17 | 354 3 | Rock Run PS Property Parcel-DB 38-2M-126.6 & 38- | 2004 | 2004 | 1.00 | USRE 51 | 184 | 256 | 1.965 | 1 | 1.000 | 1 |
| 363 20 | 363 2 4 | Lateral 7425 51 F | 1972 | 1972 | 17,570.22 | HWW-159 | 96 | 706 | 7.154 | 129,211 | 1.000 | 129,211 |
| | | | | | 1,382,508.22 | | | | | 3,591,541 | | 3,591,541 |

Using the trended original cost method, Valley Township's investment in this example of \$1,382,508 was determined to have a replacement cost new of \$3,591,541.

When the trended cost method is applied to each of Valley Township's investment in plant, property and equipment of \$13,389,110 was determined to have a replacement cost new of \$31,729,237 detailed as follows:

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) |
| Input | Input | Input | DC \$s | Input | Calculation | RCN \$s | COR \$s / RCN \$s | COR \$s |
| Eng Assmnt | AUS Input | Reproduction Cost New (RCN) to Replacement Cost New (COR) | Eng Assmnt | AUS Input | Calculation | RCN | AUS Input | Cor (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 - Original Basin | 3,368 | USBL51 | 5.86 | 19,749 | 1.00 | 19,749 |
| 353.30 | 353.30 | Land & Land Rights - Pumping | 3 | USBL51 | 1.84 | 6 | 1.00 | 6 |
| 354.30 | 354.30 | Structures & Improvements - Pumping | 1,712,310 | HWW-18 | 1.66 | 2,843,619 | 1.00 | 2,843,619 |
| 355.30 | 355.30 | Generating Equipment - Pumping | 21,547 | USBL54 | 1.71 | 36,781 | 1.00 | 36,781 |
| 360.21 | 360.21 | Collection Sewers - Force - Mains | 1,187,519 | HWW-144 | 1.67 | 1,986,812 | 1.00 | 1,986,812 |
| 360.23 | 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 20,733 | HWW-145 | 1.22 | 25,356 | 1.00 | 25,356 |
| 361.21 | 361.21 | Collection Sewers - Gravity - Mains | 6,263,231 | HWW-144 | 2.87 | 17,984,560 | 1.00 | 17,984,560 |
| 361.22 | 361.22 | Collection Sewers - Gravity - Mains Relining | 52,870 | HWW-144 | 1.11 | 58,580 | 1.00 | 58,580 |
| 361.23 | 361.23 | Collection Sewers - Gravity - Manholes | 2,183,510 | HWW-145 | 2.08 | 4,533,510 | 1.00 | 4,533,510 |
| 363.20 | 363.20 | Service Laterals | 1,934,160 | HWW-139 | 2.17 | 4,198,363 | 1.00 | 4,198,363 |
| 365.20 | 365.20 | Flow Measuring Installations Meter Pits | 9,859 | HWW-140 | 4.25 | 41,901 | 1.00 | 41,901 |
| Grand Total | Grand Total | Grand Total | 13,389,110 | | 2.37 | 31,729,237 | 1.00 | 31,729,237 |

Replacement Cost New less Depreciation - The replacement cost described above reflects the cost of new property; however, the Valley 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

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.

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 studies which are summarized in the following table:

| Summary of PAWC Depreciation Studies Prepared for Rate Case | | | | Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies | | | | | | | | | | | |
|---|---|-----------|--------|--|--------|----------------|--------|--------|----------------------------------|---------|-------|-------|---------|-------|--|
| Account | Account Description | New Curve | | Service Life | | Remaining Life | | (1) | (2) | (4) | (5) | (6) | (6a) | (6b) | |
| | | 1/2016 | 1/2020 | 1/2016 | 1/2020 | 1/2016 | 1/2020 | | | | | | | | (4a) Issue Survivor / Retirement Curve |
| 354.20 | STRUCTURES AND IMPROVEMENTS - COLLECTION | R3 | R3 | 45 | 45 | 39.3 | 33.3 | | | | | | | | |
| 354.30 | STRUCTURES AND IMPROVEMENTS - SPP | R2.5 | S0 | 50 | 55 | 45.2 | 37.6 | | | | | | | | |
| 354.40 | STRUCTURES AND IMPROVEMENTS - TDP | R2 | S0 | 65 | 55 | 56.6 | 31.7 | 354.00 | Structures & Improvements | R4.0 | 55.00 | 0.00% | MACRS | 25.00 | |
| 354.70 | STRUCTURES AND IMPROVEMENTS - GENERAL | S1 | S1 | 35 | 35 | 33.3 | 23.2 | | | | | | | | |
| 355.00 | POWER GENERATION EQUIPMENT | R2.5 | S0.5 | 35 | 35 | 29.7 | 19.3 | 355.00 | Power Generation Equipment | R3.0 | 35.00 | 0.00% | MACRS | 25.00 | |
| 360.10 | COLLECTION SEWERS - FORCE MAINS | S1 | R3 | 70 | 75 | 51.1 | 52.5 | 360.00 | Collection Mains - Force | R2.5 | 80.00 | 0.00% | MACRS | 25.00 | |
| 362.10 | COLLECTION SEWERS - GRAVITY MAINS | R2.5 | R2.5 | 70 | 80 | 56.9 | 54.8 | 361.00 | Collection Mains - Gravity | R2.5 | 60.00 | 0.00% | MACRS | 25.00 | |
| 361.20 | MANHOLES | S1.5 | S2.5 | 50 | 50 | 41.3 | 32.2 | 361.10 | Manholes | S2.0 | 75.00 | 0.00% | MACRS | 25.00 | |
| 363.00 | SERVICES | R3 | R3 | 38 | 47 | 22.9 | 20.2 | 363.00 | Service Laterals | R3.0 | 45.00 | 0.00% | MACRS | 25.00 | |
| 364.00 | FLOW MEASURING DEVICES | L3 | L2.5 | 20 | 15 | 13.3 | 5.1 | 364.00 | Flow Measuring Devices | L2.5 | 35.00 | 0.00% | MACRS | 25.00 | |
| 365.00 | FLOW MEASURING INSTALLATIONS | S1.5 | S2 | 30 | 25 | 23.1 | 10.8 | 365.00 | Flow Measuring Installations | S2.0 | 30.00 | 0.00% | MACRS | 25.00 | |
| 370.00 | RECEIVING WELLS | R3 | R3 | 50 | 50 | 42.7 | 33.7 | | | | | | | | |
| 371.00 | PUMPING EQUIPMENT | S0 | S0.5 | 40 | 30 | 35.5 | 18.2 | 371.00 | Pumping Equipment | R3.0 | 35.00 | 0.00% | MACRS | 25.00 | |
| 380.00 | TREATMENT EQUIPMENT | S.R2 | S1.5 | 45 | 35 | 37.1 | 20.1 | 380.00 | Treatment and Disposal Equipment | R3.0 | 45.00 | 0.00% | MACRS | 25.00 | |
| 381.00 | PLANT SEWERS | R3 | R3 | 50 | 50 | 32.7 | 32.7 | 381.00 | Plant Sewers | R3.0 | 45.00 | 0.00% | MACRS | 25.00 | |
| 382.00 | OUTFALL SEWER LINES | R3 | R3 | 50 | 50 | 37.8 | 28.3 | | | | | | | | |
| 383.00 | OTHER PLANT AND MISCELLANEOUS EQUIPMENT - INTANGIBLES | S2.5 | S2.5 | 20 | 20 | 13.6 | 13.3 | 383.00 | Other Plant & Misc Equip | R3.0 | 45.00 | 0.00% | MACRS | 25.00 | |
| 389.60 | OFFICE FURNITURE AND MISCELLANEOUS EQUIPMENT - CPS | SQ | SQ | 20 | 5 | 12.3 | 3.5 | | | | | | | | |
| 390.00 | OFFICE FURNITURE AND EQUIPMENT | L4 | SQ | 15 | 20 | 9.5 | 10.1 | 391.00 | Office Furniture and Equipment | R3.0 | 20.00 | | | | |
| 391.00 | TRANSPORTATION EQUIPMENT | SQ | L4 | 25 | 14 | 19.9 | 9.8 | 391.00 | Transportation Equipment | R3.0 | 15.00 | 0.00% | MACRS | 10.00 | |
| 392.00 | STORES EQUIPMENT | SQ | SQ | 20 | 25 | 16.4 | 17.2 | 392.00 | Stores Equipment | R3.0 | 35.00 | 0.00% | MACRS | 25.00 | |
| 393.00 | TOOLS, SHOP AND GARAGE EQUIPMENT | SQ | SQ | 15 | 20 | 11.3 | 15.4 | 393.00 | Tools, Shop, & Garage Equipment | R3.0 | 25.00 | 0.00% | MACRS | 25.00 | |
| 394.00 | LABORATORY EQUIPMENT | L2.5 | SQ | 16 | 15 | 8.7 | 10.4 | 394.00 | Laboratory Equipment | R3.0 | 20.00 | 0.00% | MACRS | 20.00 | |
| 395.00 | POWER OPERATED EQUIPMENT | SQ | R2 | 15 | 22 | 10.3 | 13.2 | 395.00 | Power Operated Equipment | R3.0 | 15.00 | 0.00% | MACRS | 15.00 | |
| 396.00 | COMMUNICATION EQUIPMENT | SQ | SQ | 15 | 15 | 9.6 | 6.9 | 396.00 | Communications Equipment | R3.0 | 15.00 | 0.00% | MACRS | 12.00 | |
| 397.00 | MISCELLANEOUS EQUIPMENT | SQ | SQ | 15 | 15 | 12.8 | | 397.00 | Miscellaneous Equipment | R3.0 | 20.00 | 0.00% | MACRS | 20.00 | |
| | TOTAL DEPRECIABLE PLANT | | | | | | | | | | | | | | |
| | NONDEPRECIABLE PLANT | | | | | | | | | | | | | | |
| 352.10 | FRANCHISES | | | | | | | 352.00 | Franchises | Non-Dep | 0.00 | 0.00% | Non-Dep | 0.00 | |
| 353.20 | LAND AND LAND RIGHTS - COLLECTION | | | | | | | 353.00 | Land & Land Rights | Non-Dep | 0.00 | 0.00% | Non-Dep | 0.00 | |

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:

¹⁴ The Appraisal of Real Estate, 13th Edition, page 442.

| 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 procedure 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:

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
December 17, 2019**

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

| (1) Account Number | (2) Description | (4) | | (5) | (6) | (6b) Life |
|-----------------------|---|--|--------------------------------------|--|--------------------------------------|--------------|
| | | (4a) Iowa Survivor / Retirement Curve | (4b) Normal Service Life years | Economic Obsolescence % of CORLD | (6a) Tax Depreciation Table | |
| 353.20 | Land & Land Rights - Original Basin | 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 | Structures & Improvements - Pumping | R4.0 | 45.00 | 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 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 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 | 45.00 | 0.00% | MACRS | 25.00 |
| 365.20 | Flow Measuring Installations Meter Pits | S2.0 | 30.00 | 0.00% | MACRS | 25.00 |
| 364.40 | Flow Measuring Devices - WWTP | S2.0 | 30.00 | 0.00% | MACRS | 25.00 |

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:

$$\text{Depreciation (\%)} = \frac{\text{Age (years)} \times 100\%}{\text{Service Life (years)}}$$

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

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 Rock Run portion of the Valley wastewater service area of \$3,591,541, the replacement cost new less depreciation was determined to be \$2,077,330 detailed as follows:

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 31, 2019

| (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) | (31) |
|--|--|----------------|-------------|------------------|---------------|--------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------|------------------------------|
| Account | Description | Placement Year | Age at | Replacement | Retirement | Normal | Age as % of | Loss | Loss | Normal | Total Life | Condition | Preliminary Cost |
| | | | December | Cost New | Depreciation | Service Life | | | Condition | | | | |
| | | | 17, 2019 | (RCN) | Loss- Type | (NSL) | NSL | Lookup | Percent of Percent New | Life | Years | Years | Less Normal Depreciation) |
| Input | Input | Input | years | Calculation | Input | years | % of NSL | Lookup | % | years | years | % of COR | CORLD Is |
| | | | | | | | | Calculation | Lookup | Calculation | Calculation | Calculation | Calculation |
| AUS Input | Eng Asset | Eng Asset | 2009 (2010) | Col (18) | AUS Input | AUS Input | Col (25) / (24) | Col (26) & (27) | Loss Table @ Col (26) | Col (28) / (27) | Col (29) + (28) | Col (29) / (29) | Col (29) / (29) |
| Account | Description | Year1 | Age | RCN | Loss | NLife | AgeP | LossLookup | LossCondition | Rem Life | Total Life | Condition | CORLD |
| Rock Run | | | | | | | | | | | | | |
| 361 21 1 | AH-1600 Chamber 12x1 LF | 1972 | 47.50 | 110,038 | R-0 | 40-1 | 59 | R2 5039 | 0.49155 | 37.37 | 85.87 | 45.287144 | 49,875.52 |
| 361 21 1 | AH-1600 Chamber 12x1 LF | 1972 | 47.50 | 897,987 | R-0 | 40-1 | 59 | R2 5039 | 0.49155 | 37.37 | 85.87 | 45.287144 | 457,663.92 |
| 361 21 1 | Mannings 8" EA | 1972 | 47.50 | 260,720 | R-0 | 40-1 | 59 | R2 3036 | 0.49155 | 39.32 | 86.45 | 45.287144 | 102,683.02 |
| 361 21 | 30" Dia Large Man - Original Installation (partially abandoned) 317 LF | 1972 | 47.50 | 110,320 | R-0 | 50-0 | 63 | R3 0063 | 0.43441 | 32.58 | 60.06 | 40.644316 | 46,105.71 |
| 366 21 | 11" HDPE Force Main - Replacement 1834 LF | 1997 | 22.50 | 413,311 | R-0 | 70-0 | 30 | R3 0030 | 0.71204 | 53.41 | 75.97 | 70.381040 | 284,143.75 |
| 366 21 | 10" DR Force Main - Replacement 356 LF | 2004 | 15.50 | 4,000 | R-0 | 70-0 | 22 | R4 0022 | 0.76729 | 59.03 | 75.53 | 78.181914 | 26,881.72 |
| 366 21 | 10" DR Force Main - Replacement 10' DR Force Main | 2004 | 15.50 | 4,400 | R-0 | 70-0 | 21 | R3 0021 | 0.79670 | 59.75 | 75.75 | 79.411993 | 34,589.50 |
| 366 21 | 10" DR Force Main - Replacement 3' Structure 3 | 2004 | 15.50 | 172,800 | R-0 | 40-0 | 34 | R4 0034 | 0.66513 | 22.84 | 49.34 | 45.213651 | 349,161.57 |
| 366 21 | 10" DR Force Main - Replacement Mechanical D | 2004 | 15.50 | 7,000 | R-0 | 40-1 | 34 | R4 0034 | 0.66733 | 22.84 | 49.34 | 45.413814 | 462,501.25 |
| Rock Run PS Property - Parcel ID# 562M 126 & JB | | | | | | | | | | | | | |
| 366 21 | 2M 126 1 0 | 2004 | 15.50 | | Zero Cost | 0-0 | 0 | 276646000 | 0.15700 | 0.00 | 15.50 | 15.000000 | 0.21 |
| 366 21 | 2' 126 1 25 5 LF | 1972 | 47.50 | 129,211 | R-0 | 40-0 | 106 | R3 0106 | 0.17527 | 7.89 | 55.79 | 15.100000 | 19,381.71 |
| | | | | 3,591,541 | | | | | | | | | 2,077,330 |

When the above depreciation lives are used to quantify the property's depreciation is applied to each of the Valley Township's investment in plant, property and equipment the replacement cost new (RCN) of \$31,729,237 the resultant RCN less depreciation (RCNLD) was found to be \$19,252,333 detailed as follows:

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019

Replacement Cost New less Depreciation (RCNLD)

| (18) | (19) | (21) | (22) | (23) | (24) | (28) | (29) | (30) | (31) |
|------------|---|---|----------------------------|--------------------------------|---------------------------|-----------------------|-----------------------|-------------|--|
| Account | Description | Age at December 17, 2019 Appraisal Date | Replacement Cost New (COR) | Retirement Dispersion low-type | Normal Service Life (NSL) | Normal Remaining Life | Total Life Expectancy | Condition | Preliminary Cost Approach (COR less Normal Depreciation) |
| | Input | years | COR \$e | | years | years | years | % of COR | CORLD \$e |
| Eng Assmnt | Perrow Associates, Inc.'s Valley Wastewater Engineers' Assessment | Calculation | Calculation | Input | Input | Calculation | Calculation | Calculation | Calculation |
| Account | Description | Age | RCN | lowe | NL | Rem Life | Total Life | Condition | CORLD |
| 353.20 | Land & Land Rights - Original Basin | 46.50 | 19,749 | ZNonDep | - | - | - | 1.00 | 19,749 |
| 353.30 | Land & Land Rights - Pumping | 26.76 | 6 | ZNonDep | - | - | - | 1.00 | 6 |
| 354.40 | Structures & Improvements - Pumping | 16.38 | 2,843,619 | R4.0 | 45.00 | 28.99 | 45.37 | 0.64 | 1,821,032 |
| 355.30 | Generating Equipment - Pumping | 29.50 | 36,781 | R3.0 | 35.00 | 10.11 | 39.61 | 0.26 | 9,388 |
| 360.21 | Collection Sewers - Force - Mains | 18.79 | 1,986,812 | R3.0 | 75.00 | 57.14 | 75.93 | 0.75 | 1,498,282 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 11.50 | 25,356 | R3.0 | 75.00 | 64.04 | 75.54 | 0.85 | 21,496 |
| 361.21 | Collection Sewers - Gravity - Mains | 34.90 | 17,984,560 | R2.5 | 80.00 | 49.57 | 84.48 | 0.59 | 10,631,978 |
| 361.22 | Collection Sewers - Gravity - Mains Relining | 5.50 | 58,580 | R2.5 | 60.00 | 54.94 | 60.44 | 0.91 | 53,249 |
| 361.23 | Collection Sewers - Gravity - Manholes | 28.68 | 4,533,510 | R2.5 | 80.00 | 54.71 | 83.39 | 0.66 | 2,995,110 |
| 363.20 | Service Laterals | 23.77 | 4,198,363 | R3.0 | 45.00 | 24.29 | 48.05 | 0.52 | 2,195,757 |
| 360.21 | Flow Measuring Installations Meter Pits | 49.50 | 41,901 | S2.0 | 30.00 | 4.50 | 54.00 | 0.15 | 6,285 |
| Grand | | | | | | | | | |
| Total | Grand Total | 29.82 | 31,729,237 | | 71.71 | 45.48 | 75.27 | 0.61 | 19,252,333 |

The preliminary cost approach to value of the Valley Township's wastewater utility property was found to be \$19,252,333.

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 Valley 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 Valley Township's wastewater utility's operations was evaluated based on an analysis of historical operating performances over the period 2015 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 Valley Township's 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 \$13,950,000. 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 2020 (1-1-2020)**

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 | | 45% | Embedded | 3.23% | Embedded | Not Applicable | Not Applicable | 1.45% |
| Equity | | 55% | Embedded | 9.90% | Market | Not Applicable | Not Applicable | 5.45% |
| Total Capital r | | 100.0% | | | | | | 6.90% |
| Growth (g) | | | | | | | Not Applicable | 0.00% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | | 6.90% |

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 was 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 20-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 2020 (1-1-2020)**

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 | | 26% | Market | 3.23% | Market | 28.89% | 71.11% | 0.60% |
| Equity | | 74% | Market | 9.90% | Market | 0.0% | 100.0% | 7.33% |
| Total Capital r | | 100.0% | | | | | | 7.93% |
| Growth (g) | | | | | | | | 1.82% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | | 6.00% |

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 10, 2020 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) |
| Aqua America (NYSE-WTR) | 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:

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Potential Purchaser: Investor-Owned Utility
As of December 17, 2019
Discounted Cash Flow Analysis**

| Discount Rate: 7.93% | | | | | | | | | | | | | | | |
|---|------|---------------|--------------|------------------|---------------------------|---|----------------------------------|----------------------|---------------------------|---------------------------------|----------------------------------|----------------|-----------------------------|------------|------------|
| Capitalization Rate: 6.00% | | | | | | | | | | | | | | | |
| (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 @ 28.85% | 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)-(8) 28.85% | | | (3)-(4)-(8)-(9)-(10) | | (11)*(12) | Sum (13) | | |
| 1 | 0.5 | 7,857,439 | 3,122,464 | 561,233 | (965,025) | (676,258) | (238,706) | 127,144 | 5,956 | (159,419) | 0.963 | (153,520) | (153,520) | | |
| 2 | 1.5 | 7,872,157 | 3,183,945 | 565,174 | (211,788) | (776,961) | (224,464) | 179,051 | 6,195 | (122,570) | 0.892 | (109,323) | (262,852) | | |
| 3 | 2.5 | 7,885,912 | 3,246,645 | 569,249 | 439,267 | (129,982) | (37,552) | 132,987 | 38,542 | 307,293 | 0.826 | 253,822 | (9,030) | | |
| 4 | 3.5 | 7,893,591 | 3,310,583 | 573,465 | 523,302 | (50,163) | (14,492) | 132,951 | 7,991 | 396,852 | 0.766 | 303,989 | 294,959 | | |
| 5 | 4.5 | 7,897,610 | 3,375,807 | 577,824 | 612,008 | 34,184 | 9,876 | 134,945 | 8,312 | 458,875 | 0.709 | 325,342 | 620,301 | | |
| 6 | 5.5 | 4,730,060 | 3,438,275 | 582,329 | 1,291,785 | 709,456 | 204,962 | 136,970 | 40,081 | 905,772 | 0.657 | 597,720 | 1,218,021 | | |
| 7 | 6.5 | 4,900,956 | 3,502,149 | 589,917 | 1,398,807 | 808,890 | 233,688 | 150,021 | 9,229 | 1,005,869 | 0.609 | 612,574 | 1,830,595 | | |
| 8 | 7.5 | 5,078,027 | 3,567,447 | 595,037 | 1,510,580 | 915,548 | 264,500 | 152,162 | (5,562) | 1,084,356 | 0.564 | 611,577 | 2,442,172 | | |
| 9 | 8.5 | 5,566,177 | 3,634,194 | 600,317 | 1,931,983 | 1,331,666 | 384,718 | 154,334 | 26,360 | 1,366,571 | 0.523 | 714,717 | 3,156,889 | | |
| 10 | 9.5 | 5,767,282 | 3,702,414 | 605,760 | 2,064,868 | 1,459,108 | 421,536 | 156,537 | 10,859 | 1,475,936 | 0.484 | 714,353 | 3,871,242 | | |
| 11 | 10.5 | 5,975,653 | 3,772,182 | 611,373 | 2,203,521 | 1,592,148 | 459,971 | 158,775 | 11,252 | 1,573,523 | 0.449 | 706,512 | 4,577,754 | | |
| 12 | 11.5 | 6,540,991 | 3,843,475 | 617,158 | 2,706,716 | 2,089,558 | 603,673 | 161,044 | 31,019 | 1,910,980 | 0.416 | 794,968 | 5,372,722 | | |
| 13 | 12.5 | 6,786,745 | 3,916,168 | 623,128 | 2,870,577 | 2,242,459 | 649,291 | 163,347 | 12,781 | 2,045,158 | 0.385 | 787,386 | 6,160,108 | | |
| 14 | 13.5 | 7,031,949 | 3,990,540 | 629,257 | 3,041,409 | 2,412,152 | 696,871 | 165,684 | 13,281 | 2,165,613 | 0.357 | 773,124 | 6,933,232 | | |
| 15 | 14.5 | 7,707,929 | 4,066,518 | 635,581 | 3,641,411 | 3,005,830 | 860,364 | 168,055 | 36,502 | 2,568,470 | 0.331 | 850,164 | 7,783,396 | | |
| 16 | 15.5 | 7,785,038 | 4,147,105 | 644,884 | 4,637,903 | 3,003,019 | 867,572 | 158,959 | 4,162 | 2,607,310 | 0.306 | 797,806 | 8,581,202 | | |
| 17 | 16.5 | 7,862,858 | 4,229,296 | 641,243 | 3,633,562 | 2,992,319 | 864,481 | 163,344 | 4,204 | 2,603,533 | 0.284 | 739,403 | 9,320,605 | | |
| 18 | 17.5 | 8,413,258 | 4,313,124 | 647,794 | 4,100,134 | 3,452,340 | 997,381 | 163,764 | 29,722 | 2,909,767 | 0.263 | 765,137 | 10,085,742 | | |
| 19 | 18.5 | 8,497,391 | 4,398,670 | 654,541 | 4,098,721 | 3,444,230 | 995,038 | 166,220 | 4,543 | 2,932,970 | 0.244 | 715,645 | 10,801,387 | | |
| 20 and beyond | 19.5 | 8,582,365 | 4,485,819 | 661,489 | 4,096,546 | 3,435,057 | 992,388 | 168,713 | 4,589 | 2,930,856 | 2.850 | 8,352,940 | 19,154,327 | | |
| | | | | | | | | 3,041,007 | | | | | | | |
| Age | | | | 19.5 | | | | | | | | | | | |
| PW(Age) = 1/(1+Discount Rate) ^{Age} | | | | 0.226 | | | | | | Net Plant | | 10,175,851 | | | |
| PW to Perpetuity = 1/Capitalization Rate | | | | 12.610 | | | | | | ADIT | | (1,548,965) | | | |
| PW _(Plant Income) = PW to Perpetuity * PW Factor _(19.5) | | | | 2.850 | | | | | | Rate Base | 0.226 | 1,949,676 | 12,751,063 | | |
| | | | | | | | | | | Annual Plant Construction | | | | | |
| | | | | | | | | | | Inflation Rate | | 0.0422 Input | | | |
| | | | | | | | | | | Plant Inflation over 19.5 years | | 19,718,571 | 0.226 | 4,456,397 | 15,257,784 |
| PP | | 13,950,000 | | | | | | | | | | | | | |
| OCLD | | 9,214,758 | | | | | | | | | | | | | |
| PP/OCLD | | 1.514 | | | | | | | | | | | | | |
| RCNLD | | 19,257,333 | | | | | | | | | | | | | |
| RCNLD/PP | | 1.38095529 | | | | | | | | | | | | | |
| | | 11,905,927.12 | | | | | | | | | 0.226 | 2,690,740 | 13,492,177 | | |
| Average | | | | | | | | | | | | | | 15,163,825 | |

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 \$19,154,327. 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:

| RowID | Approximate Date | Buyer | Seller | County | Type of Facility | Initial Purchase Price | Final Purchase Price ¹ | Number of Total Customers | OCA Market Value per customer | Relationship to the passage of Section 1329 | Average Purchase Price per Customer |
|-------|------------------|-------------------|--------------------------|------------|--|------------------------|-----------------------------------|---------------------------|-------------------------------|---|-------------------------------------|
| 16 | 4/1/2014 | Aqua PA | Penn Township | Chester | | 3,700,000 | 3,700,000 | 801 | 4,619 | Prior | |
| 17 | 12/1/2015 | PA American Water | Fairview Township | York | | 16,800,000 | 16,800,000 | 3,912 | 4,294 | Prior | Average |
| 18 | 10/1/2016 | PA American Water | New Cumberland Borough | Cumberland | | 23,000,000 | 23,000,000 | 3,100 | 7,419 | Prior | 5,354 |
| 19 | 12/1/2016 | PA American Water | Scranton Sewer Authority | Lackawanna | | 158,788,456 | 158,788,456 | 31,229 | 5,085 | Prior | |
| 20 | 6/1/2016 | PA American Water | City of McKeesport | Allegheny | Wastewater Collection and Treatment | 180,000,000 | 159,000,000 | 21,953 | 7,197 | Post | 7,242.75 |
| 21 | 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 | 14,008 | Post | 14,007.60 |
| 22 | 12/1/2017 | Aqua PA | Limerick Township | Montgomery | | 64,373,000 | 64,373,000 | 5,434 | 11,846 | Post | 9,264 |
| 23 | 12/10/2017 | Aqua PA | East Bradford Township | Chester | Wastewater Collection and paid for treatment Capacity | 5,000,000 | 5,000,000 | 1,248 | 4,006 | Post | 4,006.41 |
| 24 | | SUEZ | Mahoning | Carbon | Water Treatment and Distribution System | 4,734,800 | 4,734,800 | 2,806 | | Post | |
| 25 | | SUEZ | Mahoning | Carbon | Wastewater Collection and Treatment | 4,765,200 | 4,765,200 | 2,806 | | Post | |
| 26 | 6/1/2018 | Aqua PA | Cheltenham | Montgomery | Wastewater Collection | 50,250,000 | 50,250,000 | 10,500 | | Post | 4,785.71 |
| 27 | 11/14/2018 | PA American Water | Steelton | Dauphin | Water Distribution and Treatment | 22,500,000 | 21,750,000 | 2,325 | | Post | 9,354.84 |
| 28 | | PA American Water | Sadsbury | Chester | Wastewater Collection | 9,250,000 | 8,600,000 | 998 | | Post | 8,617.23 |
| 29 | 5/28/2018 | PA American Water | Exeter | Berks | Wastewater Collection and Treatment | 96,000,000 | 96,000,000 | 9,000 | | Post | 10,666.67 |
| 30 | 10/29/2018 | Aqua PA | East Norriton | Montgomery | Wastewater Collection | 21,000,000 | 21,000,000 | 4,950 | | Post | 4,242.42 |
| 31 | 9/30/2018 | PA American | Kane | McKean | Wastewater Collection and Treatment | 17,560,000 | 17,560,000 | 2006 | | Post | 8,753.74 |

Notes:

¹ Final Purchase Price reflects the agreed upon purchase price achieved to settled the acquisition application

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)

Pennsylvania American Water Company
 Valley Township Wastewater System
 Wastewater Collection System
 Investor-Owned Utility
 As of December 17, 2019

Comparable Sales Approach

Market Sales Analysis - PP/OCLD

| Property Acquired | | Purchase Price (PP) | Proportion of Purchase Price to Total | Depreciated Original Cost (OCLD) (AUS) Consultants Determination | Purchase Price to (PP/OCLD) |
|--|-----------------------|---------------------|---|--|--------------------------------|
| New Garden Wastewater System | Wastewater | 29,500,000 | 6% | 18,567,728 | 1.5888 |
| McKeesport Wastewater System | Wastewater | 159,000,000 | 32% | 101,915,080 | 1.5601 |
| Limerick Wastewater System | Wastewater | 75,100,000 | 15% | 46,153,867 | 1.6272 |
| Mahoning Water System | Water | 4,734,800 | 1% | 1,194,489 | 3.9639 |
| Mahoning Wastewater System | Wastewater | 4,765,200 | 1% | 1,658,678 | 2.8729 |
| East Bradford Wastewater Collection System | Wastewater | 5,000,000 | 1% | 5,383,591 | 0.9287 |
| Sadsbury Wastewater Collection System | Wastewater | 8,600,000 | 2% | 6,128,876 | 1.4032 |
| Exeter Wastewater Collection System | Wastewater | 96,000,000 | 19% | 40,057,634 | 2.3965 |
| Steelton Water System | Water | 21,750,000 | 4% | 14,433,435 | 1.5069 |
| Cheltenham Wastewater Collection System | Wastewater-collection | 50,250,000 | 10% | 15,784,463 | 3.1835 |
| East Norriton Wastewater | Wastewater-collection | 21,000,000 | 4% | 8,407,007 | 2.4979 |
| Kane Wastewater | Wastewater | 17,560,000 | 4% | 12,070,455 | 1.4548 |
| | | 493,260,000 | 100% | 271,755,303 | 1.8151 |
| Simple Mean | | | | | 2.082 |
| Standard Deviation | | | | | 0.8607 |
| Simple Median | | | | | 1.608 |
| Simple Mode | | | | | Not Applicable |
| Weighted Mean | | | | | 1.999 |
| Standard Deviation | | | | | 0.6008 |
| Wtd Median | | | | | 1.5598 |
| Wtd Mode | | | | | 1.5601 |

Purchase Price to Replacement Cost New less Depreciation (CORLD)

Pennsylvania American Water Company
 Valley Township Wastewater System
 Wastewater Collection System
 Investor-Owned Utility
 As of December 17, 2019

Comparable Sales Approach

Market Sales Analysis - PP/CORLD

| Property Acquired | | Purchase Price (PP) | Proportion of | | Replacement | Purchase Price to |
|--|-----------------------|---------------------|-------------------|-------|---------------|-------------------|
| | | | Purchase Price to | Total | Cost New less | |
| New Garden Wastewater System | Wastewater | 29,500,000 | | 6% | 30,615,410 | 0.9636 |
| McKeesport Wastewater System | Wastewater | 159,000,000 | | 32% | 160,301,491 | 0.9919 |
| Limerick Wastewater System | Wastewater | 75,100,000 | | 15% | 86,086,756 | 0.8724 |
| Mahoning Water System | Water | 4,734,800 | | 1% | 8,899,336 | 0.532 |
| Mahoning Wastewater System | Wastewater | 4,765,200 | | 1% | 7,991,234 | 0.5963 |
| East Bradford Wastewater Collection System | Wastewater | 5,000,000 | | 1% | 9,236,581 | 0.5413 |
| Sadsbury Wastewater Collection System | Wastewater | 8,600,000 | | 2% | 8,517,587 | 1.0097 |
| Exeter Wastewater Collection System | Wastewater | 96,000,000 | | 19% | 99,589,819 | 0.964 |
| Steeltown Water System | Water | 21,750,000 | | 4% | 23,921,473 | 0.9092 |
| Cheltenham Wastewater Collection System | Wastewater-collection | 50,250,000 | | 10% | 49,940,486 | 1.0062 |
| East Norriton Wastewater | Wastewater-collection | 21,000,000 | | 4% | 27,461,356 | 0.7647 |
| Kane Wastewater | Wastewater | 17,560,000 | | 4% | 29,015,055 | 0.6052 |
| | | 493,260,000 | | 100% | 541,576,584 | 0.9108 |
| | Simple Mean | | | | | 0.8130 |
| | Standard Deviation | | | | | 0.1852 |
| | Simple Median | | | | | 0.8908 |
| | Simple Mode | | | | | Not Applicable |
| | Weighted Mean | | | | | 0.9285 |
| | Standard Deviation | | | | | 0.1086 |
| | Wtd Median | | | | | 0.9637 |
| | Wtd Mode | | | | | 0.9919 |

Purchase Price to Customers

Pennsylvania American Water Company
 Valley Township Wastewater System
 Wastewater Collection System
 Investor-Owned Utility
 As of December 17, 2019

Comparable Sales Approach

Market Sales Analysis - PP/Customer

| Property Acquired | | Asset Purchase Agreement (APA) Date | Purchase Price (PP) | Proportion of Purchase Price to Total | \$Customers | Purchase Price to Customers |
|--|-----------------------|-------------------------------------|---------------------|---------------------------------------|-------------|-----------------------------|
| New Garden Wastewater System | Wastewater | 2016.59 | 79,500,000 | 6% | 2,100 | 14,048 |
| McKeesport Wastewater System | Wastewater | 2016.67 | 159,000,000 | 32% | 20,320 | 7,825 |
| Limerick Wastewater System | Wastewater | 2018.57 | 75,100,000 | 15% | 5,434 | 13,820 |
| Mahoning Water System | Water | 2017.79 | 4,734,800 | 1% | 2,806 | 1,687 |
| Mahoning Wastewater System | Wastewater | 2017.79 | 4,765,200 | 1% | 2,806 | 1,698 |
| East Bradford Wastewater Collection System | Wastewater | 2017.97 | 5,000,000 | 1% | 1,248 | 4,006 |
| Sadsbury Wastewater Collection System | Wastewater | 2019.19 | 8,600,000 | 2% | 998 | 8,617 |
| Exeter Wastewater Collection System | Wastewater | 2018.41 | 96,000,000 | 19% | 9,000 | 10,667 |
| Steelton Water System | Water | 2018.87 | 21,750,000 | 4% | 2,412 | 9,017 |
| Cheltenham Wastewater Collection System | Wastewater-collection | 2018.42 | 50,250,000 | 10% | 10,219 | 4,917 |
| East Norriton Wastewater | Wastewater-collection | 2018.76 | 21,000,000 | 4% | 4,952 | 4,241 |
| Kane Wastewater | Wastewater | 2019.75 | 17,560,000 | 4% | 2,006 | 8,754 |
| | | | 493,260,000 | 100% | 64,301 | 7,671 |
| Simple Mean | | | | | | 7441 |
| Standard Deviation | | | | | | 4031 |
| Simple Median | | | | | | 8,221 |
| Simple Mode | | | | | | Not Applicable |
| Weighted Mean | | | | | | 9157 |
| Standard Deviation | | | | | | 3158 |
| Wtd Median | | | | | | 6,312 |
| Wtd Mode | | | | | | 7825 |
| Forecast | | 2019.944064 | | | | 7,293 |
| | | 2021 | | | | 7,201 |

Purchase Price to Cash Flows (EBITDA)

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019

Comparable Sales Approach

Market Sales Analysis - PP/Cash Flow (EBITDA)

| Property Acquired | | Asset Purchase | | Proportion of Purchase | | Cash Flows (EBITDA) | Purchase Price to Cash Flow |
|--|-----------------------|----------------------|---------------------|------------------------|--|---------------------|-----------------------------|
| | | Agreement (APA) Date | Purchase Price (PP) | Price to Total | | | |
| New Garden Wastewater System | Wastewater | 2016.59 | 29,500,000 | 7% | | 1,409,768 | 20.93 |
| McKeesport Wastewater System | Wastewater | 2016.67 | 159,000,000 | 39% | | 5,247,843 | 30.30 |
| Limerick Wastewater System | Wastewater | 2018.57 | 75,100,000 | | | | |
| Mahoning Water System | Water | 2017.79 | 4,734,800 | | | | |
| Mahoning Wastewater System | Wastewater | 2017.79 | 4,765,200 | | | | |
| East Bradford Wastewater Collection System | Wastewater | 2017.97 | 5,000,000 | 1% | | 100,053 | 49.97 |
| Sadsbury Wastewater Collection System | Wastewater | 2019.19 | 8,600,000 | 2% | | 580,238 | 14.82 |
| Exeter Wastewater Collection System | Wastewater | 2018.41 | 96,000,000 | 23% | | 7,099,396 | 13.52 |
| Steelton Water System | Water | 2018.87 | 21,750,000 | 5% | | 1,568,999 | 13.86 |
| Cheltenham Wastewater Collection System | Wastewater-collection | 2018.42 | 50,250,000 | 12% | | 5,270,576 | 9.53 |
| East Norriton Wastewater | Wastewater-collection | 2018.76 | 21,000,000 | 5% | | 925,477 | 22.69 |
| Kane Wastewater | Wastewater | 2019.75 | 17,560,000 | 4% | | 680,463 | 25.81 |
| | | | 408,660,000 | 100% | | 22,882,813 | 17.86 |
| Simple Mean | | | | | | | 22.38 |
| Standard Deviation | | | | | | | 11.60 |
| Simple Median | | | | | | | 20.93 |
| Simple Mode | | | | | | | Not Applicable |
| Weighted Mean | | | | | | | 21.58 |
| Standard Deviation | | | | | | | 8.02 |
| Wtd Median | | | | | | | 13.00 |
| Wtd Mode | | | | | | | Not Applicable |
| Forecast | | | 2019.944064 | | | | 17.24 |
| | | | 2021 | | | | 13.95 |

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 2020) 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:

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
December 31, 2019

Comparable Sales Approach

Financial Basis¹

| | Industry Averages | American & Aqua Averages | American States Water | American Water | Aqua America | California Water | Consol. Water Co. | Middlesex Water | SIW Corp | York |
|---|-------------------|--------------------------|-----------------------|----------------|----------------|------------------|-------------------|-----------------|--------------|--------------|
| 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 | 4.01 | 2.3 | 4.46 |
| Minimum | 1.5 | 2.62 | | | | | | | | |
| Mean | 3.40 | 3.1 | | 3.58 | 2.62 | | | | | |
| Standard Deviation | 1.38 | 0.480 | | | | | | | | |
| Weighted Market to Debt Ratio | 3.41 | | 20.013.27 | 112,367.26 | 34,710.74 | 11,201.07 | 371.08 | 5,481.74 | 5,674.18 | 1,135.10 |
| Median | 3.415 | 3.1 | | | | | | | | |
| Maximum | 5.42 | 3.58 | | | | | | | | |
| Debt (Total) \$s millions | | | 475.3 | 9,343.0 | 3,086.4 | 967.9 | - | 294.0 | 511.1 | 100.7 |
| Outstanding Shares (millions) | | | 36.84 | 180.78 | 235.84 | 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 | 7.75 |
| Equity (Total) \$s millions | | | 3,217.16 | 21,244.51 | 10,161.78 | 2,480.43 | 247.35 | 1,050.52 | 2,047.89 | 602.24 |
| Total Capital (Debt + Equity) | | | 3,692.48 | 21,719.51 | 13,248.18 | 3,448.33 | 247.35 | 1,344.52 | 2,559.99 | 702.94 |
| | | | 0.07 | 0.55 | 0.23 | 0.06 | | 0.02 | 0.05 | 0.01 |
| Market Value per Share (Equity+Debt) | | | 100.23 | 173.63 | 61.48 | 71.62 | 16.46 | 81.2 | 88.75 | 52.14 |
| Book Value per Share (Equity+Debt) | | | 25 | 84.96 | 32.3 | 35.95 | 10.95 | 31.34 | 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 | 0.62 | 0.670 | | | | | | | | |
| Weighted Market to Book (Debt&Equity) Ratio | 2.31 | | 12,775.97 | 64,010.52 | 20,171.55 | 6,862.18 | 371.03 | 3,302.58 | 4,673.80 | 2,034.75 |
| Variance to Wtd Mean | 0.1392 | | 1.55 | (0.07) | (0.21) | (0.12) | (0.61) | 0.83 | (0.28) | 0.87 |
| Median | 2.325 | 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:

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 31, 2019

Comparable Sales Approach

Market Sales Data

Central Tendency and Reliability Analysis

Market Sales Analysis - PP/OCLD

| | Simple | Weighted |
|--------------------|----------------|----------|
| Mean | 2.082 | 1.9992 |
| Standard Deviation | 0.8607 | 0.6006 |
| Median | 1.608 | 1.5598 |
| Mode | Not Applicable | 1.5601 |

Conclusion 2.0000 AUS Input

Market Sales Analysis - PP/CORLD

| | Simple | Weighted |
|--------------------|----------------|----------|
| Mean | 0.813 | 0.9285 |
| Standard Deviation | 0.1852 | 0.1086 |
| Median | 0.8908 | 0.9637 |
| Mode | Not Applicable | 0.9919 |

Conclusion 0.9314 AUS Input

| | | | | | |
|--|-----------|----------------------|---|------------|-----------------------|
| Valley Township Wastewater System OCLD | 9,214,738 | Cost Approach - OCLD | Valley Township Wastewater System CORLD | 19,252,333 | Cost Approach - CORLD |
|--|-----------|----------------------|---|------------|-----------------------|

| | | | |
|-------------------------|------------|-------------------------|------------|
| Market Value Indication | 18,429,476 | Market Value Indication | 17,931,623 |
|-------------------------|------------|-------------------------|------------|

Market Sales Analysis - PP/Customer

| | Simple | Weighted |
|--------------------|----------------|----------|
| Mean | 7.441 | 9.157 |
| Standard Deviation | 40.31 | 3.158 |
| Median | 8.221 | 6.312 |
| Mode | Not Applicable | 7.825 |
| Forecast | 7.293 | |

Conclusion 7.300 Valley Wastewater Info

| | | | | | |
|---|-------|-----------|--|-----------|----------------------|
| Valley Township Wastewater System Customers | 1,596 | AUS Input | Valley Township Wastewater System OCLD | 9,214,738 | Cost Approach - OCLD |
|---|-------|-----------|--|-----------|----------------------|

| | | | |
|-------------------------|------------|-------------------------|------------|
| Market Value Indication | 11,650,800 | Market Value Indication | 19,443,097 |
|-------------------------|------------|-------------------------|------------|

Market Sales Analysis - PP/Cash Flows (EBITDA)

| | Simple | Weighted |
|--------------------|----------------|----------------|
| Mean | 22.38 | 21.58 |
| Standard Deviation | 11.60 | 8.02 |
| Median | 20.93 | 13.00 |
| Mode | Not Applicable | Not Applicable |
| Forecast | | |

Conclusion 22.00 AUS Input

| | | |
|--|---------|-----------------|
| Valley Township Wastewater System Cash Flows | 685,766 | Income Approach |
|--|---------|-----------------|

Market Value Indication 15,086,845

Summary of Market Analyses

| Indicators | |
|------------|------------|
| OCLD | 18,429,476 |
| CORLD | 17,931,623 |
| Customers | 11,650,800 |
| Cash Flows | 15,086,845 |
| Value Line | 19,443,097 |
| Mean | 16,508,368 |
| Median | 17,931,623 |
| Conclusion | 17,931,623 |

The market approach conclusion of this appraisal was determined to be \$17,931,623.

Cost Approach Revisited – Before concluding this appraisal's fair market value, the preliminary cost approach conclusion of \$19,252,333 needs to be evaluated to determine if external obsolescence exists in the preliminary replacement cost new less

depreciation conclusion of \$19,252,333. 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 \$19,154,327 and the market approach conclusion of \$17,931,623 for the Valley Township’s future wastewater system compared to the preliminary cost approach conclusion of \$19,252,333 indicates no significant external obsolescence exists in the cost approach conclusion of \$19,252,333 detailed as follows:

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

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019

| (36) | (37) | (38) | (39) | (40) | (41) |
|-----------------|--|----------------|--|---|---|
| Account | Description | Placement Year | Preliminary Cost Approach CORLD \$s | Economic Obsolescence % of Preliminary Cost Approach | Fair Market Value 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 |
| Rock Run | | | | | |
| 361.21 | 12" Asbestos Cement 742 LF | 1972 | 49,835.32 | 0.00% | 49,835.32 |
| 361.21 | 8" Asbestos Cement 10094 LF | 1972 | 451,965.63 | 0.00% | 451,965.63 |
| 361.23 | Manholes 61 EA | 1972 | 102,683.65 | 0.00% | 102,683.65 |
| 360.21 | 6" CIP Force Main - Original Installation (partially abandoned) 917 LF | 1972 | 46,105.71 | 0.00% | 46,105.71 |
| 360.21 | 10" HDPE Force Main - Replacement 1834 LF | 1997 | 284,143.75 | 0.00% | 284,143.75 |
| 360.21 | 10" DIP Force Main - Replacement 350 LF | 2003 | 26,581.72 | 0.00% | 26,581.72 |
| 360.21 | Rock Run PS Replacement - 10" DIP Force Main 724 LF | 2004 | 344,989.69 | 0.00% | 344,989.69 |
| 354.3 | Rock Run PS Replacement - Structural 0 | 2004 | 349,121.50 | 0.00% | 349,121.50 |
| 354.3 | Rock Run PS Replacement - Mechanical 0 | 2004 | 402,521.22 | 0.00% | 402,521.22 |
| 353.3 | Rock Run PS Property - Parcel ID# 38-2M-126 | 2004 | 0.21 | 0.00% | 0.21 |
| 363.2 | 4" Laterals 2425.5 LF | 1972 | 19,381.71 | 0.00% | 19,381.71 |
| | | | 2,077,330 | | 2,077,330 |

Therefore, the preliminary cost approach conclusion of \$19,252,333 can be considered the final cost approach conclusion as follows:

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019

Fair Market Value

| (36) | (37) | (39) | (40) | (41) |
|------------|---|--|--|---|
| Account | Description | Preliminary Cost Approach CORLD \$s | Economic Obsolescence % of Preliminary Cost Approach Input AUS Economic Obsolescence Analysis | Fair Market Value Appraisal Date Value \$s |
| Input | Input | Calculation | Input | Calculation |
| Eng Assmnt | Eng Assmnt | Col (31) | | (39) * [1.00-Col (40)] |
| Account | Description | Prelim CORLD | EO% | FMV |
| 353.20 | Land & Land Rights - Original Basin | 19,749 | 0.00% | 19,749 |
| 353.30 | Land & Land Rights - Pumping | 6 | 0.00% | 6 |
| 354.30 | Stuctures & Improvements - Pumping | 1,821,032 | 0.00% | 1,821,032 |
| 355.30 | Generating Equipment - Pumping | 9,388 | 0.00% | 9,388 |
| 360.21 | Collection Sewers - Force - Mains | 1,498,282 | 0.00% | 1,498,282 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 21,496 | 0.00% | 21,496 |
| 361.21 | Collection Sewers - Gravity - Mains | 10,631,978 | 0.00% | 10,631,978 |
| 361.22 | Collection Sewers - Gravity - Mains Relining | 53,249 | 0.00% | 53,249 |
| 361.23 | Collection Sewers - Gravity - Manholes | 2,995,110 | 0.00% | 2,995,110 |
| 363.20 | Service Laterals | 2,195,757 | 0.00% | 2,195,757 |
| 365.20 | Flow Measuring Installations Meter Pits | 6,285 | 0.00% | 6,285 |
| Grand | | | | |
| Total | Grand Total | 19,252,333 | 0.00% | 19,252,333 |

Value Conclusion

The Fair Market Value of the Valley Township's, Pennsylvania's wastewater property, plant and equipment and its operation were determined to be \$19,081,059 as follows:

**Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Fair Market Value Appraisal

| Appraisal Approach | Investor-owned Utility | Weight | Wtd Valuation Indications |
|--|---------------------------|-------------|------------------------------|
| Cost Approach | | | |
| Inventory of Assets (7-2019) | | | |
| Original Cost (\$OC) | 13,389,110 | | |
| Depreciated Original Cost (\$OCLD) | 9,214,738 | | |
| Replacement Cost (9-30-2019) | | | |
| Replacement Cost New (COR) | 31,729,237 | | |
| Depreciated Replacement Cost New (CORLD) | \$ 19,252,333 | | |
| Cost Approach Conclusion | 19,252,333 | 50% | 9,626,166 |
| Income Approach | | | |
| Required Rate Increases: 20% period 3, 15% period 6, and 6% every 3rd year beginning in period 9 (Input 6) | | | |
| | 19,154,327 | | |
| Income Approach Conclusion | 19,154,327 | 40% | 7,661,731 |
| Market Approach | | | |
| Market Comparables (to) | | | |
| OCLD | 18,429,476 | | |
| CORLD | 17,931,623 | | |
| Customers | 11,650,800 | | |
| Cash Flows (EBITDA) | 15,086,845 | | |
| Market Financials (to) | | | |
| OCLD | 19,443,097 | | |
| Market Approach Conclusion | 17,931,623 | 10% | 1,793,162 |
| Appraisal Conclusion | \$ 19,081,059 | 100% | 19,081,059 |
| Conclusion (cost approach) | \$ 19,252,333 | | |

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 Valley Township's wastewater collection and treatment system's property, plant and equipment this appraisal's conclusion of \$19,081,059 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:
Pennsylvania American Water Company and the Pennsylvania Public Utility Commission
- State the intended use of the appraisal
To establish the Fair Market Value of Valley Township's (PA) Wastewater System (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 and wastewater treatment structures, improvements and equipment. 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 cite 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 December 17, 2019 and the appraisal report date is August 9, 2020.
- 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
The appraisal considered all three approaches to value: the cost, income and market. Briefly the scopes of work for each are as follows:

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

Fulfillment of Requirements for a Personal Property Appraisal and Report

Cost Approach – The cost approach utilized the trended cost method utilizing the investment inventory developed by Pennoni's 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 Borough's operating experience was analyzed (2015-2019) 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

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.

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

- 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

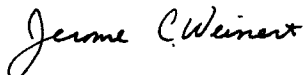

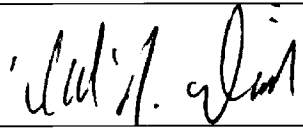
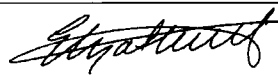
AUS Consultants, Valuation and Depreciation Services Group certify that, to the best of its knowledge and belief:

- 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 Valley Township's sanitary wastewater collection 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 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 Fogelsanger of Pennsylvania American Wastewater Company provided information obtained from the Valley Township 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 Professionals in the Society of Depreciation Professionals

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania
Wastewater System

Appraisal Work Papers
As of December 17, 2019

Valuation 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

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Fair Market Value Appraisal

| Appraisal Approach | Investor-owned Utility | Weight | Wtd Valuation Indications |
|--|---------------------------|-------------|------------------------------|
| Cost Approach | | | |
| Inventory of Assets (7-2019) | | | |
| Original Cost (\$OC) | 13,389,110 | | |
| Depreciated Original Cost (\$OCLD) | 9,214,738 | | |
| Replacement Cost (9-30-2019) | | | |
| Replacement Cost New (COR) | 31,729,237 | | |
| Depreciated Replacement Cost New (CORLD) | \$ 19,252,333 | | |
| Cost Approach Conclusion | 19,252,333 | 50% | 9,626,166 |
| Income Approach | | | |
| Required Rate Increases: 20% period 3, 15% period 6, and 6% every 3rd year beginning in period 9 (Input 6) | | | |
| | 19,154,327 | | |
| Income Approach Conclusion | 19,154,327 | 40% | 7,661,731 |
| Market Approach | | | |
| Market Comparables (to) | | | |
| OCLD | 18,429,476 | | |
| CORLD | 17,931,623 | | |
| Customers | 11,650,800 | | |
| Cash Flows (EBITDA) | 15,086,845 | | |
| Market Financials (to) | | | |
| OCLD | 19,443,097 | | |
| Market Approach Conclusion | 17,931,623 | 10% | 1,793,162 |
| Appraisal Conclusion | \$ 19,081,059 | 100% | 19,081,059 |
| Conclusion (cost approach) | \$ 19,252,333 | | |

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania
Wastewater System

Appraisal Work Papers
As of December 17, 2019

Cost Approach

AUS Consultants
Suite 201
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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

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

Wastewater System
Appraisal Work Papers
As of December 17, 2019

Cost Approach
Replacement Cost New

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

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

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) |
| Input | Input | Input | OC \$s | Input | Calculation | RCN \$s | COR \$s / RCN \$s | COR \$s |
| Eng Assmnt | AUS Input | Pennoni Associates, Inc.'s Valley Wastewater Engineers Assessment | 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 - Original Basin | 3,368 | USBLS1 | 5.86 | 19,749 | 1.00 | 19,749 |
| 353.30 | 353.30 | Land & Land Rights - Pumping | 3 | USBLS1 | 1.84 | 6 | 1.00 | 6 |
| 354.30 | 354.30 | Structures & Improvements - Pumping | 1,712,310 | HWW-18 | 1.66 | 2,843,619 | 1.00 | 2,843,619 |
| 355.30 | 355.30 | Generating Equipment - Pumping | 21,547 | USBLS4 | 1.71 | 36,781 | 1.00 | 36,781 |
| 360.21 | 360.21 | Collection Sewers - Force - Mains | 1,187,519 | HWW-144 | 1.67 | 1,986,812 | 1.00 | 1,986,812 |
| 360.23 | 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 20,733 | HWW-145 | 1.22 | 25,356 | 1.00 | 25,356 |
| 361.21 | 361.21 | Collection Sewers - Gravity - Mains | 6,263,231 | HWW-144 | 2.87 | 17,984,560 | 1.00 | 17,984,560 |
| 361.22 | 361.22 | Collection Sewers - Gravity - Mains Relining | 52,870 | HWW-144 | 1.11 | 58,580 | 1.00 | 58,580 |
| 361.23 | 361.23 | Collection Sewers - Gravity - Manholes | 2,183,510 | HWW-145 | 2.08 | 4,533,510 | 1.00 | 4,533,510 |
| 363.20 | 363.20 | Service Laterals | 1,934,160 | HWW-139 | 2.17 | 4,198,363 | 1.00 | 4,198,363 |
| 365.20 | 365.20 | Flow Measuring Installations Meter Pits | 9,859 | HWW-140 | 4.25 | 41,901 | 1.00 | 41,901 |
| Grand Total | Grand Total | Grand Total | 13,389,110 | | 2.37 | 31,729,237 | 1.00 | 31,729,237 |

1
Pennsylvania American Water Company
Wastewater Collection System
Investor-Owned Utility
December 17, 2019

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 - Original Basin | 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 |
| 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 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | HW | W-1 | 45.00 | HWW-145 | 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 | 44.00 | HWW-144 | 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 |
| 365.20 | Flow Measuring Installations Meter Pits | HW | W-1 | 40.00 | HWW-140 | 1.00 |
| 364.40 | Flow Measuring Devices - WWTP | HW | W-1 | 40.00 | HWW-140 | 1.00 |

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

Wastewater System
Appraisal Work Papers
As of December 17, 2019

Cost Approach
Replacement Cost New less Depreciation

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

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Replacement Cost New less Depreciation (RCNLD)

| (18) | (19) | (21) | (22) | (23) | (24) | (28) | (29) | (30) | (31) |
|-------------|---|---|----------------------------|---------------------------------|---------------------------|-----------------------|-----------------------|-------------|--|
| Account | Description | Age at December 17, 2019 Appraisal Date | Replacement Cost New (COR) | Retirement Dispersion lowa type | Normal Service Life (NSL) | Normal Remaining Life | Total Life Expectancy | Condition | Preliminary Cost Approach (COR less Normal Depreciation) |
| Input | Input | years | COR \$s | Input | years | years | years | % of COR | CORLD \$s |
| Eng Assmnt | Pennoni Associates, Inc.'s Valley Wastewater Engineers Assessment | Calculation | Calculation | Input | Input | Calculation | Calculation | Calculation | Calculation |
| Account | Description | Age | RCN | lowa | NL | Rem Life | Total Life | Condition | CORLD |
| 353.20 | Land & Land Rights - Original Basin | 46.50 | 19,749 | ZNonDep | - | - | - | 1.00 | 19,749 |
| 353.30 | Land & Land Rights - Pumping | 26.76 | 6 | ZNonDep | - | - | - | 1.00 | 6 |
| 354.40 | Stuctures & Improvements - Pumping | 16.38 | 2,843,619 | R4.0 | 45.00 | 28.99 | 45.37 | 0.64 | 1,821,032 |
| 355.30 | Generating Equipment - Pumping | 29.50 | 36,781 | R3.0 | 35.00 | 10.11 | 39.61 | 0.26 | 9,388 |
| 360.21 | Collection Sewers - Force - Mains | 18.79 | 1,986,812 | R3.0 | 75.00 | 57.14 | 75.93 | 0.75 | 1,498,282 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 11.50 | 25,356 | R3.0 | 75.00 | 64.04 | 75.54 | 0.85 | 21,496 |
| 361.21 | Collection Sewers - Gravity - Mains | 34.90 | 17,984,560 | R2.5 | 80.00 | 49.57 | 84.48 | 0.59 | 10,631,978 |
| 361.22 | Collection Sewers - Gravity - Mains Relining | 5.50 | 58,580 | R2.5 | 60.00 | 54.94 | 60.44 | 0.91 | 53,249 |
| 361.23 | Collection Sewers - Gravity - Manholes | 28.68 | 4,533,510 | R2.5 | 80.00 | 54.71 | 83.39 | 0.66 | 2,995,110 |
| 363.20 | Service Laterals | 23.77 | 4,198,363 | R3.0 | 45.00 | 24.29 | 48.05 | 0.52 | 2,195,757 |
| 360.21 | Flow Measuring Installations Meter Pits | 49.50 | 41,901 | S2.0 | 30.00 | 4.50 | 54.00 | 0.15 | 6,285 |
| Grand Total | Grand Total | 29.82 | 31,729,237 | | 71.71 | 45.48 | 75.27 | 0.61 | 19,252,333 |

\\aus-dc1\Shared\water industry\PA American - Valley\Valley Wastewater System Valuation as of 12-10-2019 - Created 7-2-2020

| | 9 | 10 | 11 | 12 | 13 |
|--|---------------------|-----------------------|------------------|---------------------|---------------------|
| | (4b) | (5) | (6a) | (6b) | |
| | Normal Service Life | Economic Obsolescence | Tax Depreciation | Report Depreciation | |
| | years | % | Table | Life | |
| 353.20 Land & Land Rights - Original Basin | | | 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 Structures & Improvements - Pumping | | | R4.0 | 45.00 | 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 |
| 360.23 Collection Sewers - Force - Manholes / Meter Pits | | | 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 | 45.00 | 0.00% MACRS 25.00 |
| 365.20 Flow Measuring Installations Meter Pits | | | S2.0 | 30.00 | 0.00% MACRS 25.00 |
| 364.40 Flow Measuring Devices - WWTP | | | S2.0 | 30.00 | 0.00% MACRS 25.00 |

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

**Wastewater System
Appraisal Work Papers
As of December 17, 2019**

Cost Approach

Replacement Cost New less Depreciation to Fair Market Value

**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**

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Fair Market Value

| (36) | (37) | (39) | (40) | (41) |
|------------|---|--|--|--|
| Account | Description | Preliminary Cost Approach CORLD \$s | Economic Obsolescence % of Preliminary Cost Approach Input AUS Economic Obsolescence Analysis | Fair Market Value Appraisal Date Value \$s |
| Input | Input | Calculation | Input | Calculation |
| Eng Assmnt | Eng Assmnt | Col (31) | | (39) * [1.00-Col (40)] |
| Account | Description | Prelim CORLD | EO% | FMV |
| 353.20 | Land & Land Rights - Original Basin | 19,749 | 0.00% | 19,749 |
| 353.30 | Land & Land Rights - Pumping | 6 | 0.00% | 6 |
| 354.30 | Stuctures & Improvements - Pumping | 1,821,032 | 0.00% | 1,821,032 |
| 355.30 | Generating Equipment - Pumping | 9,388 | 0.00% | 9,388 |
| 360.21 | Collection Sewers - Force - Mains | 1,498,282 | 0.00% | 1,498,282 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 21,496 | 0.00% | 21,496 |
| 361.21 | Collection Sewers - Gravity - Mains | 10,631,978 | 0.00% | 10,631,978 |
| 361.22 | Collection Sewers - Gravity - Mains Relining | 53,249 | 0.00% | 53,249 |
| 361.23 | Collection Sewers - Gravity - Manholes | 2,995,110 | 0.00% | 2,995,110 |
| 363.20 | Service Laterals | 2,195,757 | 0.00% | 2,195,757 |
| 365.20 | Flow Measuring Installations Meter Pits | 6,285 | 0.00% | 6,285 |
| Grand | | | | |
| Total | Grand Total | 19,252,333 | 0.00% | 19,252,333 |

\\aus-dc1\Shared\water industry\PA American - Valley\Valley Wastewater System Valuation as of 12-10-2019 - Created 7-2-2020

| | 9 | 10 | 11 | 12 | 13 |
|--------|---|-----------------------|------------------|---------------------|---------------------|
| | (4b) | (5) | (6a) | (6b) | |
| | Normal Service Life | Economic Obsolescence | Tax Depreciation | Report Depreciation | |
| | years | % | Table | Life | |
| 353.20 | Land & Land Rights - Original Basin | | 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 | 45.00 | 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 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | | 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 | 45.00 | 0.00% MACRS 25.00 |
| 365.20 | Flow Measuring Installations Meter Pits | | S2.0 | 30.00 | 0.00% MACRS 25.00 |
| 364.40 | Flow Measuring Devices - WWTP | | S2.0 | 30.00 | 0.00% MACRS 25.00 |

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

Wastewater System
Appraisal Work Papers
As of December 17, 2019

Original Cost less Depreciation

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

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Determination of the Depreciated Original Cost

| (43) | (44) | (46) | (47) | (48) | (49) | (53) | (54) | (55) | (56) | (57) |
|-----------|---|----------------|---------------------------------------|---------------------------------|---|-----------------------------|--------------------------|-----------------------------------|------------------------|------------------------------|
| Account | Description | Original Costs | Retirement Dispersion lowa-type | Normal Service Life (NSL) | Age at December 17, 2019 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 | lowa | Normal Life | age | Rem Life | Total Life | Theo% | Theo Reserve | Net Book |
| 353.20 | Land & Land Rights - Original Basin | 3,368 | ZNonDep | - | 46.50 | - | - | - | - | 3,368 |
| 353.30 | Land & Land Rights - Pumping | 3 | ZNonDep | - | 25.50 | - | - | - | - | 3 |
| 354.30 | Stuctures & Improvements - Pumping | 1,712,310 | R4.0 | 45.00 | 15.32 | 29.96 | 45.27 | 0.34 | 577,507 | 1,134,804 |
| 355.30 | Generating Equipment - Pumping | 21,547 | R3.0 | 35.00 | 29.50 | 10.11 | 39.61 | 0.74 | 16,047 | 5,500 |
| 360.21 | Collection Sewers - Force - Mains | 1,187,519 | R3.0 | 75.00 | 16.19 | 59.49 | 75.68 | 0.21 | 253,281 | 934,238 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 20,733 | R3.0 | 75.00 | 11.50 | 64.04 | 75.54 | 0.15 | 3,156 | 17,577 |
| 361.21 | Collection Sewers - Gravity - Mains | 6,263,231 | R2.5 | 80.00 | 26.61 | 56.43 | 83.03 | 0.32 | 1,981,751 | 4,281,480 |
| 361.22 | Collection Sewers - Gravity - Mains Relining | 52,870 | R2.5 | 60.00 | 5.50 | 54.94 | 60.44 | 0.09 | 4,811 | 48,059 |
| 361.23 | Collection Sewers - Gravity - Manholes | 2,183,510 | R2.5 | 80.00 | 21.77 | 60.44 | 82.22 | 0.26 | 572,279 | 1,611,231 |
| 363.20 | Service Laterals | 1,934,160 | R3.0 | 45.00 | 18.61 | 28.01 | 46.63 | 0.39 | 757,159 | 1,177,001 |
| 365.20 | Flow Measuring Installations Meter Pits | 9,859 | S2.0 | 30.00 | 49.50 | 4.50 | 54.00 | 0.85 | 8,380 | 1,479 |
| Grand | | | | | | | | | | |
| Total | Grand Total | 13,389,110 | | 69.81 | 22.21 | 49.74 | 71.95 | 0.31 | 4,174,372 | 9,214,738 |

\\aus-dc1\Shared\water industry\PA American - Valley\Valley Wastewater System Valuation as of 12-10-2019 - Created 7-2-2020

| | 9 | 10 | 11 | 12 | 13 |
|--------|---|-----------------------|------------------|---------------------|---------------------|
| | (4b) | (5) | (6a) | (6) | (6b) |
| | Normal Service Life | Economic Obsolescence | Tax Depreciation | Report Depreciation | |
| | years | % | Table | Life | |
| 353.20 | Land & Land Rights - Original Basin | | 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 | 45.00 | 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 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | | 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 | 45.00 | 0.00% MACRS 25.00 |
| 365.20 | Flow Measuring Installations Meter Pits | | S2.0 | 30.00 | 0.00% MACRS 25.00 |
| 364.40 | Flow Measuring Devices - WWTP | | S2.0 | 30.00 | 0.00% MACRS 25.00 |

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

Wastewater System
Appraisal Work Papers
As of December 17, 2019

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:

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Potential Purchaser: Investor-Owned Utility
As of December 17, 2019
Discounted Cash Flow Analysis**

| Discount Rate | Capitalization Rate | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|--|---------------------|-----------|--------------|------------------|---------------------------|---|----------------------------------|----------------------|---------------------------|----------------------|----------------------------------|----------------|-----------------------------|
| | | | 7.93% | | | | | | | | | | |
| | | | 6.00% | | | | | | | | | | |
| 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 | 2,857,439 | 3,122,464 | 561,233 | (265,025) | (826,258) | (238,706) | 127,144 | 5,956 | (159,419) | 0.963 | (153,520) | (153,520) |
| 2 | 1.5 | 2,972,157 | 3,183,945 | 565,173 | (211,788) | (776,961) | (224,464) | 129,051 | 6,195 | (122,570) | 0.892 | (109,332) | (262,852) |
| 3 | 2.5 | 3,685,912 | 3,246,645 | 569,249 | 439,267 | (128,982) | (37,552) | 130,987 | 38,542 | 307,290 | 0.826 | 253,822 | (9,030) |
| 4 | 3.5 | 3,833,891 | 3,310,589 | 573,465 | 523,302 | (50,163) | (14,492) | 132,951 | 7,991 | 396,852 | 0.766 | 303,989 | 294,959 |
| 5 | 4.5 | 3,987,810 | 3,375,802 | 577,824 | 612,008 | 34,184 | 9,876 | 134,945 | 8,312 | 458,875 | 0.709 | 325,342 | 620,301 |
| 6 | 5.5 | 4,730,060 | 3,438,275 | 582,329 | 1,291,785 | 709,456 | 204,962 | 136,970 | 40,081 | 909,772 | 0.657 | 597,720 | 1,218,021 |
| 7 | 6.5 | 4,900,956 | 3,502,149 | 589,917 | 1,398,807 | 808,890 | 233,688 | 150,021 | 9,229 | 1,005,869 | 0.609 | 612,574 | 1,830,595 |
| 8 | 7.5 | 5,078,027 | 3,567,447 | 595,037 | 1,510,580 | 915,543 | 264,500 | 152,162 | 9,562 | 1,084,356 | 0.564 | 611,577 | 2,442,172 |
| 9 | 8.5 | 5,566,177 | 3,634,194 | 600,317 | 1,931,983 | 1,331,666 | 384,718 | 154,334 | 26,360 | 1,366,571 | 0.523 | 714,717 | 3,156,889 |
| 10 | 9.5 | 5,767,282 | 3,702,414 | 605,760 | 2,064,868 | 1,459,108 | 421,536 | 156,537 | 10,859 | 1,475,936 | 0.484 | 714,353 | 3,871,242 |
| 11 | 10.5 | 5,975,653 | 3,772,132 | 611,373 | 2,203,521 | 1,592,148 | 459,971 | 158,775 | 11,252 | 1,573,523 | 0.449 | 706,512 | 4,577,754 |
| 12 | 11.5 | 6,550,091 | 3,843,375 | 617,158 | 2,706,716 | 2,089,558 | 603,673 | 161,044 | 31,019 | 1,910,980 | 0.416 | 794,968 | 5,372,722 |
| 13 | 12.5 | 6,786,745 | 3,916,168 | 623,118 | 2,870,577 | 2,247,459 | 649,291 | 163,347 | 12,781 | 2,045,158 | 0.385 | 787,386 | 6,160,108 |
| 14 | 13.5 | 7,031,949 | 3,990,540 | 629,257 | 3,041,409 | 2,412,152 | 696,871 | 165,684 | 13,241 | 2,165,613 | 0.357 | 773,124 | 6,933,232 |
| 15 | 14.5 | 7,707,929 | 4,066,518 | 635,581 | 3,641,411 | 3,005,830 | 868,384 | 168,055 | 36,502 | 2,568,470 | 0.331 | 850,164 | 7,783,396 |
| 16 | 15.5 | 7,785,008 | 4,147,105 | 634,884 | 3,637,903 | 3,003,019 | 867,572 | 158,959 | 4,162 | 2,607,210 | 0.306 | 797,806 | 8,581,202 |
| 17 | 16.5 | 7,862,858 | 4,229,296 | 641,243 | 3,633,562 | 2,992,319 | 864,481 | 161,344 | 4,204 | 2,603,533 | 0.284 | 739,403 | 9,320,605 |
| 18 | 17.5 | 8,413,258 | 4,313,124 | 647,794 | 4,100,134 | 3,452,340 | 997,381 | 163,764 | 29,722 | 2,909,267 | 0.263 | 765,137 | 10,085,742 |
| 19 | 18.5 | 8,497,391 | 4,398,620 | 654,541 | 4,098,771 | 3,444,230 | 995,038 | 166,220 | 4,543 | 2,932,970 | 0.244 | 715,645 | 10,801,387 |
| 20 and beyond | 19.5 | 8,582,365 | 4,485,819 | 661,489 | 4,096,546 | 3,435,057 | 992,388 | 168,713 | 4,589 | 2,930,856 | 2.850 | 8,352,940 | 19,154,327 |
| Age | 19.5 | | | | | | | 3,041,007 | | | | | |
| PW(Age) = 1/(1+Discount Rate) ^{Age} | | | | 0.226 | | | | | | 10,175,851 | | | |
| PW to Perpetuity = 1/Capitalization Rate | | | | 12.610 | | | | | | (1,548,965) | | | |
| PW _(Plant Inflation) = PW to Perpetuity * PW Factor _(13.5) | | | | 2.850 | | | | | | 8,626,886 | 0.226 | 1,949,676 | 12,751,063 |
| Rate Base | | | | | | | | | | | | | |
| Annual Plant Construction Inflation Rate | | | | | | | | | | 0.0422 | Input | | |
| Plant Inflation over 19.5 years | | | | | | | | | | 15,718,571 | 0.226 | 4,456,397 | 15,257,784 |
| PP | | | | | | | | | | 13,950,000 | | | |
| OCLD | | | | | | | | | | 9,214,738 | | | |
| PP/OCLD | | | | | | | | | | 1.514 | | | |
| RCNLD | | | | | | | | | | 19,252,333 | | | |
| RCNLD/PP | | | | | | | | | | 1.380095529 | | | |
| | | | | | | | | | | 11,905,927.12 | 0.226 | 2,690,740 | 13,492,127 |
| Average | | | | | | | | | | | | | 15,163,825 |

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Potential Purchaser: Investor-Owned Utility
As of December 17, 2019
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 | 2,857,439 | 3,122,464 | 334,635 | 193,069 | (792,729) | (229,019) | (370,641) | (563,710) | 13,742,509 | 154,302 | (65,465) | 13,831,346 | -2.68% | 16,448,763 | -3.43% |
| 2 | 1.5 | 2,972,157 | 3,183,945 | 336,430 | 188,526 | (736,744) | (212,845) | (335,373) | (523,899) | 13,535,130 | 160,497 | (131,549) | 13,564,078 | -2.47% | 15,924,864 | -3.29% |
| 3 | 2.5 | 3,685,912 | 3,246,645 | 336,344 | 184,597 | (81,674) | (23,596) | 126,519 | (58,078) | 13,329,773 | 199,039 | (198,835) | 13,329,977 | 0.95% | 15,866,786 | -0.37% |
| 4 | 3.5 | 3,833,891 | 3,310,589 | 336,291 | 178,443 | 8,568 | 2,475 | 184,536 | 6,093 | 13,126,432 | 207,030 | (267,354) | 13,066,108 | 1.41% | 15,872,878 | 0.04% |
| 5 | 4.5 | 3,987,810 | 3,375,802 | 337,616 | 172,495 | 101,897 | 29,438 | 244,954 | 72,459 | 12,923,762 | 215,342 | (336,750) | 12,802,354 | 1.91% | 15,945,338 | 0.45% |
| 6 | 5.5 | 4,730,060 | 3,438,275 | 339,161 | 166,745 | 785,879 | 227,041 | 725,583 | 558,838 | 12,721,571 | 255,423 | (407,002) | 12,569,992 | 5.77% | 16,504,176 | 3.39% |
| 7 | 6.5 | 4,900,956 | 3,502,149 | 338,655 | 161,187 | 898,965 | 259,711 | 800,441 | 639,254 | 12,532,938 | 264,652 | (479,592) | 12,317,998 | 6.50% | 17,143,431 | 3.73% |
| 8 | 7.5 | 5,078,027 | 3,567,447 | 338,111 | 155,814 | 1,016,655 | 293,712 | 878,757 | 722,943 | 12,346,989 | 274,214 | (553,818) | 12,067,385 | 7.28% | 17,866,374 | 4.05% |
| 9 | 8.5 | 5,566,177 | 3,634,194 | 341,247 | 150,620 | 1,440,116 | 416,049 | 1,174,687 | 1,024,067 | 12,160,076 | 300,574 | (628,663) | 11,831,987 | 9.93% | 18,890,441 | 5.42% |
| 10 | 9.5 | 5,767,282 | 3,702,414 | 340,526 | 145,600 | 1,578,742 | 456,099 | 1,268,243 | 1,122,643 | 11,976,086 | 311,433 | (705,290) | 11,582,229 | 10.95% | 20,013,083 | 5.61% |
| 11 | 10.5 | 5,975,653 | 3,772,132 | 342,317 | 140,746 | 1,720,458 | 497,040 | 1,364,164 | 1,223,418 | 11,792,545 | 322,685 | (783,020) | 11,332,210 | 12.04% | 21,236,502 | 5.76% |
| 12 | 11.5 | 6,550,091 | 3,843,375 | 342,025 | 136,055 | 2,228,636 | 643,853 | 1,720,838 | 1,584,783 | 11,611,564 | 353,704 | (862,506) | 11,102,762 | 15.50% | 22,821,285 | 6.94% |
| 13 | 12.5 | 6,786,745 | 3,916,168 | 343,617 | 131,520 | 2,395,440 | 692,043 | 1,834,917 | 1,703,397 | 11,431,294 | 366,485 | (943,254) | 10,854,525 | 16.90% | 24,524,682 | 6.95% |
| 14 | 13.5 | 7,031,949 | 3,990,540 | 343,121 | 127,136 | 2,571,152 | 742,806 | 1,955,482 | 1,828,346 | 11,253,857 | 379,726 | (1,025,919) | 10,607,664 | 18.43% | 26,353,028 | 6.94% |
| 15 | 14.5 | 7,707,929 | 4,066,518 | 343,908 | 122,898 | 3,174,605 | 917,143 | 2,380,360 | 2,257,462 | 11,078,004 | 416,228 | (1,110,183) | 10,384,049 | 22.92% | 28,610,490 | 7.89% |
| 16 | 15.5 | 7,785,008 | 4,147,105 | 344,319 | 118,801 | 3,174,783 | 917,195 | 2,376,389 | 2,257,588 | 10,892,644 | 420,390 | (1,194,127) | 10,118,907 | 23.48% | 30,868,078 | 7.31% |
| 17 | 16.5 | 7,862,858 | 4,229,296 | 345,334 | 114,841 | 3,173,387 | 916,792 | 2,371,436 | 2,256,595 | 10,708,654 | 424,594 | (1,279,616) | 9,853,632 | 24.07% | 33,124,673 | 6.81% |
| 18 | 17.5 | 8,413,258 | 4,313,124 | 345,516 | 111,013 | 3,643,605 | 1,052,638 | 2,701,980 | 2,590,967 | 10,526,902 | 454,316 | (1,366,945) | 9,614,273 | 28.10% | 35,715,640 | 7.25% |
| 19 | 18.5 | 8,497,391 | 4,398,620 | 343,901 | 107,313 | 3,647,557 | 1,053,779 | 2,701,091 | 2,593,778 | 10,349,222 | 458,859 | (1,456,689) | 9,351,392 | 28.88% | 38,309,419 | 6.77% |
| 20 | 19.5 | 8,582,365 | 4,485,819 | 342,083 | 103,736 | 3,650,727 | 1,054,695 | 2,699,768 | 2,596,032 | 10,175,851 | 463,448 | (1,548,965) | 9,090,334 | 29.70% | 40,905,450 | 6.35% |

2,299,742.38

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

Wastewater System
Appraisal Work Papers
As of December 17, 2019

Income Approach
Cost of Capital / Required Return

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

**Water and Wastewater Cost of Capital
First Quarter 2020 (1-1-2020)**

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 | 26% | Market | 3.23% | Market | 28.89% | 71.11% | 0.60% |
| Equity | 74% | Market | 9.90% | Market | 0.0% | 100.0% | 7.33% |
| Total Capital r | 100.0% | | | | | | 7.93% |
| Growth (g) | | | | | | | 1.82% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | 6.00% |

**Water and Wastewater Cost of Capital
First Quarter 2020 (1-1-2020)**

As an Investor-Owned Utility

Weighted Cost of Capital (Capitization 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 | 26% | Market | 3.23% | Market | Not Applicable | Not Applicable | 0.84% |
| Equity | 74% | Market | 9.90% | Market | Not Applicable | Not Applicable | 7.33% |
| Total Capital r | 100.0% | | | | | | 8.17% |
| Growth (g) | | | | | | | 1.82% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | 6.23% |

**Water and Wastewater Cost of Capital
First Quarter 2020 (1-1-2020)**

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 | 45% | Embedded | 3.23% | Embedded | Not Applicable | Not Applicable | 1.45% |
| Equity | 55% | Embedded | 9.90% | Market | Not Applicable | Not Applicable | 5.45% |
| Total Capital r | 100.0% | | | | | | 6.90% |
| Growth (g) | | | | | | Not Applicable | 0.00% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | 6.90% |

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

Wastewater System
Appraisal Work Papers
As of December 17, 2019

Market 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: weinertj@auswest.net

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Comparable Sales Approach

Market Sales Data

Central Tendency and Reliability Analysis

Market Sales Analysis - PP/OCLD

| | Simple | Weighted |
|--------------------|----------------|----------|
| Mean | 2.082 | 1.9992 |
| Standard Deviation | 0.8607 | 0.6008 |
| Median | 1.608 | 1.5598 |
| Mode | Not Applicable | 1.5601 |

Conclusion 2.0000 AUS Input

Market Sales Analysis - PP/CORLD

| | Simple | Weighted |
|--------------------|----------------|----------|
| Mean | 0.813 | 0.9285 |
| Standard Deviation | 0.1852 | 0.1086 |
| Median | 0.8908 | 0.9637 |
| Mode | Not Applicable | 0.9919 |

Conclusion 0.9314 AUS Input

Valley Township Wastewater System OCLD 9,214,738

Cost Approach - OCLD

Valley Township Wastewater System CORLD 19,252,333

Cost Approach - CORLD

Market Value Indication 18,429,476

Market Value Indication 17,931,623

Market Sales Analysis - PP/Customer

| | Simple | Weighted |
|--------------------|----------------|----------|
| Mean | 7441 | 9,157 |
| Standard Deviation | 4031 | 3,158 |
| Median | 8221 | 6,312 |
| Mode | Not Applicable | 7,825 |
| Forecast | 7,293 | |

Conclusion 7,300

Valley Wastewater Info

Financial Basis¹

| 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 |

Valley Township Wastewater System Customers 1,596

AUS Input

Valley Township Wastewater System OCLD 9,214,738

Cost Approach - OCLD

Market Value Indication 11,650,800

Market Value Indication 19,443,097

Market Sales Analysis - PP/Cash Flows (EBITDA)

| | Simple | Weighted |
|--------------------|----------------|----------------|
| Mean | 22.38 | 21.58 |
| Standard Deviation | 11.60 | 8.02 |
| Median | 20.93 | 13.00 |
| Mode | Not Applicable | Not Applicable |
| Forecast | | |

Conclusion 22.00 AUS Input

Valley Township Wastewater System Cash Flows 685,766

Income Approach

Market Value Indication 15,086,845

Summary of Market Analyses

| Indicators | |
|-------------------|-------------------|
| OCLD | 18,429,476 |
| CORLD | 17,931,623 |
| Customers | 11,650,800 |
| Cash Flows | 15,086,845 |
| Value Line | 19,443,097 |
| Mean | 16,508,368 |
| Median | 17,931,623 |
| Conclusion | 17,931,623 |

Unit: \$USM unless otherwise specified. American Water Valley Wastewater System Valuation as of 12/30/2019. Created 1/2/2020

| Row ID | Acquisition Date | Buyer | Seller | County | Type of Facility | Final Purchase Price | Final Purchase Price | Number of Total Customers | OCA Market Value per Customer | Relating to the Sale (to Section 133) | Average Purchase Price per Customer | Adjusted Market Value per Customer | Transfer Assumptions | Original Cost | Accrual Depreciation % | Accrual Depreciation \$ | Net Book Value | Replacement Cost (2019) | Cost Allocation % | Final Purchase Price to OCA | Price Ratio Determined by PA 133 | | | |
|--------|------------------|-------------------|--------------------|------------|---|----------------------|----------------------|---------------------------|-------------------------------|---------------------------------------|-------------------------------------|------------------------------------|-------------------------------------|---------------|------------------------|-------------------------|----------------|-------------------------|-------------------|-----------------------------|----------------------------------|-------------|--|--|
| 20 | 8/1/2016 | PA American Water | City of McKeenport | Allegheny | Collection and Treatment | 180,000,000 | 159,000,000 | 21,993 | 7,187 | Paid | 7,242.75 | 7,243 | City Engineers, Inc. | 108,231,570 | 74.0% | 80,045,807 | 1,196,4 | 123,138,640 | 68.4% | 158,524,909 | 1.0158 | 158,000,000 | | |
| 21 | 8/1/2016 | Apur PA | New Garden Twp. SA | Chester | Collection and Treatment | 29,400,000 | 29,400,000 | 7,106 | 4,139 | Paid | 14,007.80 | 14,008 | ADS Consultants | 27,146,857 | 92.0% | 18,547,738 | 1,588 | 86,132,010 | 30.8% | 80,815,410 | 0.9546 | 79,500,000 | | |
| 22 | 11/3/2017 | Apur PA | Amersch Township | Montgomery | Wastewater Collection and Treatment | 54,171,000 | 44,373,000 | 4,434 | 11,845 | Paid | 9,264 | 11,846 | | | | | 1,4364 | 48,816,918 | | 1,068,877 | 6.8810 | 64,175,000 | | |
| 23 | 12/10/2017 | Apur PA | Town of North East | Chester | Collection and Treatment | 5,300,000 | 5,000,000 | 1,248 | 4,004 | Paid | 4,006.41 | 4,005 | | 8,794,930 | 64.9% | 5,362,591 | 0.9287 | 1,817,139 | 61.3% | 9,236,561 | 0.9411 | 5,000,000 | | |
| 24 | 1/27 | Muhanna | | Carter | Water Treatment and Distribution System | 4,744,800 | 4,744,800 | 2,806 | | Paid | | 1,687 | | | | | | | | | | 1.5120 | | |
| 25 | 1/27 | Muhanna | | Carter | Wastewater Collection and Treatment | 4,761,200 | 4,761,200 | 2,806 | | Paid | | 1,696 | | | | | | | | | | 0.9463 | | |
| 26 | 8/1/2018 | Apur PA | Cherryhurst | Montgomery | Wastewater Collection | 40,294,000 | 50,740,000 | 10,500 | | Paid | 8,785.71 | 8,786 | Douglas & James Inc. | 19,818,218 | 74.6% | 15,798,853 | 1,1875 | 145,513,461 | 44.3% | 49,940,488 | 1.0262 | | | |
| 27 | 11/14/2018 | PA American Water | Lebanon | Lebanon | Water Distribution and Treatment | 22,500,000 | 21,760,000 | 2,327 | | Paid | 9,354.84 | 9,355 | Herbert Rowland & Grubb, Inc. (H&G) | 19,119,906 | 71.1% | 14,443,440 | 1,9689 | 51,816,158 | 26.1% | 21,921,811 | 0.9092 | | | |
| 28 | | PA American Water | Lebanon | Lebanon | Wastewater Collection | 9,750,000 | 8,640,000 | 998 | | Paid | 8,617.23 | 8,617 | Herbert Rowland & Grubb, Inc. (H&G) | 7,480,621 | 81.9% | 6,128,876 | 1,481 | 10,642,183 | 60.0% | 6,512,687 | 1.0277 | | | |
| 29 | 5/28/2018 | PA American Water | Frederick | Frederick | Collection and Treatment | 96,000,000 | 96,000,000 | 9,000 | | Paid | 10,666.67 | 10,667 | Truman's Farming | 68,404,341 | 58.6% | 40,057,634 | 2,2965 | 129,649,218 | 67.5% | 69,549,419 | 1.1640 | | | |
| 30 | 10/29/2018 | Apur PA | Juniata | Montgomery | Wastewater Collection and Treatment | 23,000,000 | 21,000,000 | 4,950 | | Paid | 4,242.42 | | Carroll Engineering Corporation | 16,246,828 | 51.7% | 8,407,007 | 2,4978 | 40,710,233 | 38.4% | 27,461,156 | 0.7647 | | | |
| 31 | 9/30/2018 | PA American Water | Lebanon | Lebanon | Collection and Treatment | 17,540,000 | 17,140,000 | 2,006 | | Paid | 8,541.14 | | Truman's Farming | 23,028,577 | 57.4% | 13,070,455 | 1,4548 | 2,947 | 55,919,558 | 52.2% | 29,015,815 | 0.8452 | | |

Notes:
1. Final Purchase Price reflects the agreed upon purchase price achieved in settled acquisition agreements.

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania
Wastewater System

Appraisal Work Papers
As of December 17, 2019

Cost 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: weinertj@auswest.net

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

Wastewater System
Appraisal Work Papers
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Cost Approach
Replacement Cost New

AUS Consultants
Suite 201
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**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

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) |
| Input | Input | Input | OC \$s | Input | Calculation | RCN \$s | COR \$s / RCN \$s | COR \$s |
| Eng Assmnt | AUS Input | Pennoni Associates, Inc.'s Valley Wastewater Engineers Assessment | 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 - Original Basin | 3,368 | USBLS1 | 5.86 | 19,749 | 1.00 | 19,749 |
| 353.30 | 353.30 | Land & Land Rights - Pumping | 3 | USBLS1 | 1.84 | 6 | 1.00 | 6 |
| 354.30 | 354.30 | Structures & Improvements - Pumping | 1,712,310 | HWW-18 | 1.66 | 2,843,619 | 1.00 | 2,843,619 |
| 355.30 | 355.30 | Generating Equipment - Pumping | 21,547 | USBLS4 | 1.71 | 36,781 | 1.00 | 36,781 |
| 360.21 | 360.21 | Collection Sewers - Force - Mains | 1,187,519 | HWW-144 | 1.67 | 1,986,812 | 1.00 | 1,986,812 |
| 360.23 | 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 20,733 | HWW-145 | 1.22 | 25,356 | 1.00 | 25,356 |
| 361.21 | 361.21 | Collection Sewers - Gravity - Mains | 6,263,231 | HWW-144 | 2.87 | 17,984,560 | 1.00 | 17,984,560 |
| 361.22 | 361.22 | Collection Sewers - Gravity - Mains Relining | 52,870 | HWW-144 | 1.11 | 58,580 | 1.00 | 58,580 |
| 361.23 | 361.23 | Collection Sewers - Gravity - Manholes | 2,183,510 | HWW-145 | 2.08 | 4,533,510 | 1.00 | 4,533,510 |
| 363.20 | 363.20 | Service Laterals | 1,934,160 | HWW-139 | 2.17 | 4,198,363 | 1.00 | 4,198,363 |
| 365.20 | 365.20 | Flow Measuring Installations Meter Pits | 9,859 | HWW-140 | 4.25 | 41,901 | 1.00 | 41,901 |
| Grand Total | Grand Total | Grand Total | 13,389,110 | | 2.37 | 31,729,237 | 1.00 | 31,729,237 |

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Replacement Cost New (RCN)

| 1 | 2 | 3 | 4 | 5 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|----------------------------|------------|---|----------------|-----------------------------|------------------|-------------------|------------------------------------|---|-----------------|-----------------------------|---|----------------------------|
| (1) | (2) | (3) | (4) | (5) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
| Account | Account | Asset Description | Year installed | Effective Installation Year | 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) |
| Input | Input | Input | Input | Input | Input | Input | Input | Input | Calculation | Calculation | Input | Calculation |
| Eng Assmnt | AUS Input | Pennoni Associates, Inc.'s Valley Wastewater Engineers Assessment | 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 | |
| Beacon Hill | | | | | | | | | | | | |
| 361.21 | 361.21 | 8" SDR 35 7743 LF | 1994 | 1994 | 200,484 | HWW-144 | 264.7 | 616.2 | 2.328 | 466,727 | 1.000 | 466,727 |
| 361.23 | 361.23 | Doghouse Manholes 2 EA | 1994 | 1994 | 7,711 | HWW-145 | 290.8 | 561.9 | 1.932 | 14,898 | 1.000 | 14,898 |
| 361.23 | 361.23 | Drop Manholes 2 EA | 1994 | 1994 | 8,410 | HWW-145 | 290.8 | 561.9 | 1.932 | 16,248 | 1.000 | 16,248 |
| 361.23 | 361.23 | Manholes 42 EA | 1994 | 1994 | 116,127 | HWW-145 | 290.8 | 561.9 | 1.932 | 224,357 | 1.000 | 224,357 |
| 363.2 | 363.2 | 4" PVC Laterals 4131 LF | 1994 | 1994 | 92,318 | HWW-139 | 300 | 706 | 2.353 | 217,224 | 1.000 | 217,224 |
| Country Club Valley | | | | | | | | | | | | |
| 361.21 | 361.21 | 10" DIP 123.039446366782 LF | 1990 | 1990 | 4,677 | HWW-144 | 268.4 | 616.2 | 2.296 | 10,739 | 1.000 | 10,739 |
| 361.21 | 361.21 | 10" SDR 35 1844 LF | 1990 | 1990 | 66,138 | HWW-144 | 268.4 | 616.2 | 2.296 | 151,853 | 1.000 | 151,853 |
| 361.21 | 361.21 | 6" SDR 35 207 LF | 1990 | 1990 | 4,606 | HWW-144 | 268.4 | 616.2 | 2.296 | 10,575 | 1.000 | 10,575 |
| 361.21 | 361.21 | 8" SDR 35 10543 LF | 1990 | 1990 | 244,898 | HWW-144 | 268.4 | 616.2 | 2.296 | 562,285 | 1.000 | 562,285 |
| 361.23 | 361.23 | Manholes 68 EA | 1990 | 1990 | 126,718 | HWW-145 | 263 | 561.9 | 2.137 | 270,796 | 1.000 | 270,796 |
| 363.2 | 363.2 | 4" PVC Laterals 5492 LF | 1990 | 1990 | 99,644 | HWW-139 | 262 | 706 | 2.695 | 268,540 | 1.000 | 268,540 |
| Country Ridge | | | | | | | | | | | | |
| 360.21 | 360.21 | 4" SDR 35 Force Main 1956 LF | 1990 | 1990 | 24,101 | HWW-144 | 268.4 | 616.2 | 2.296 | 55,335 | 1.000 | 55,335 |
| 361.21 | 361.21 | 8" SDR 35 7873 LF | 1990 | 1990 | 170,749 | HWW-144 | 268.4 | 616.2 | 2.296 | 392,039 | 1.000 | 392,039 |
| 354.3 | 354.3 | Country Ridge PS - Electrical Work 0 | 1990 | 1990 | 13,819 | HWW-18 | 271 | 719 | 2.653 | 36,661 | 1.000 | 36,661 |
| 355.3 | 355.3 | Country Ridge PS - Generator/Propane 0 | 1990 | 1990 | 21,547 | USBLS4 | 127.5 | 217.6 | 1.707 | 36,781 | 1.000 | 36,781 |
| 354.3 | 354.3 | Country Ridge PS - Paving 0 | 1990 | 1990 | 2,814 | HWW-18 | 271 | 719 | 2.653 | 7,466 | 1.000 | 7,466 |
| 354.3 | 354.3 | Country Ridge PS - Pump St. & Valve 0 | 1990 | 1990 | 50,881 | HWW-18 | 271 | 719 | 2.653 | 134,987 | 1.000 | 134,987 |
| 353.3 | 353.3 | Country Ridge PS Property - Parcel ID# 28-9-82.5 0 | 1990 | 1990 | 1 | USBLS1 | 131 | 258 | 1.969 | 2 | 1.000 | 2 |
| 361.23 | 361.23 | Manholes 38 EA | 1990 | 1990 | 53,198 | HWW-145 | 263 | 561.9 | 2.137 | 113,683 | 1.000 | 113,683 |
| 363.2 | 363.2 | 4" PVC Laterals 1856 LF | 1990 | 1990 | 17,120 | HWW-139 | 262 | 706 | 2.695 | 46,137 | 1.000 | 46,137 |
| Hillview Phase 1 | | | | | | | | | | | | |
| 363.2 | 363.2 | 1-1/2" PVC SCH-40 Laterals 700 LF | 2004 | 2004 | 21,694 | HWW-139 | 388.3 | 706 | 1.818 | 39,439 | 1.000 | 39,439 |
| 360.21 | 360.21 | 4" SDR 21 Force Main 1200 LF | 2004 | 2004 | 27,280 | HWW-144 | 362.6 | 616.2 | 1.699 | 46,349 | 1.000 | 46,349 |
| 361.21 | 361.21 | 8" SDR 35 11299 LF | 2004 | 2004 | 588,875 | HWW-144 | 362.6 | 616.2 | 1.699 | 1,000,499 | 1.000 | 1,000,499 |
| 361.23 | 361.23 | Drop Manholes 7 EA | 2004 | 2004 | 36,273 | HWW-145 | 375.6 | 561.9 | 1.496 | 54,264 | 1.000 | 54,264 |
| 361.21 | 361.21 | Isolation Valves 22 EA | 2004 | 2004 | 19,248 | HWW-144 | 362.6 | 616.2 | 1.699 | 32,702 | 1.000 | 32,702 |
| 361.23 | 361.23 | Manholes 63 EA | 2004 | 2004 | 259,159 | HWW-145 | 375.6 | 561.9 | 1.496 | 387,702 | 1.000 | 387,702 |
| 363.2 | 363.2 | 6" PVC Laterals 8151 LF | 2004 | 2004 | 337,063 | HWW-139 | 388.3 | 706 | 1.818 | 612,781 | 1.000 | 612,781 |
| 360.21 | 360.21 | 2" SDR 21 Force Main 550 LF | 2004 | 2004 | 17,482 | HWW-144 | 362.6 | 616.2 | 1.699 | 29,702 | 1.000 | 29,702 |
| Hillview Phase 2 | | | | | | | | | | | | |

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Replacement Cost New (RCN)

| 1 | 2 | 3 | 4 | 5 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|----------------------------------|------------|---|----------------|-----------------------------|------------------|-------------------|------------------------------------|---|-----------------|-----------------------------|---|----------------------------|
| (1) | (2) | (3) | (4) | (5) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
| Account | Account | Asset Description | Year Installed | Effective Installation Year | 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) |
| Input | Input | Input | Input | Input | Input | Input | Input | Input | Calculation | Calculation | Input | Calculation |
| Eng Assmnt | AUS Input | Pennoni Associates, Inc.'s Valley Wastewater Engineers Assessment | Eng Assmnt | AUS Input | Eng Assmnt | AUS Input | Cost Indices Lookup Cost(10) & (5) | Cost Indices Lookup Cost(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 | COR | |
| 360.21 | 360.21 | 4" SDR 21 Force Main 1440 LF | 2005 | 2005 | 37,753 | HW-144 | 393.8 | 616.2 | 1.565 | 59,083 | 1.000 | 59,083 |
| 361.21 | 361.21 | 8" SDR 35 12810 LF | 2005 | 2005 | 606,661 | HW-144 | 393.8 | 616.2 | 1.565 | 952,555 | 1.000 | 952,555 |
| 361.23 | 361.23 | Drop Manholes 1 EA | 2005 | 2005 | 8,970 | HW-145 | 398.8 | 561.9 | 1.409 | 12,638 | 1.000 | 12,638 |
| 354.3 | 354.3 | Hillview PS 0 | 2005 | 2005 | 392,983 | HW-18 | 448 | 719 | 1.605 | 630,738 | 1.000 | 630,738 |
| 361.23 | 361.23 | Manholes 76 EA | 2005 | 2005 | 351,530 | HW-145 | 398.8 | 561.9 | 1.409 | 495,306 | 1.000 | 495,306 |
| 363.2 | 363.2 | 6" PVC Laterals 11895 LF | 2005 | 2005 | 519,048 | HW-139 | 409.8 | 706 | 1.723 | 894,319 | 1.000 | 894,319 |
| Highlands Corp. Center | | | | | | | | | | | | |
| 360.21 | 360.21 | 3" PVC Force Main 1895 LF | 1988 | 1988 | 51,350 | HW-144 | 251.2 | 616.2 | 2.453 | 125,962 | 1.000 | 125,962 |
| 361.21 | 361.21 | 8" SDR 35 8030 LF | 1988 | 1988 | 665,010 | HW-144 | 251.2 | 616.2 | 2.453 | 1,631,268 | 1.000 | 1,631,268 |
| 361.23 | 361.23 | Manholes 34 EA | 1988 | 1988 | 54,844 | HW-145 | 260.6 | 561.9 | 2.156 | 118,244 | 1.000 | 118,244 |
| 354.3 | 354.3 | Highlands Corp. Center PS#1 0 | 1988 | 1988 | 48,199 | HW-18 | 251 | 719 | 2.865 | 138,091 | 1.000 | 138,091 |
| 354.3 | 354.3 | Highlands Corp. Center PS#1 - Site Improvements 0 | 1988 | 1988 | 25,104 | HW-18 | 251 | 719 | 2.865 | 71,922 | 1.000 | 71,922 |
| 353.3 | 353.3 | Highlands Corp. Center PS#1 Property- Parcel ID# 38-2-387.1 0 | 1988 | 1988 | 1 | USBLS1 | 118 | 258 | 2.186 | 2 | 1.000 | 2 |
| Lincoln Highway Extension | | | | | | | | | | | | |
| 361.21 | 361.21 | 8" DIP 45 LF | 1990 | 1990 | 1,366 | HW-144 | 268.4 | 616.2 | 2.296 | 3,136 | 1.000 | 3,136 |
| 361.21 | 361.21 | 8" VCP 4431 LF | 1990 | 1990 | 111,384 | HW-144 | 268.4 | 616.2 | 2.296 | 255,737 | 1.000 | 255,737 |
| 361.23 | 361.23 | Manholes 18 EA | 1990 | 1990 | 24,081 | HW-145 | 263 | 561.9 | 2.137 | 51,461 | 1.000 | 51,461 |
| London Tract | | | | | | | | | | | | |
| 361.21 | 361.21 | 8" SDR 35 6 LF | 2008 | 2008 | 299 | HW-144 | 508 | 616.2 | 1.213 | 362 | 1.000 | 362 |
| 360.21 | 360.21 | 2" SDR 21 Force Main 865 LF | 2008 | 2008 | 21,521 | HW-144 | 508 | 616.2 | 1.213 | 26,105 | 1.000 | 26,105 |
| 363.2 | 363.2 | 1.5" SDR 21 Laterals 532 LF | 2008 | 2008 | 10,589 | HW-139 | 514.3 | 706 | 1.373 | 14,538 | 1.000 | 14,538 |
| 360.23 | 360.23 | Force Main Cleanout & Tie In Manhole 4 EA | 2008 | 2008 | 20,733 | HW-145 | 459.3 | 561.9 | 1.223 | 25,356 | 1.000 | 25,356 |
| 360.21 | 360.21 | Curb Boxes and Valves 14 EA | 2008 | 2008 | 11,610 | HW-144 | 508 | 616.2 | 1.213 | 14,084 | 1.000 | 14,084 |
| Meadowbrook | | | | | | | | | | | | |
| 361.21 | 361.21 | 8" SDR 35 6219 LF | 2003 | 2003 | 180,457 | HW-144 | 341 | 616.2 | 1.807 | 326,086 | 1.000 | 326,086 |
| 361.23 | 361.23 | Manholes 32 EA | 2003 | 2003 | 93,300 | HW-145 | 377.9 | 561.9 | 1.487 | 138,738 | 1.000 | 138,738 |
| 363.2 | 363.2 | 6" PVC Laterals 1320 LF | 2003 | 2003 | 76,253 | HW-139 | 367.5 | 706 | 1.921 | 146,482 | 1.000 | 146,482 |
| 361.21 | 361.21 | Stream Crossing 1 EA | 2003 | 2003 | 8,624 | HW-144 | 341 | 616.2 | 1.807 | 15,583 | 1.000 | 15,583 |
| Oakcrest Phase 1 | | | | | | | | | | | | |
| 361.21 | 361.21 | 8" SDR 35 7007 LF | 2005 | 2005 | 186,163 | HW-144 | 393.8 | 616.2 | 1.565 | 291,345 | 1.000 | 291,345 |
| 361.23 | 361.23 | Manholes 39 EA | 2005 | 2005 | 121,208 | HW-145 | 398.8 | 561.9 | 1.409 | 170,782 | 1.000 | 170,782 |
| 363.2 | 363.2 | 6" PVC Laterals 3240 LF | 2005 | 2005 | 83,828 | HW-139 | 409.8 | 706 | 1.723 | 144,435 | 1.000 | 144,435 |
| Oakcrest Glencrest Rd | | | | | | | | | | | | |

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Replacement Cost New (RCN)

| 1 | 2 | 3 | 4 | 5 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|-------------------------|------------|--|----------------|-----------------------------|------------------|-------------------|------------------------------------|---|-----------------|-----------------------------|---|----------------------------|
| (1) | (2) | (3) | (4) | (5) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
| Account | Account | Asset Description | Year Installed | Effective Installation Year | 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) |
| Input | Input | Input | Input | Input | Input | Input | Input | Input | Calculation | Calculation | Input | Calculation |
| Eng Assmnt | AUS Input | Pennoni Associates, Inc.'s Valley Wastewater Engineers Assessment | Eng Assmnt | AUS Input | Eng Assmnt | AUS Input | Cost Indices Lookup Code(10) & (5) | Cost Indices Lookup Code(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 | |
| 361.21 | 361.21 | 8" SDR 35 1289 LF | 2005 | 2005 | 96,471 | HW-144 | 393.8 | 616.2 | 1.565 | 150,977 | 1.000 | 150,977 |
| 361.23 | 361.23 | Manholes 8 EA | 2005 | 2005 | 44,252 | HW-145 | 398.8 | 561.9 | 1.409 | 82,351 | 1.000 | 82,351 |
| 360.21 | 360.21 | 2" Force Main 1030 LF | 2005 | 2005 | 47,398 | HW-144 | 393.8 | 616.2 | 1.565 | 74,178 | 1.000 | 74,178 |
| 360.21 | 360.21 | 1.5" Force Main 365 LF | 2005 | 2005 | 14,461 | HW-144 | 393.8 | 616.2 | 1.565 | 22,632 | 1.000 | 22,632 |
| 363.2 | 363.2 | 6" PVC Laterals 105 LF | 2005 | 2005 | 14,357 | HW-139 | 409.8 | 706 | 1.723 | 24,737 | 1.000 | 24,737 |
| Oakcrest Phase 2 | | | | | | | | | | | | |
| 361.21 | 361.21 | 8" SDR 35 2416 LF | 2005 | 2005 | 90,912 | HW-144 | 393.8 | 616.2 | 1.565 | 142,278 | 1.000 | 142,278 |
| 361.23 | 361.23 | Manholes 16 EA | 2005 | 2005 | 56,688 | HW-145 | 398.8 | 561.9 | 1.409 | 79,874 | 1.000 | 79,874 |
| 363.2 | 363.2 | 6" PVC Laterals 1860 LF | 2005 | 2005 | 59,933 | HW-139 | 409.8 | 706 | 1.723 | 103,265 | 1.000 | 103,265 |
| Hayti | | | | | | | | | | | | |
| 361.21 | 361.21 | 10" Asbestos Cement 6933 LF | 1972 | 1972 | 135,570 | HW-144 | 97.5 | 616.2 | 6.320 | 856,800 | 1.000 | 856,800 |
| 361.21 | 361.21 | 15" Asbestos Cement 106 LF | 1972 | 1972 | 2,902 | HW-144 | 97.5 | 616.2 | 6.320 | 18,340 | 1.000 | 18,340 |
| 361.21 | 361.21 | 8" Asbestos Cement 26704 LF | 1972 | 1972 | 417,741 | HW-144 | 97.5 | 616.2 | 6.320 | 2,640,126 | 1.000 | 2,640,126 |
| 361.23 | 361.23 | Manholes 154 EA | 1972 | 1972 | 95,112 | HW-145 | 94.6 | 561.9 | 5.940 | 564,965 | 1.000 | 564,965 |
| 361.21 | 361.21 | Hayti Basin Sewer Rehab 0 | 2010 | 2010 | 224,592 | HW-144 | 506.6 | 616.2 | 1.216 | 273,104 | 1.000 | 273,104 |
| 363.2 | 363.2 | 4" Laterals 5758.5 LF | 1972 | 1972 | 41,714 | HW-139 | 96 | 706 | 7.354 | 306,767 | 1.000 | 306,767 |
| Rock Run | | | | | | | | | | | | |
| 361.21 | 361.21 | 12" Asbestos Cement 742 LF | 1972 | 1972 | 17,411 | HW-144 | 97.5 | 616.2 | 6.320 | 110,038 | 1.000 | 110,038 |
| 361.21 | 361.21 | 8" Asbestos Cement 10094 LF | 1972 | 1972 | 157,905 | HW-144 | 97.5 | 616.2 | 6.320 | 997,957 | 1.000 | 997,957 |
| 361.23 | 361.23 | Manholes 61 EA | 1972 | 1972 | 38,170 | HW-145 | 94.6 | 561.9 | 5.940 | 226,729 | 1.000 | 226,729 |
| 360.21 | 360.21 | 6" CIP Force Main - Original Installation (partially abandoned) 917 LF | 1972 | 1972 | 17,931 | HW-144 | 97.5 | 616.2 | 6.320 | 113,326 | 1.000 | 113,326 |
| 360.21 | 360.21 | 10" HDPE Force Main - Replacement 1834 LF | 1997 | 1997 | 190,699 | HW-144 | 291.1 | 616.2 | 2.117 | 403,711 | 1.000 | 403,711 |
| 360.21 | 360.21 | 10" DIP Force Main - Replacement 350 LF | 2003 | 2003 | 18,821 | HW-144 | 341 | 616.2 | 1.807 | 34,009 | 1.000 | 34,009 |
| 360.21 | 360.21 | Rock Run PS Replacement - 10" DIP Force Main 724 LF | 2004 | 2004 | 255,730 | HW-144 | 362.6 | 616.2 | 1.699 | 434,485 | 1.000 | 434,485 |
| 354.3 | 354.3 | Rock Run PS Replacement - Structural 0 | 2004 | 2004 | 310,397 | HW-18 | 420.8 | 719 | 1.709 | 530,468 | 1.000 | 530,468 |
| 354.3 | 354.3 | Rock Run PS Replacement - Mechanical 0 | 2004 | 2004 | 357,873 | HW-18 | 420.8 | 719 | 1.709 | 611,606 | 1.000 | 611,606 |
| 353.3 | 353.3 | Rock Run PS Property - Parcel ID# 38-2M-126 & 38-2M-126.1 0 | 2004 | 2004 | 1 | USBLS1 | 189 | 258 | 1.365 | 1 | 1.000 | 1 |
| 363.2 | 363.2 | 4" Laterals 2425.5 LF | 1972 | 1972 | 17,570 | HW-139 | 96 | 706 | 7.354 | 129,211 | 1.000 | 129,211 |
| Westwood | | | | | | | | | | | | |
| 361.21 | 361.21 | 15" Asbestos Cement 5991 LF | 1972 | 1972 | 164,009 | HW-144 | 97.5 | 616.2 | 6.320 | 1,036,539 | 1.000 | 1,036,539 |
| 361.21 | 361.21 | 18" Asbestos Cement 62 LF | 1972 | 1972 | 1,940 | HW-144 | 97.5 | 616.2 | 6.320 | 12,259 | 1.000 | 12,259 |
| 361.21 | 361.21 | 8" Asbestos Cement 32366 LF | 1972 | 1972 | 506,314 | HW-144 | 97.5 | 616.2 | 6.320 | 3,199,907 | 1.000 | 3,199,907 |

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Replacement Cost New (RCN)

| (1) | (2) | (3) | (4) | (5) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
|---------------------------|------------|---|----------------|-----------------------------|------------------|-------------------|-----------------------------------|--|-----------------|-----------------------------|---|----------------------------|
| Account | Account | Asset Description | Year Installed | Effective Installation Year | Original Cost | Costing Parameter | Placement Date | Appraisal Date | Cost Translator | Reproduction Cost New (RCN) | Reproduction Cost New (RCN) to Replacement Cost New (COR) | Replacement Cost New (COR) |
| Input | Input | Input | Input | Input | Input | Input | Input | Input | Calculation | Calculation | Input | Calculation |
| Eng Assmnt | AUS Input | Pennoni Associates, Inc.'s Valley Wastewater Engineers Assessment | Eng Assmnt | AUS Input | Eng Assmnt | AUS Input | Cost Indices Lookup Col(10) & (5) | Cost Indices Lookup Col(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 | |
| 361.23 | 361.23 | Manholes 172 EA | 1972 | 1972 | 107,627 | HW-145 | 94.6 | 561.9 | 5.940 | 639,302 | 1.000 | 639,302 |
| 363.2 | 363.2 | 4" Laterals 7276.5 LF | 1972 | 1972 | 52,711 | HW-139 | 96 | 706 | 7.354 | 387,634 | 1.000 | 387,634 |
| 361.21 | 361.21 | Westwood Basin Sewer Rehab - Excavated work 0 | 2013 | 2013 | 88,050 | HW-144 | 551.7 | 616.2 | 1.117 | 98,352 | 1.000 | 98,352 |
| 361.22 | 361.22 | Westwood Basin Sewer Rehab - Trenchless work 0 | 2014 | 2014 | 52,870 | HW-144 | 556 | 616.2 | 1.108 | 58,580 | 1.000 | 58,580 |
| Round Hill | | | | | | | | | | | | |
| 360.21 | 360.21 | 2" DI Force Main 1230 LF | 2008 | 2008 | 44,451 | HW-144 | 508 | 616.2 | 1.213 | 53,919 | 1.000 | 53,919 |
| 360.21 | 360.21 | 4" DI Force Main 905 LF | 2008 | 2008 | 23,863 | HW-144 | 508 | 616.2 | 1.213 | 28,946 | 1.000 | 28,946 |
| 363.2 | 363.2 | 6" PVC Laterals 2512.5 LF | 2008 | 2008 | 168,375 | HW-139 | 514.3 | 706 | 1.373 | 231,180 | 1.000 | 231,180 |
| 361.21 | 361.21 | 8" SDR 35 3809 LF | 2008 | 2008 | 111,120 | HW-144 | 508 | 616.2 | 1.213 | 134,789 | 1.000 | 134,789 |
| 361.23 | 361.23 | Manholes 17 EA | 2008 | 2008 | 66,471 | HW-145 | 459.3 | 561.9 | 1.223 | 81,294 | 1.000 | 81,294 |
| 354.3 | 354.3 | Roud Hill PS#1 & PS#2 - Control Building Installation 0 | 2008 | 2008 | 106,534 | HW-18 | 538.3 | 719 | 1.336 | 142,329 | 1.000 | 142,329 |
| 354.3 | 354.3 | Roud Hill PS#1 & PS#2 - Excavation & Site Work 0 | 2008 | 2008 | 123,355 | HW-18 | 538.3 | 719 | 1.336 | 164,802 | 1.000 | 164,802 |
| 354.3 | 354.3 | Roud Hill PS#1 & PS#2 - Mechanical Equipment Installed 0 | 2008 | 2008 | 95,320 | HW-18 | 538.3 | 719 | 1.336 | 127,347 | 1.000 | 127,347 |
| 354.3 | 354.3 | Roud Hill PS#1 & PS#2 - On-Site Electrical Work 0 | 2008 | 2008 | 140,176 | HW-18 | 538.3 | 719 | 1.336 | 187,275 | 1.000 | 187,275 |
| 354.3 | 354.3 | Roud Hill PS#1 & PS#2 - Precast Concrete 0 | 2008 | 2008 | 28,035 | HW-18 | 538.3 | 719 | 1.336 | 37,455 | 1.000 | 37,455 |
| 354.3 | 354.3 | Roud Hill PS#1 & PS#2 - Structures Installed 0 | 2008 | 2008 | 16,821 | HW-18 | 538.3 | 719 | 1.336 | 22,473 | 1.000 | 22,473 |
| 361.21 | 361.21 | 12" SDR 35 196 LF | 2008 | 2008 | 52,486 | HW-144 | 508 | 616.2 | 1.213 | 63,665 | 1.000 | 63,665 |
| Terry Funeral Home | | | | | | | | | | | | |
| 363.2 | 363.2 | 4" PVC Laterals 35 LF | 2005 | 2005 | 5,898 | HW-139 | 409.8 | 706 | 1.723 | 9,818 | 1.000 | 9,818 |
| Timberlane | | | | | | | | | | | | |
| 361.23 | 361.23 | Manholes 5 EA | 2005 | 2005 | 16,388 | HW-145 | 398.8 | 561.9 | 1.409 | 23,090 | 1.000 | 23,090 |
| 361.21 | 361.21 | 8" SDR 35 890 LF | 2005 | 2005 | 37,841 | HW-144 | 393.8 | 616.2 | 1.565 | 59,221 | 1.000 | 59,221 |
| 363.2 | 363.2 | 4" PVC Laterals 1425 LF | 2005 | 2005 | 61,082 | HW-139 | 409.8 | 706 | 1.723 | 105,244 | 1.000 | 105,244 |
| Valley Crossing | | | | | | | | | | | | |
| 361.21 | 361.21 | 8" SDR 35 7950 LF | 1993 | 1993 | 173,629 | HW-144 | 284.5 | 616.2 | 2.330 | 404,556 | 1.000 | 404,556 |
| 361.23 | 361.23 | Drop Manholes 1 EA | 1993 | 1993 | 3,779 | HW-145 | 282.2 | 561.9 | 1.991 | 7,524 | 1.000 | 7,524 |
| 361.23 | 361.23 | Manholes 45 EA | 1993 | 1993 | 96,791 | HW-145 | 282.2 | 561.9 | 1.991 | 192,710 | 1.000 | 192,710 |
| 363.2 | 363.2 | 4" PVC Laterals 4340 LF | 1993 | 1993 | 76,217 | HW-139 | 292 | 706 | 2.418 | 184,292 | 1.000 | 184,292 |
| Valley Farm | | | | | | | | | | | | |
| 360.21 | 360.21 | 4" Insertion Valve 1 EA | 2007 | 2007 | 24,269 | HW-144 | 465.8 | 616.2 | 1.323 | 32,109 | 1.000 | 32,109 |
| 360.21 | 360.21 | 4" SDR 21 Force Main 340 LF | 2007 | 2007 | 16,180 | HW-144 | 465.8 | 616.2 | 1.323 | 21,406 | 1.000 | 21,406 |
| 361.21 | 361.21 | 8" SDR 35 4600 LF | 2007 | 2007 | 175,368 | HW-144 | 465.8 | 616.2 | 1.323 | 232,039 | 1.000 | 232,039 |
| 361.23 | 361.23 | Manholes 31 EA | 2007 | 2007 | 132,939 | HW-145 | 443.3 | 561.9 | 1.268 | 168,566 | 1.000 | 168,566 |

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Replacement Cost New (RCN)

| 1 | 2 | 3 | 4 | 5 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|------------------------------|------------|---|----------------|-----------------------------|------------------|-------------------|-----------------------------------|--|-----------------|-----------------------------|---|----------------------------|
| (1) | (2) | (3) | (4) | (5) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
| Account | Account | Asset Description | Year Installed | Effective Installation Year | 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) |
| Input | Input | Input | Input | Input | Input | Input | Input | Input | Calculation | Calculation | Input | Calculation |
| Eng Assmnt | AUS Input | Pennoni Associates, Inc.'s Valley Wastewater Engineers Assessment | Eng Assmnt | AUS Input | Eng Assmnt | AUS Input | Cost Indices Lookup Col(10) & (5) | Cost Indices Lookup Col(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 | |
| 363.2 | 363.2 | 6" PVC Laterals 1500 LF | 2007 | 2007 | 66,077 | HWW-139 | 485.3 | 706 | 1.455 | 96,142 | 1.000 | 96,142 |
| Valley Springs | | | | | | | | | | | | |
| 361.21 | 361.21 | 8" SDR 35 11217 LF | 1988 | 1988 | 191,452 | HWW-144 | 251.2 | 616.2 | 2.453 | 469,631 | 1.000 | 469,631 |
| 361.21 | 361.21 | 10" SDR 35 5200 LF | 1988 | 1988 | 246,961 | HWW-144 | 251.2 | 616.2 | 2.453 | 605,796 | 1.000 | 605,796 |
| 361.23 | 361.23 | Drop Manholes 11 EA | 1988 | 1988 | 23,972 | HWW-145 | 260.6 | 561.9 | 2.156 | 51,684 | 1.000 | 51,684 |
| 361.23 | 361.23 | Manholes 58 EA | 1988 | 1988 | 78,280 | HWW-145 | 260.6 | 561.9 | 2.156 | 168,772 | 1.000 | 168,772 |
| 363.2 | 363.2 | 4" PVC Laterals 3780 LF | 1988 | 1988 | 53,815 | HWW-139 | 245 | 706 | 2.882 | 155,095 | 1.000 | 155,095 |
| Valley View Business Park | | | | | | | | | | | | |
| 360.21 | 360.21 | 2" & 6" Air Release Chamber 4 EA | 2008 | 2008 | 29,454 | HWW-144 | 508 | 616.2 | 1.213 | 35,727 | 1.000 | 35,727 |
| 360.21 | 360.21 | 2" SDR 21 Force Main 8185 LF | 2008 | 2008 | 132,915 | HWW-144 | 508 | 616.2 | 1.213 | 161,225 | 1.000 | 161,225 |
| 360.21 | 360.21 | 6" Air Release Chamber 1 EA | 2008 | 2008 | 4,326 | HWW-144 | 508 | 616.2 | 1.213 | 5,247 | 1.000 | 5,247 |
| 360.21 | 360.21 | 6" SDR 26 Force Main 6425 LF | 2008 | 2008 | 146,264 | HWW-144 | 508 | 616.2 | 1.213 | 177,418 | 1.000 | 177,418 |
| 361.21 | 361.21 | 8" SDR 35 1338 LF | 2008 | 2008 | 51,884 | HWW-144 | 508 | 616.2 | 1.213 | 62,935 | 1.000 | 62,935 |
| 361.23 | 361.23 | Manholes 7 EA | 2008 | 2008 | 18,224 | HWW-145 | 459.3 | 561.9 | 1.223 | 22,288 | 1.000 | 22,288 |
| Woodland Pointe | | | | | | | | | | | | |
| 361.21 | 361.21 | 8" SDR 35 1250 LF | 2008 | 2008 | 10,001 | HWW-144 | 508 | 616.2 | 1.213 | 12,131 | 1.000 | 12,131 |
| 361.23 | 361.23 | Manholes 5 EA | 2008 | 2008 | 62,575 | HWW-145 | 459.3 | 561.9 | 1.223 | 76,530 | 1.000 | 76,530 |
| 363.2 | 363.2 | 4" PVC Laterals 300 LF | 2008 | 2008 | 3,478 | HWW-139 | 514.3 | 706 | 1.373 | 4,776 | 1.000 | 4,776 |
| Round Hill - Robinson/Oaklyn | | | | | | | | | | | | |
| 363.2 | 363.2 | 6" PVC Laterals 350 LF | 2008 | 2008 | 55,577 | HWW-139 | 514.3 | 706 | 1.373 | 76,307 | 1.000 | 76,307 |
| 361.21 | 361.21 | 8" DIP 146 LF | 2008 | 2008 | 14,250 | HWW-144 | 508 | 616.2 | 1.213 | 17,286 | 1.000 | 17,286 |
| 361.21 | 361.21 | 8" SDR 35 3312 LF | 2008 | 2008 | 232,762 | HWW-144 | 508 | 616.2 | 1.213 | 282,341 | 1.000 | 282,341 |
| 361.23 | 361.23 | Manholes 14 EA | 2008 | 2008 | 80,715 | HWW-145 | 459.3 | 561.9 | 1.223 | 98,715 | 1.000 | 98,715 |
| Spruce Street | | | | | | | | | | | | |
| 360.21 | 360.21 | 1.5" HDPE Force Main 450 LF | 2017 | 2017 | 29,660 | HWW-144 | 573.5 | 616.2 | 1.074 | 31,855 | 1.000 | 31,855 |
| Bulk Meter Pits | | | | | | | | | | | | |
| 365.2 | 365.2 | Charles Street Bulk Meter Pit 1 EA | 1970 | 1970 | 4,930 | HWW-140 | 108 | 459 | 4.250 | 20,950 | 1.000 | 20,950 |
| 365.2 | 365.2 | Valley Road Bulk Meter Pit 1 EA | 1970 | 1970 | 4,930 | HWW-140 | 108 | 459 | 4.250 | 20,950 | 1.000 | 20,950 |
| ROWS | | | | | | | | | | | | |
| 353.2 | 353.2 | ROWS - Original Basins 23 EA | 1973 | 1973 | 3,368 | USBS1 | 44 | 258 | 5.864 | 19,749 | 1.000 | 19,749 |
| Grand Total | | | | | 13,389,108 | | | | | 31,729,237 | | 31,729,237 |
| Check Total | | | | | 13,389,110 | | | | | | | |

1
Pennsylvania American Water Company
Wastewater Collection System
Investor-Owned Utility
December 17, 2019

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 - Original Basin | 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 | Structures & Improvements - Pumping | HW | W-1 | 8.00 | HWW-18 | 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 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | HW | W-1 | 45.00 | HWW-145 | 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 | 44.00 | HWW-144 | 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 |
| 365.20 | Flow Measuring Installations Meter Pits | HW | W-1 | 40.00 | HWW-140 | 1.00 |
| 364.40 | Flow Measuring Devices - WWTP | HW | W-1 | 40.00 | HWW-140 | 1.00 |

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

Wastewater System
Appraisal Work Papers
As of December 17, 2019

Cost Approach
Replacement Cost New less Depreciation

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

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Replacement Cost New less Depreciation (RCNLD)

| (18) | (19) | (21) | (22) | (23) | (24) | (28) | (29) | (30) | (31) |
|-------------|--|---|----------------------------|---------------------------------|---------------------------|-----------------------|-----------------------|-----------------|--|
| Account | Description | Age at December 17, 2019 Appraisal Date | Replacement Cost New (COR) | Retirement Dispersion lowa 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 | Pennoni Associates, Inc.'s Valley Wastewater Engineers Assessment | | Col (16) | AUS Input | AUS Input | | Col (21) + (28) | Col (28) / (29) | Col (22) * (30) |
| Account | Description | Age | RCN | lowa | NL | Rem Life | Total Life | Condition | CORLD |
| 353.20 | Land & Land Rights - Original Basin | 46.50 | 19,749 | ZNonDep | - | - | - | 1.00 | 19,749 |
| 353.30 | Land & Land Rights - Pumping | 26.76 | 6 | ZNonDep | - | - | - | 1.00 | 6 |
| 354.40 | Stuctures & Improvements - Pumping | 16.38 | 2,843,619 | R4.0 | 45.00 | 28.99 | 45.37 | 0.64 | 1,821,032 |
| 355.30 | Generating Equipment - Pumping | 29.50 | 36,781 | R3.0 | 35.00 | 10.11 | 39.61 | 0.26 | 9,388 |
| 360.21 | Collection Sewers - Force - Mains | 18.79 | 1,986,812 | R3.0 | 75.00 | 57.14 | 75.93 | 0.75 | 1,498,282 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 11.50 | 25,356 | R3.0 | 75.00 | 64.04 | 75.54 | 0.85 | 21,496 |
| 361.21 | Collection Sewers - Gravity - Mains | 34.90 | 17,984,560 | R2.5 | 80.00 | 49.57 | 84.48 | 0.59 | 10,631,978 |
| 361.22 | Collection Sewers - Gravity - Mains Relining | 5.50 | 58,580 | R2.5 | 60.00 | 54.94 | 60.44 | 0.91 | 53,249 |
| 361.23 | Collection Sewers - Gravity - Manholes | 28.68 | 4,533,510 | R2.5 | 80.00 | 54.71 | 83.39 | 0.66 | 2,995,110 |
| 363.20 | Service Laterals | 23.77 | 4,198,363 | R3.0 | 45.00 | 24.29 | 48.05 | 0.52 | 2,195,757 |
| 360.21 | Flow Measuring Installations Meter Pits | 49.50 | 41,901 | S2.0 | 30.00 | 4.50 | 54.00 | 0.15 | 6,285 |
| Grand Total | | 29.82 | 31,729,237 | | 71.71 | 45.48 | 75.27 | 0.61 | 19,252,333 |

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019

Replacement Cost New less Depreciation (RCNLD)

Table with columns (18) through (35) representing various financial and asset metrics. Rows include asset descriptions such as 'Westwood Basin Sewer Rehab', 'Force Mains', 'Manholes', and 'PVC Laterals' with associated values for age, cost, and depreciation.

| 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 |
|---|-----------------------------------|----------------|---|----------------------------|--------------------------------|---------------------------|-----------------|----------------|---|-----------------------|-----------------------|----------------|--|--------------------|------------------------------------|------------------------------------|--|
| Pennsylvania American Water Company Valley Township Wastewater System Wastewater Collection System Investor-Owned Utility As of December 17, 2019 | | | | | | | | | | | | | | | | | |
| 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 December 17, 2019 Appraisal Date | Replacement Cost New (COR) | Retirement Dispersion low-type | Normal Service Life (NSL) | Age as % of NSL | Iowa Lookup | Iowa Condition Percent of 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) |
| input | input | input | years | COR \$ | input | years | % of NSL | Lookup | % | years | years | % of COR | CORLD \$ | COR \$ * Years | COR \$ * Years | COR \$ * Years | COR \$ * Years |
| Eng Assmt | Eng Assmt | Eng Assmt | 2019 (20)+0 9 | Co (16) | AUS input | AUS input | Co (21) / (24) | Co (26) & (25) | Lookup: Lookup new Curves Life Tables @ co (26) | Co (24) * (27) | Co (21) * (28) | Co (28) / (28) | Co (22) * (28) | Co (22) * (21) | Co (22) * (28) | Co (22) * (28) | Co (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 |
| 361.21 | 8" SDR 35 3312 LF | 2008 | 11.50 | 282,341 | R2.5 | 80.0 | 14 | R2.5014 | 0.86951 | 69.56 | 81.06 | 85.812978% | 242,284.87 | 3,246.917 | 19,639.511 | 22,886.528 | 22,587.247 |
| 361.23 | Manholes 14 EA | 2008 | 11.50 | 98,715 | R2.5 | 80.0 | 14 | R2.5014 | 0.86951 | 69.56 | 81.06 | 85.812978% | 84,710.02 | 1,135.219 | 8,866.594 | 8,001.813 | 7,807.175 |
| 360.21 | 1 1/2" HDPE Force Main 450 LF | 2017 | 2.50 | 31,855 | R3.0 | 75.0 | 3 | R3.0003 | 0.97050 | 72.79 | 75.29 | 96.679506% | 30,797.52 | 79.638 | 2,318.745 | 2,398.383 | 2,389.145 |
| 365.2 | Charles Street Bulk Meter Pk 1 EA | 1970 | 49.50 | 20,950 | S2.0 | 30.0 | 165 | S2.0165 | 0.15000 | 4.50 | 54.00 | 15.000000% | 3,142.56 | 1,037.044 | 94.277 | 1,131.321 | 628.511 |
| 365.2 | Valley Road Bulk Meter Pk 1 EA | 1970 | 49.50 | 20,950 | S2.0 | 30.0 | 165 | S2.0165 | 0.15000 | 4.50 | 54.00 | 15.000000% | 3,142.56 | 1,037.044 | 94.277 | 1,131.321 | 628.511 |
| 353.2 | ROWs - Original Basins 23 EA | 1973 | 46.50 | 19,749 | ZNonDep | 0.0 | 0 | ZNonDep000 | 0.00000 | 0.00 | 0.00 | 100.000000% | 19,749.48 | 918.351 | - | - | - |
| | | | | | | | | | | | | | 19,252,333 | 946,137,920 | 1,442,943,146 | 2,388,162,587 | 2,275,306,571 |

\\aus-dc1\Shared\water industry\PA American - Valley\Valley Wastewater System Valuation as of 12-10-2019 - Created 7-2-2020

| | 9 | 10 | 11 | 12 | 13 |
|--------|---|-----------------------|------------------|---------------------|---------------------|
| | (4b) | (5) | (6a) | (6) | (6b) |
| | Normal Service Life | Economic Obsolescence | Tax Depreciation | Report Depreciation | |
| | years | % | Table | Life | |
| 353.20 | Land & Land Rights - Original Basin | | 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 | 45.00 | 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 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | | 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 | 45.00 | 0.00% MACRS 25.00 |
| 365.20 | Flow Measuring Installations Meter Pits | | S2.0 | 30.00 | 0.00% MACRS 25.00 |
| 364.40 | Flow Measuring Devices - WWTP | | S2.0 | 30.00 | 0.00% MACRS 25.00 |

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

**Wastewater System
Appraisal Work Papers
As of December 17, 2019**

Cost Approach

Replacement Cost New less Depreciation to Fair Market Value

**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**

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

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 - Original Basin | 19,749 | 0.00% | 19,749 |
| 353.30 | Land & Land Rights - Pumping | 6 | 0.00% | 6 |
| 354.30 | Stuctures & Improvements - Pumping | 1,821,032 | 0.00% | 1,821,032 |
| 355.30 | Generating Equipment - Pumping | 9,388 | 0.00% | 9,388 |
| 360.21 | Collection Sewers - Force - Mains | 1,498,282 | 0.00% | 1,498,282 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 21,496 | 0.00% | 21,496 |
| 361.21 | Collection Sewers - Gravity - Mains | 10,631,978 | 0.00% | 10,631,978 |
| 361.22 | Collection Sewers - Gravity - Mains Relining | 53,249 | 0.00% | 53,249 |
| 361.23 | Collection Sewers - Gravity - Manholes | 2,995,110 | 0.00% | 2,995,110 |
| 363.20 | Service Laterals | 2,195,757 | 0.00% | 2,195,757 |
| 365.20 | Flow Measuring Installations Meter Pits | 6,285 | 0.00% | 6,285 |
| Grand | | | | |
| Total | Grand Total | 19,252,333 | 0.00% | 19,252,333 |

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Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019

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 |
| 361.21 | 8" SDR 35 7743 LF | 1994 | 322,009.90 | 0.00% | 322,009.90 |
| 361.23 | Doghouse Manholes 2 EA | 1994 | 10,278.35 | 0.00% | 10,278.35 |
| 361.23 | Drop Manholes 2 EA | 1994 | 11,209.68 | 0.00% | 11,209.68 |
| 361.23 | Manholes 42 EA | 1994 | 154,790.83 | 0.00% | 154,790.83 |
| 363.2 | 4" PVC Laterals 4131 LF | 1994 | 99,743.34 | 0.00% | 99,743.34 |
| 361.21 | 10" DIP 123.039446366782 LF | 1990 | 6,914.02 | 0.00% | 6,914.02 |
| 361.21 | 10" SDR 35 1844 LF | 1990 | 97,770.40 | 0.00% | 97,770.40 |
| 361.21 | 6" SDR 35 207 LF | 1990 | 6,808.72 | 0.00% | 6,808.72 |
| 361.21 | 8" SDR 35 10543 LF | 1990 | 362,026.77 | 0.00% | 362,026.77 |
| 361.23 | Manholes 68 EA | 1990 | 174,351.78 | 0.00% | 174,351.78 |
| 363.2 | 4" PVC Laterals 5492 LF | 1990 | 103,602.90 | 0.00% | 103,602.90 |
| 360.21 | 4" SDR 35 Force Main 1956 LF | 1990 | 34,107.81 | 0.00% | 34,107.81 |
| 361.21 | 8" SDR 35 7873 LF | 1990 | 252,413.87 | 0.00% | 252,413.87 |
| 354.3 | Country Ridge PS - Electrical Wor | 1990 | 13,312.45 | 0.00% | 13,312.45 |
| 355.3 | Country Ridge PS - Generator/Pro | 1990 | 9,387.82 | 0.00% | 9,387.82 |
| 354.3 | Country Ridge PS - Paving 0 | 1990 | 2,711.07 | 0.00% | 2,711.07 |
| 354.3 | Country Ridge PS - Pump St. & Vi | 1990 | 49,017.17 | 0.00% | 49,017.17 |
| 353.3 | Country Ridge PS Property - Parc | 1990 | 1.97 | 0.00% | 1.97 |
| 361.23 | Manholes 38 EA | 1990 | 73,194.94 | 0.00% | 73,194.94 |
| 363.2 | 4" PVC Laterals 1856 LF | 1990 | 17,799.76 | 0.00% | 17,799.76 |
| 363.2 | 1-1/2" PVC SCH-40 Laterals 700 L | 2004 | 26,135.34 | 0.00% | 26,135.34 |
| 360.21 | 4" SDR 21 Force Main 1200 LF | 2004 | 36,801.67 | 0.00% | 36,801.67 |
| 361.21 | 8" SDR 35 11299 LF | 2004 | 810,033.07 | 0.00% | 810,033.07 |
| 361.23 | Drop Manholes 7 EA | 2004 | 43,933.68 | 0.00% | 43,933.68 |
| 361.21 | Isolation Valves 22 EA | 2004 | 26,476.87 | 0.00% | 26,476.87 |
| 361.23 | Manholes 63 EA | 2004 | 313,894.59 | 0.00% | 313,894.59 |
| 363.2 | 6" PVC Laterals 8151 LF | 2004 | 406,076.01 | 0.00% | 406,076.01 |
| 360.21 | 2" SDR 21 Force Main 550 LF | 2004 | 23,583.77 | 0.00% | 23,583.77 |

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Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019

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 | 4" SDR 21 Force Main 1440 LF | 2005 | 47,763.04 | 0.00% | 47,763.04 |
| 361.21 | 8" SDR 35 12810 LF | 2005 | 782,329.91 | 0.00% | 782,329.91 |
| 361.23 | Drop Manholes 1 EA | 2005 | 10,379.66 | 0.00% | 10,379.66 |
| 354.3 | Hillview PS 0 | 2005 | 428,489.28 | 0.00% | 428,489.28 |
| 361.23 | Manholes 76 EA | 2005 | 406,792.88 | 0.00% | 406,792.88 |
| 363.2 | 6" PVC Laterals 11895 LF | 2005 | 610,935.83 | 0.00% | 610,935.83 |
| 360.21 | 3" PVC Force Main 1895 LF | 1988 | 74,392.02 | 0.00% | 74,392.02 |
| 361.21 | 8" SDR 35 8030 LF | 1988 | 1,015,806.06 | 0.00% | 1,015,806.06 |
| 361.23 | Manholes 34 EA | 1988 | 73,631.68 | 0.00% | 73,631.68 |
| 354.3 | Highlands Corp. Center PS#1 0 | 1988 | 45,323.47 | 0.00% | 45,323.47 |
| 354.3 | Highlands Corp. Center PS#1 - Sil | 1988 | 23,605.98 | 0.00% | 23,605.98 |
| 353.3 | Highlands Corp. Center PS#1 Proj | 1988 | 2.19 | 0.00% | 2.19 |
| 361.21 | 8" DIP 45 LF | 1990 | 2,019.09 | 0.00% | 2,019.09 |
| 361.21 | 8" VCP 4431 LF | 1990 | 164,656.03 | 0.00% | 164,656.03 |
| 361.23 | Manholes 18 EA | 1990 | 33,133.07 | 0.00% | 33,133.07 |
| 361.21 | 8" SDR 35 6 LF | 2008 | 310.76 | 0.00% | 310.76 |
| 360.21 | 2" SDR 21 Force Main 885 LF | 2008 | 22,130.65 | 0.00% | 22,130.65 |
| 363.2 | 1.5" SDR 21 Laterals 532 LF | 2008 | 10,842.70 | 0.00% | 10,842.70 |
| 360.23 | Force Main Cleanout & Tie In Man | 2008 | 21,496.23 | 0.00% | 21,496.23 |
| 360.21 | Curb Boxes and Valves 14 EA | 2008 | 11,939.47 | 0.00% | 11,939.47 |
| 361.21 | 8" SDR 35 6219 LF | 2003 | 259,644.94 | 0.00% | 259,644.94 |
| 361.23 | Manholes 32 EA | 2003 | 110,469.30 | 0.00% | 110,469.30 |
| 363.2 | 6" PVC Laterals 1320 LF | 2003 | 93,640.88 | 0.00% | 93,640.88 |
| 361.21 | Stream Crossing 1 EA | 2003 | 12,407.95 | 0.00% | 12,407.95 |
| 361.21 | 8" SDR 35 7007 LF | 2005 | 239,280.63 | 0.00% | 239,280.63 |
| 361.23 | Manholes 39 EA | 2005 | 140,262.44 | 0.00% | 140,262.44 |
| 363.2 | 6" PVC Laterals 3240 LF | 2005 | 98,668.09 | 0.00% | 98,668.09 |

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Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019

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 |
| 361.21 | 8" SDR 35 1289 LF | 2005 | 123,996.76 | 0.00% | 123,996.76 |
| 361.23 | Manholes 8 EA | 2005 | 51,208.89 | 0.00% | 51,208.89 |
| 360.21 | 2" Force Main 1030 LF | 2005 | 59,965.70 | 0.00% | 59,965.70 |
| 360.21 | 1.5" Force Main 365 LF | 2005 | 18,295.44 | 0.00% | 18,295.44 |
| 363.2 | 6" PVC Laterals 105 LF | 2005 | 16,898.46 | 0.00% | 16,898.46 |
| 361.21 | 8" SDR 35 2416 LF | 2005 | 116,852.29 | 0.00% | 116,852.29 |
| 361.23 | Manholes 16 EA | 2005 | 65,600.30 | 0.00% | 65,600.30 |
| 363.2 | 6" PVC Laterals 1860 LF | 2005 | 70,543.43 | 0.00% | 70,543.43 |
| 361.21 | 10" Asbestos Cement 6933 LF | 1972 | 388,037.16 | 0.00% | 388,037.16 |
| 361.21 | 15" Asbestos Cement 106 LF | 1972 | 8,305.89 | 0.00% | 8,305.89 |
| 361.21 | 8" Asbestos Cement 26704 LF | 1972 | 1,195,689.52 | 0.00% | 1,195,689.52 |
| 361.23 | Manholes 154 EA | 1972 | 255,867.46 | 0.00% | 255,867.46 |
| 361.21 | Hayti Basin Sewer Rehab 0 | 2010 | 240,886.23 | 0.00% | 240,886.23 |
| 363.2 | 4" Laterals 5758.5 LF | 1972 | 46,015.07 | 0.00% | 46,015.07 |
| 361.21 | 12" Asbestos Cement 742 LF | 1972 | 49,835.32 | 0.00% | 49,835.32 |
| 361.21 | 8" Asbestos Cement 10094 LF | 1972 | 451,965.63 | 0.00% | 451,965.63 |
| 361.23 | Manholes 61 EA | 1972 | 102,683.65 | 0.00% | 102,683.65 |
| 360.21 | 6" CIP Force Main - Original Instal | 1972 | 46,105.71 | 0.00% | 46,105.71 |
| 360.21 | 10" HDPE Force Main - Replacem | 1997 | 284,143.75 | 0.00% | 284,143.75 |
| 360.21 | 10" DIP Force Main - Replacem | 2003 | 26,581.72 | 0.00% | 26,581.72 |
| 360.21 | Rock Run PS Replacement - 10" [| 2004 | 344,989.69 | 0.00% | 344,989.69 |
| 354.3 | Rock Run PS Replacement - Struc | 2004 | 349,121.50 | 0.00% | 349,121.50 |
| 354.3 | Rock Run PS Replacement - Mecl | 2004 | 402,521.22 | 0.00% | 402,521.22 |
| 353.3 | Rock Run PS Property - Parcel ID | 2004 | 1.37 | 0.00% | 1.37 |
| 363.2 | 4" Laterals 2425.5 LF | 1972 | 19,381.71 | 0.00% | 19,381.71 |
| 361.21 | 15" Asbestos Cement 5991 LF | 1972 | 469,439.33 | 0.00% | 469,439.33 |
| 361.21 | 18" Asbestos Cement 62 LF | 1972 | 5,552.18 | 0.00% | 5,552.18 |
| 361.21 | 8" Asbestos Cement 32366 LF | 1972 | 1,449,209.38 | 0.00% | 1,449,209.38 |

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Pennsylvania American Water Company
Valley Township Wastewater System
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As of December 17, 2019

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 |
| 361.23 | Manholes 172 EA | 1972 | 289,534.22 | 0.00% | 289,534.22 |
| 363.2 | 4" Laterals 7276.5 LF | 1972 | 58,145.12 | 0.00% | 58,145.12 |
| 361.21 | Westwood Basin Sewer Rehab - E | 2013 | 90,409.41 | 0.00% | 90,409.41 |
| 361.22 | Westwood Basin Sewer Rehab - T | 2014 | 53,249.22 | 0.00% | 53,249.22 |
| 360.21 | 2" DI Force Main 1230 LF | 2008 | 45,710.66 | 0.00% | 45,710.66 |
| 360.21 | 4" DI Force Main 905 LF | 2008 | 24,539.32 | 0.00% | 24,539.32 |
| 363.2 | 6" PVC Laterals 2512.5 LF | 2008 | 172,413.75 | 0.00% | 172,413.75 |
| 361.21 | 8" SDR 35 3809 LF | 2008 | 115,666.41 | 0.00% | 115,666.41 |
| 361.23 | Manholes 17 EA | 2008 | 69,760.85 | 0.00% | 69,760.85 |
| 354.3 | Roud Hill PS#1 & PS#2 - Control | 2008 | 105,842.44 | 0.00% | 105,842.44 |
| 354.3 | Roud Hill PS#1 & PS#2 - Excavati | 2008 | 122,554.40 | 0.00% | 122,554.40 |
| 354.3 | Roud Hill PS#1 & PS#2 - Mechani | 2008 | 94,701.13 | 0.00% | 94,701.13 |
| 354.3 | Roud Hill PS#1 & PS#2 - On-Site I | 2008 | 139,266.37 | 0.00% | 139,266.37 |
| 354.3 | Roud Hill PS#1 & PS#2 - Precast | 2008 | 27,853.27 | 0.00% | 27,853.27 |
| 354.3 | Roud Hill PS#1 & PS#2 - Structur | 2008 | 16,711.96 | 0.00% | 16,711.96 |
| 361.21 | 12" SDR 35 196 LF | 2008 | 54,633.22 | 0.00% | 54,633.22 |
| 363.2 | 4" PVC Laterals 35 LF | 2005 | 6,706.75 | 0.00% | 6,706.75 |
| 361.23 | Manholes 5 EA | 2005 | 18,964.02 | 0.00% | 18,964.02 |
| 361.21 | 8" SDR 35 890 LF | 2005 | 48,637.92 | 0.00% | 48,637.92 |
| 363.2 | 4" PVC Laterals 1425 LF | 2005 | 71,895.05 | 0.00% | 71,895.05 |
| 361.21 | 8" SDR 35 7950 LF | 1993 | 274,686.74 | 0.00% | 274,686.74 |
| 361.23 | Drop Manholes 1 EA | 1993 | 5,108.94 | 0.00% | 5,108.94 |
| 361.23 | Manholes 45 EA | 1993 | 130,846.83 | 0.00% | 130,846.83 |
| 363.2 | 4" PVC Laterals 4340 LF | 1993 | 81,346.26 | 0.00% | 81,346.26 |
| 360.21 | 4" Insertion Valve 1 EA | 2007 | 26,764.93 | 0.00% | 26,764.93 |
| 360.21 | 4" SDR 21 Force Main 340 LF | 2007 | 17,843.27 | 0.00% | 17,843.27 |
| 361.21 | 8" SDR 35 4600 LF | 2007 | 196,052.46 | 0.00% | 196,052.46 |
| 361.23 | Manholes 31 EA | 2007 | 142,423.77 | 0.00% | 142,423.77 |

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Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019

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 | 6" PVC Laterals 1500 LF | 2007 | 69,677.24 | 0.00% | 69,677.24 |
| 361.21 | 8" SDR 35 11217 LF | 1988 | 292,443.65 | 0.00% | 292,443.65 |
| 361.21 | 10" SDR 35 5200 LF | 1988 | 377,235.01 | 0.00% | 377,235.01 |
| 361.23 | Drop Manholes 11 EA | 1988 | 32,183.97 | 0.00% | 32,183.97 |
| 361.23 | Manholes 58 EA | 1988 | 105,095.77 | 0.00% | 105,095.77 |
| 363.2 | 4" PVC Laterals 3760 LF | 1988 | 54,818.06 | 0.00% | 54,818.06 |
| 360.21 | 2" & 5" Air Release Chamber 4 EA | 2008 | 30,288.40 | 0.00% | 30,288.40 |
| 360.21 | 2" SDR 21 Force Main 6185 LF | 2008 | 136,680.89 | 0.00% | 136,680.89 |
| 360.21 | 6" Air Release Chamber 1 EA | 2008 | 4,448.20 | 0.00% | 4,448.20 |
| 360.21 | 6" SDR 26 Force Main 6425 LF | 2008 | 150,408.77 | 0.00% | 150,408.77 |
| 361.21 | 8" SDR 35 1338 LF | 2008 | 54,006.77 | 0.00% | 54,006.77 |
| 361.23 | Manholes 7 EA | 2008 | 19,125.81 | 0.00% | 19,125.81 |
| 361.21 | 8" SDR 35 1250 LF | 2008 | 10,410.00 | 0.00% | 10,410.00 |
| 361.23 | Manholes 5 EA | 2008 | 65,672.35 | 0.00% | 65,672.35 |
| 363.2 | 4" PVC Laterals 300 LF | 2008 | 3,561.70 | 0.00% | 3,561.70 |
| 363.2 | 6" PVC Laterals 350 LF | 2008 | 56,909.45 | 0.00% | 56,909.45 |
| 361.21 | 8" DIP 146 LF | 2008 | 14,833.35 | 0.00% | 14,833.35 |
| 361.21 | 8" SDR 35 3312 LF | 2008 | 242,284.87 | 0.00% | 242,284.87 |
| 361.23 | Manholes 14 EA | 2008 | 84,710.02 | 0.00% | 84,710.02 |
| 360.21 | 1.5" HDPE Force Main 450 LF | 2017 | 30,797.52 | 0.00% | 30,797.52 |
| 365.2 | Charles Street Bulk Meter Pit 1 EA | 1970 | 3,142.56 | 0.00% | 3,142.56 |
| 365.2 | Valley Road Bulk Meter Pit 1 EA | 1970 | 3,142.56 | 0.00% | 3,142.56 |
| 353.2 | ROWs - Original Basins 23 EA | 1973 | 19,749.48 | 0.00% | 19,749.48 |
| | | | 19,252,333 | | 19,252,333 |

\\aus-dc1\Shared\water industry\PA American - Valley\Valley Wastewater System Valuation as of 12-10-2019 - Created 7-2-2020

| | 9 | 10 | 11 | 12 | 13 |
|--------|---|-----------------------|------------------|---------------------|---------------------|
| | (4b) | (5) | (6a) | (6b) | |
| | Normal Service Life | Economic Obsolescence | Tax Depreciation | Report Depreciation | |
| | years | % | Table | Life | |
| 353.20 | Land & Land Rights - Original Basin | | 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 | 45.00 | 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 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | | 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 | 45.00 | 0.00% MACRS 25.00 |
| 365.20 | Flow Measuring Installations Meter Pits | | S2.0 | 30.00 | 0.00% MACRS 25.00 |
| 364.40 | Flow Measuring Devices - WWTP | | S2.0 | 30.00 | 0.00% MACRS 25.00 |

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

Wastewater System
Appraisal Work Papers
As of December 17, 2019

Original Cost less Depreciation

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

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Determination of the Depreciated Original Cost

| (43) | (44) | (46) | (47) | (48) | (49) | (53) | (54) | (55) | (56) | (57) |
|-----------|---|----------------|---------------------------------------|---------------------------------|---|-----------------------------|--------------------------|-----------------------------------|------------------------|------------------------------|
| Account | Description | Original Costs | Retirement Dispersion lowa-type | Normal Service Life (NSL) | Age at December 17, 2019 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 - Original Basin | 3,368 | ZNonDep | - | 46.50 | - | - | - | - | 3,368 |
| 353.30 | Land & Land Rights - Pumping | 3 | ZNonDep | - | 25.50 | - | - | - | - | 3 |
| 354.30 | Stuctures & Improvements - Pumping | 1,712,310 | R4.0 | 45.00 | 15.32 | 29.96 | 45.27 | 0.34 | 577,507 | 1,134,804 |
| 355.30 | Generating Equipment - Pumping | 21,547 | R3.0 | 35.00 | 29.50 | 10.11 | 39.61 | 0.74 | 16,047 | 5,500 |
| 360.21 | Collection Sewers - Force - Mains | 1,187,519 | R3.0 | 75.00 | 16.19 | 59.49 | 75.68 | 0.21 | 253,281 | 934,238 |
| 360.23 | Collection Sewers - Force - Manholes / Meter Pits | 20,733 | R3.0 | 75.00 | 11.50 | 64.04 | 75.54 | 0.15 | 3,156 | 17,577 |
| 361.21 | Collection Sewers - Gravity - Mains | 6,263,231 | R2.5 | 80.00 | 26.61 | 56.43 | 83.03 | 0.32 | 1,981,751 | 4,281,480 |
| 361.22 | Collection Sewers - Gravity - Mains Relining | 52,870 | R2.5 | 60.00 | 5.50 | 54.94 | 60.44 | 0.09 | 4,811 | 48,059 |
| 361.23 | Collection Sewers - Gravity - Manholes | 2,183,510 | R2.5 | 80.00 | 21.77 | 60.44 | 82.22 | 0.26 | 572,279 | 1,611,231 |
| 363.20 | Service Laterals | 1,934,160 | R3.0 | 45.00 | 18.61 | 28.01 | 46.63 | 0.39 | 757,159 | 1,177,001 |
| 365.20 | Flow Measuring Installations Meter Pits | 9,859 | S2.0 | 30.00 | 49.50 | 4.50 | 54.00 | 0.85 | 8,380 | 1,479 |
| Grand | | | | | | | | | | |
| Total | Grand Total | 13,389,110 | | 69.81 | 22.21 | 49.74 | 71.95 | 0.31 | 4,174,372 | 9,214,738 |

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

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 lowa-type | Normal Service Life (NSL) | Age at December 17, 2019 Appraisal Date | Age as % of NSL | lowa Lookup | lowa Condition Percent of 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 | (45)/(49.5) | Col (49) / (48) | Col (47) * (50) | Lookup lowa Values @ Col (51) | Col (48) * (52) | Col (46) * (53) | Col (53) / (54) | Col (46) * (56) | Col (46) - (56) | Col (46) * (49) | Col (46) * (53) | Col (46) * (54) | Col (46) * (48) |
| Acct | Descrip | Year | Original Cost | lowa | Normal Life | age | AgeP | lowaLookup | lowa 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 |
| 361.21 | 8" SDR 35 7743 LF | 1994 | 200,484 | R2.5 | 80 | 25.50 | | 32 R2.5032 | 0.70922 | 56.74 | 82.24 | 0.31007 | 62,164 | 138,320 | 5,112,345 | 11,375,470 | 16,487,815 | 16,038,731 |
| 361.23 | Doghouse Manholes 2 EA | 1994 | 7,711 | R2.5 | 80 | 25.50 | | 32 R2.5032 | 0.70922 | 56.74 | 82.24 | 0.31007 | 2,391 | 5,320 | 196,630 | 437,522 | 634,152 | 618,879 |
| 361.23 | Drop Manholes 2 EA | 1994 | 8,410 | R2.5 | 80 | 25.50 | | 32 R2.5032 | 0.70922 | 56.74 | 82.24 | 0.31007 | 2,608 | 5,802 | 214,447 | 477,166 | 891,613 | 872,775 |
| 361.23 | Manholes 42 EA | 1994 | 116,127 | R2.5 | 80 | 25.50 | | 32 R2.5032 | 0.70922 | 56.74 | 82.24 | 0.31007 | 36,007 | 80,119 | 2,961,229 | 6,589,026 | 9,550,255 | 9,290,131 |
| 363.2 | 4" PVC Laterals 4131 LF | 1994 | 92,318 | R3.0 | 45 | 25.50 | | 57 R3.0057 | 0.48107 | 21.85 | 47.15 | 0.54063 | 49,928 | 42,390 | 2,354,106 | 1,996,682 | 4,352,788 | 4,154,304 |
| 361.21 | 10" DIP 123.039446366782 LF | 1990 | 4,677 | R2.5 | 80 | 29.50 | | 37 R2.5037 | 0.66661 | 53.33 | 82.83 | 0.35615 | 1,666 | 3,011 | 137,974 | 249,429 | 387,403 | 374,166 |
| 361.21 | 10" SDR 35 1844 LF | 1990 | 66,138 | R2.5 | 80 | 29.50 | | 37 R2.5037 | 0.66661 | 53.33 | 82.83 | 0.35615 | 23,555 | 42,583 | 1,951,073 | 3,527,144 | 5,478,217 | 5,291,046 |
| 361.21 | 6" SDR 35 207 LF | 1990 | 4,606 | R2.5 | 80 | 29.50 | | 37 R2.5037 | 0.66661 | 53.33 | 82.83 | 0.35615 | 1,640 | 2,965 | 135,873 | 245,830 | 381,503 | 368,468 |
| 361.21 | 8" SDR 35 10543 LF | 1990 | 244,898 | R2.5 | 80 | 29.50 | | 37 R2.5037 | 0.66661 | 53.33 | 82.83 | 0.35615 | 87,220 | 157,677 | 7,224,485 | 13,060,399 | 20,284,884 | 19,591,824 |
| 361.23 | Manholes 68 EA | 1990 | 126,718 | R2.5 | 80 | 29.50 | | 37 R2.5037 | 0.66661 | 53.33 | 82.83 | 0.35615 | 45,131 | 81,587 | 3,738,178 | 6,757,865 | 10,496,043 | 10,137,431 |
| 363.2 | 4" PVC Laterals 5492 LF | 1990 | 99,644 | R3.0 | 45 | 29.50 | | 66 R3.0066 | 0.41185 | 18.53 | 48.03 | 0.61420 | 61,201 | 38,443 | 2,939,492 | 1,846,400 | 4,785,892 | 4,483,971 |
| 360.21 | 4" SDR 35 Force Main 1956 LF | 1990 | 24,101 | R3.0 | 75 | 29.50 | | 39 R3.0039 | 0.63205 | 47.4 | 76.9 | 0.38362 | 9,246 | 14,855 | 710,971 | 1,142,374 | 1,853,345 | 1,807,554 |
| 361.21 | 8" SDR 35 7873 LF | 1990 | 170,749 | R2.5 | 80 | 29.50 | | 37 R2.5037 | 0.66661 | 53.33 | 82.83 | 0.35615 | 60,812 | 109,937 | 5,037,087 | 9,108,028 | 14,143,115 | 13,659,896 |
| 354.3 | Country Ridge PS - Electrical Work | 1990 | 13,819 | R4.0 | 45 | 29.50 | | 66 R4.0066 | 0.37381 | 16.82 | 46.32 | 0.63687 | 8,801 | 5,018 | 407,648 | 232,429 | 640,077 | 621,836 |
| 355.3 | Country Ridge PS - Generator/Propse | 1990 | 21,547 | R3.0 | 35 | 29.50 | | 84 R3.0084 | 0.28888 | 10.11 | 39.61 | 0.74476 | 16,047 | 5,500 | 635,634 | 217,839 | 853,473 | 754,142 |
| 354.3 | Country Ridge PS - Paving | 1990 | 2,814 | R4.0 | 45 | 29.50 | | 66 R4.0066 | 0.37381 | 16.82 | 46.32 | 0.63687 | 1,792 | 1,022 | 83,017 | 47,334 | 130,351 | 126,636 |
| 354.3 | Country Ridge PS - Pump St. & Valv | 1990 | 50,881 | R4.0 | 45 | 29.50 | | 66 R4.0066 | 0.37381 | 16.82 | 46.32 | 0.63687 | 32,404 | 18,476 | 1,500,982 | 855,814 | 2,356,796 | 2,289,634 |
| 353.3 | Country Ridge PS Property - Parcel | 1990 | 1 | ZNonDep | 0 | 29.50 | 3 | ZNonDep000 | 0.00000 | 0 | 0 | 0 | 0 | 1 | 30 | - | - | - |
| 361.23 | Manholes 38 EA | 1990 | 53,198 | R2.5 | 80 | 29.50 | | 37 R2.5037 | 0.66661 | 53.33 | 82.83 | 0.35615 | 18,946 | 34,251 | 1,569,331 | 2,837,032 | 4,406,363 | 4,255,814 |
| 363.2 | 4" PVC Laterals 1856 LF | 1990 | 17,120 | R3.0 | 45 | 29.50 | | 66 R3.0066 | 0.41185 | 18.53 | 48.03 | 0.61420 | 10,515 | 6,605 | 505,027 | 317,225 | 822,252 | 770,380 |
| 363.2 | 1-1/2" PVC SCH-40 Laterals 700 LF | 2004 | 21,694 | R3.0 | 45 | 15.50 | | 34 R3.0034 | 0.67866 | 30.45 | 45.95 | 0.33732 | 7,318 | 14,376 | 336,251 | 660,571 | 996,823 | 976,214 |
| 360.21 | 4" SDR 21 Force Main 1200 LF | 2004 | 27,280 | R3.0 | 75 | 15.50 | | 21 R3.0021 | 0.79673 | 59.75 | 75.25 | 0.20598 | 5,619 | 21,661 | 422,838 | 1,629,974 | 2,052,812 | 2,045,993 |
| 361.21 | 8" SDR 35 11299 LF | 2004 | 588,875 | R2.5 | 80 | 15.50 | | 19 R2.5019 | 0.82402 | 65.92 | 81.42 | 0.19037 | 112,104 | 476,771 | 9,127,566 | 38,818,654 | 47,946,220 | 47,110,017 |
| 361.23 | Drop Manholes 7 EA | 2004 | 36,273 | R2.5 | 80 | 15.50 | | 19 R2.5019 | 0.82402 | 65.92 | 81.42 | 0.19037 | 6,905 | 29,367 | 562,227 | 2,391,096 | 2,953,323 | 2,901,816 |
| 361.21 | Isolation Valves 22 EA | 2004 | 19,248 | R2.5 | 80 | 15.50 | | 19 R2.5019 | 0.82402 | 65.92 | 81.42 | 0.19037 | 3,664 | 15,584 | 298,345 | 1,567,178 | 1,539,846 | |
| 361.23 | Manholes 63 EA | 2004 | 259,159 | R2.5 | 80 | 15.50 | | 19 R2.5019 | 0.82402 | 65.92 | 81.42 | 0.19037 | 49,336 | 209,823 | 4,016,963 | 17,083,755 | 21,100,718 | 20,732,713 |
| 363.2 | 8" PVC Laterals 8151 LF | 2004 | 337,063 | R3.0 | 45 | 15.50 | | 34 R3.0034 | 0.67866 | 30.45 | 45.95 | 0.33732 | 113,698 | 223,365 | 5,224,484 | 10,263,582 | 15,488,066 | 15,167,856 |
| 360.21 | 2" SDR 21 Force Main 550 LF | 2004 | 17,482 | R3.0 | 75 | 15.50 | | 21 R3.0021 | 0.79673 | 59.75 | 75.25 | 0.20598 | 3,601 | 13,881 | 270,969 | 1,044,543 | 1,315,512 | 1,311,142 |
| 360.21 | 4" SDR 21 Force Main 1440 LF | 2005 | 37,753 | R3.0 | 75 | 14.50 | | 19 R3.0019 | 0.81568 | 61.18 | 75.68 | 0.19160 | 7,233 | 30,519 | 547,416 | 2,309,717 | 2,857,132 | 2,831,460 |
| 361.21 | 8" SDR 35 12810 LF | 2005 | 608,661 | R2.5 | 80 | 14.50 | | 18 R2.5018 | 0.83306 | 66.64 | 81.14 | 0.17870 | 108,768 | 499,893 | 8,825,587 | 40,561,182 | 49,386,769 | 48,692,895 |
| 361.23 | Drop Manholes 1 EA | 2005 | 8,970 | R2.5 | 80 | 14.50 | | 18 R2.5018 | 0.83306 | 66.64 | 81.14 | 0.17870 | 1,603 | 7,367 | 130,059 | 597,733 | 727,792 | 717,566 |
| 354.3 | Hillview PS 0 | 2005 | 392,983 | R4.0 | 45 | 14.50 | | 32 R4.0032 | 0.88258 | 30.72 | 45.22 | 0.32065 | 126,010 | 266,973 | 5,698,260 | 12,072,452 | 17,770,712 | 17,684,256 |
| 361.23 | Manholes 76 EA | 2005 | 351,530 | R2.5 | 80 | 14.50 | | 18 R2.5018 | 0.83306 | 66.64 | 81.14 | 0.17870 | 62,818 | 288,712 | 5,097,185 | 23,425,958 | 26,523,143 | 28,122,398 |
| 363.2 | 6" PVC Laterals 11895 LF | 2005 | 519,048 | R3.0 | 45 | 14.50 | | 32 R3.0032 | 0.89469 | 31.26 | 45.76 | 0.31687 | 164,471 | 354,577 | 7,526,193 | 18,225,835 | 23,751,628 | 23,357,151 |
| 360.21 | 3" PVC Force Main 1895 LF | 1988 | 51,350 | R3.0 | 75 | 31.50 | | 42 R3.0042 | 0.80583 | 45.44 | 76.94 | 0.40941 | 21,023 | 30,327 | 1,617,533 | 2,333,356 | 3,950,889 | 3,851,270 |
| 361.21 | 8" SDR 35 8030 LF | 1988 | 665,010 | R2.5 | 80 | 31.50 | | 39 R2.5039 | 0.64984 | 51.99 | 83.49 | 0.37729 | 260,901 | 414,108 | 20,947,801 | 34,573,848 | 55,521,649 | 53,200,766 |

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

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

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 lowa-type | Normal Service Life (NSL) | Age at December 17, 2019 Appraisal Date | Age as % of NSL | lowa Lookup | lowa Condition Percent of 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 Assesmt | Eng Assesmt | Eng Assesmt | AUS Input | AUS Input | 2020- [43]+(9.5) | Col (49) / (48) | Col (47) / (50) | Lookup lowa Curves Life Tables [8] col (51) | Col (48) * (52) | Col (46) + (53) | Col (53) / (54) | Col (46) * (55) | Col (46) - (56) | Col (46) * (49) | Col (46) * (53) | Col (46) * (54) | Col (46) * (48) |
| Acct | Descrip | Year | Original Cost | lowa | Normal Life | age | AgeP | lowaLookup | lowa 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 | Manholes 34 EA | 1988 | 54,844 | R2.5 | 80 | 31.50 | 39 | R2.5039 | 0.64984 | 51.99 | 83.49 | 0.37729 | 20,692 | 34,152 | 1,727,592 | 2,851,349 | 4,578,941 | 4,387,535 |
| 354.3 | Highlands Corp. Center PS#1 0 | 1988 | 48,199 | R4.0 | 45 | 31.50 | 70 | R4.0070 | 0.34201 | 15.39 | 46.89 | 0.67179 | 32,380 | 15,819 | 1,518,276 | 741,786 | 2,260,062 | 2,168,966 |
| 354.3 | Highlands Corp. Center PS#1 - Site | 1988 | 25,104 | R4.0 | 45 | 31.50 | 70 | R4.0070 | 0.34201 | 15.39 | 46.89 | 0.67179 | 16,864 | 8,239 | 790,789 | 386,347 | 1,177,116 | 1,129,670 |
| 353.3 | Highlands Corp. Center PS#1 Propri | 1988 | 1 | ZNonDep | 0 | 31.50 | 3 | ZNonDep000 | 0.00000 | 0 | 0 | 0 | - | 1 | 32 | - | - | - |
| 361.21 | 8" DIP 45 LF | 1990 | 1,366 | R2.5 | 80 | 29.50 | 37 | R2.5037 | 0.66661 | 53.33 | 82.83 | 0.35615 | 486 | 879 | 40,292 | 72,840 | 113,133 | 109,267 |
| 361.21 | 8" VCP 4431 LF | 1990 | 111,384 | R2.5 | 80 | 29.50 | 37 | R2.5037 | 0.66661 | 53.33 | 82.83 | 0.35615 | 39,669 | 71,714 | 3,285,621 | 5,940,095 | 9,225,916 | 8,910,700 |
| 361.23 | Manholes 18 EA | 1990 | 24,081 | R2.5 | 80 | 29.50 | 37 | R2.5037 | 0.66661 | 53.33 | 82.83 | 0.35615 | 8,576 | 15,505 | 710,387 | 1,284,236 | 1,994,623 | 1,926,474 |
| 361.21 | 8" SDR 35 6 LF | 2008 | 299 | R2.5 | 80 | 11.50 | 14 | R2.5014 | 0.86951 | 69.56 | 81.06 | 0.14187 | 42 | 256 | 3,433 | 20,767 | 24,200 | 23,884 |
| 360.21 | 2" SDR 21 Force Main 865 LF | 2008 | 21,521 | R3.0 | 75 | 11.50 | 15 | R3.0015 | 0.85389 | 64.04 | 75.54 | 0.15224 | 3,276 | 18,245 | 247,490 | 1,378,194 | 1,625,684 | 1,614,062 |
| 363.2 | 1.5" SDR 21 Laterals 532 LF | 2008 | 10,589 | R3.0 | 45 | 11.50 | 26 | R3.0026 | 0.74986 | 33.74 | 45.24 | 0.25420 | 2,692 | 7,897 | 121,771 | 357,264 | 479,035 | 476,494 |
| 360.23 | Force Main Cleanout & Tie In Manhc | 2008 | 20,733 | R3.0 | 75 | 11.50 | 15 | R3.0015 | 0.85389 | 64.04 | 75.54 | 0.15224 | 3,156 | 17,577 | 238,429 | 1,327,739 | 1,566,169 | 1,554,973 |
| 360.21 | Curb Boxes and Valves 14 EA | 2008 | 11,610 | R3.0 | 75 | 11.50 | 15 | R3.0015 | 0.85389 | 64.04 | 75.54 | 0.15224 | 1,768 | 9,843 | 133,520 | 743,535 | 877,055 | 870,785 |
| 361.21 | 8" SDR 35 6219 LF | 2003 | 180,457 | R2.5 | 80 | 16.50 | 21 | R2.5021 | 0.80602 | 64.48 | 80.98 | 0.20375 | 36,768 | 143,689 | 2,977,545 | 11,635,887 | 14,613,432 | 14,436,584 |
| 361.23 | Manholes 32 EA | 2003 | 93,300 | R2.5 | 80 | 16.50 | 21 | R2.5021 | 0.80602 | 64.48 | 80.98 | 0.20375 | 19,010 | 74,290 | 1,539,456 | 6,016,008 | 7,555,464 | 7,464,030 |
| 363.2 | 6" PVC Laterals 1320 LF | 2003 | 76,253 | R3.0 | 45 | 16.50 | 37 | R3.0037 | 0.64975 | 29.24 | 45.74 | 0.36073 | 27,507 | 48,746 | 1,258,175 | 2,229,638 | 3,487,812 | 3,431,385 |
| 361.21 | Stream Crossing 1 EA | 2003 | 8,624 | R2.5 | 80 | 16.50 | 21 | R2.5021 | 0.80602 | 64.48 | 80.98 | 0.20375 | 1,757 | 6,867 | 142,291 | 556,057 | 698,349 | 689,898 |
| 361.21 | 8" SDR 35 7007 LF | 2005 | 186,163 | R2.5 | 80 | 14.50 | 18 | R2.5018 | 0.83306 | 66.64 | 81.14 | 0.17870 | 33,267 | 152,896 | 2,699,363 | 12,405,898 | 15,105,261 | 14,893,035 |
| 361.23 | Manholes 39 EA | 2005 | 121,208 | R2.5 | 80 | 14.50 | 18 | R2.5018 | 0.83306 | 66.64 | 81.14 | 0.17870 | 21,660 | 99,548 | 1,757,513 | 8,077,285 | 9,834,798 | 9,696,621 |
| 363.2 | 6" PVC Laterals 3240 LF | 2005 | 83,828 | R3.0 | 45 | 14.50 | 32 | R3.0032 | 0.69489 | 31.26 | 45.76 | 0.31687 | 26,563 | 57,265 | 1,215,504 | 2,620,460 | 3,835,964 | 3,772,255 |
| 361.21 | 8" SDR 35 1289 LF | 2005 | 96,471 | R2.5 | 80 | 14.50 | 18 | R2.5018 | 0.83306 | 66.64 | 81.14 | 0.17870 | 17,239 | 79,231 | 1,398,827 | 6,428,816 | 7,827,643 | 7,717,666 |
| 361.23 | Manholes 8 EA | 2005 | 44,252 | R2.5 | 80 | 14.50 | 18 | R2.5018 | 0.83306 | 66.64 | 81.14 | 0.17870 | 7,908 | 36,344 | 641,656 | 2,948,963 | 3,590,619 | 3,540,172 |
| 360.21 | 2" Force Main 1030 LF | 2005 | 47,398 | R3.0 | 75 | 14.50 | 19 | R3.0019 | 0.81568 | 61.18 | 75.68 | 0.19160 | 9,081 | 38,317 | 687,271 | 2,899,811 | 3,587,082 | 3,554,852 |
| 360.21 | 1.5" Force Main 365 LF | 2005 | 14,461 | R3.0 | 75 | 14.50 | 19 | R3.0019 | 0.81568 | 61.18 | 75.68 | 0.19160 | 2,771 | 11,690 | 209,685 | 884,728 | 1,094,413 | 1,084,580 |
| 363.2 | 6" PVC Laterals 105 LF | 2005 | 14,357 | R3.0 | 45 | 14.50 | 32 | R3.0032 | 0.69489 | 31.26 | 45.76 | 0.31687 | 4,549 | 9,808 | 208,174 | 448,795 | 656,969 | 646,058 |
| 361.21 | 8" SDR 35 2416 LF | 2005 | 90,912 | R2.5 | 80 | 14.50 | 18 | R2.5018 | 0.83306 | 66.64 | 81.14 | 0.17870 | 16,246 | 74,666 | 1,318,229 | 6,058,399 | 7,376,628 | 7,272,988 |
| 361.23 | Manholes 16 EA | 2005 | 56,688 | R2.5 | 80 | 14.50 | 18 | R2.5018 | 0.83306 | 66.64 | 81.14 | 0.17870 | 10,130 | 46,558 | 821,983 | 3,777,720 | 4,599,703 | 4,535,078 |
| 363.2 | 6" PVC Laterals 1860 LF | 2005 | 59,933 | R3.0 | 45 | 14.50 | 32 | R3.0032 | 0.69489 | 31.26 | 45.76 | 0.31687 | 18,991 | 40,942 | 869,033 | 1,873,516 | 2,742,549 | 2,696,999 |
| 361.21 | 10" Asbestos Cement 6933 LF | 1972 | 135,570 | R2.5 | 80 | 47.50 | 59 | R2.5059 | 0.49155 | 39.32 | 86.82 | 0.54711 | 74,172 | 61,398 | 6,439,559 | 5,330,999 | 11,770,158 | 10,845,573 |
| 361.21 | 15" Asbestos Cement 106 LF | 1972 | 2,902 | R2.5 | 80 | 47.50 | 59 | R2.5059 | 0.49155 | 39.32 | 86.82 | 0.54711 | 1,588 | 1,314 | 137,838 | 114,101 | 251,939 | 232,148 |
| 361.21 | 8" Asbestos Cement 26704 LF | 1972 | 417,741 | R2.5 | 80 | 47.50 | 59 | R2.5059 | 0.49155 | 39.32 | 86.82 | 0.54711 | 228,551 | 189,191 | 19,842,721 | 16,425,996 | 36,268,317 | 33,419,320 |
| 361.23 | Manholes 154 EA | 1972 | 95,112 | R2.5 | 80 | 47.50 | 59 | R2.5059 | 0.49155 | 39.32 | 86.82 | 0.54711 | 52,037 | 43,075 | 4,517,615 | 3,739,800 | 8,257,616 | 7,608,952 |
| 361.21 | Hayti Basin Sewer Rehab 0 | 2010 | 224,592 | R2.5 | 80 | 9.50 | 12 | R2.5012 | 0.88789 | 71.03 | 80.53 | 0.11797 | 26,493 | 198,097 | 2,133,624 | 15,952,770 | 18,086,394 | 17,967,360 |
| 363.2 | 4" Laterals 5758.5 LF | 1972 | 41,714 | R3.0 | 45 | 47.50 | 106 | R3.0106 | 0.17527 | 7.89 | 55.39 | 0.85000 | 35,457 | 6,257 | 1,981,430 | 329,126 | 2,310,556 | 1,877,144 |
| 361.21 | 12" Asbestos Cement 742 LF | 1972 | 17,411 | R2.5 | 80 | 47.50 | 59 | R2.5059 | 0.49155 | 39.32 | 86.82 | 0.54711 | 9,526 | 7,885 | 827,028 | 684,605 | 1,511,633 | 1,392,889 |

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

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 lowa-type | Normal Service Life (NSL) | Age at December 17, 2019 Appraisal Date | Age as % of NSL | lowa Lookup | lowa Condition Percent of 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 | (49)/(50) | Col (49) / (48) | Col (47) / (50) | Lookup lowa Curves Life Tables @ col (51) | Col (48) * (52) | Col (46) * (53) | Col (53) / (54) | Col (46) * (55) | Col (46) - (56) | Col (46) * (49) | Col (46) * (53) | Col (46) * (54) | Col (46) * (48) |
| Acct | Descrip | Year | Original Cost | lowa | Normal Life | age | AgeP | lowaLookup | lowa 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 |
| 361.21 | 8" Asbestos Cement 10094 LF | 1972 | 157,905 | R2.5 | 80 | 47.50 | 59 | R2.5059 | 0.49155 | 39.32 | 86.82 | 0.54711 | 86.391 | 71,513 | 7,500,465 | 6,208,806 | 13,709,272 | 12,632,363 |
| 361.23 | Manholes 61 EA | 1972 | 38,170 | R2.5 | 80 | 47.50 | 59 | R2.5059 | 0.49155 | 39.32 | 86.82 | 0.54711 | 20,883 | 17,287 | 1,813,071 | 1,500,841 | 3,313,912 | 3,053,593 |
| 360.21 | 6" CIP Force Main - Original Installat | 1972 | 17,931 | R3.0 | 75 | 47.50 | 63 | R3.0063 | 0.43441 | 32.58 | 80.08 | 0.59316 | 10,636 | 7,295 | 851,735 | 584,200 | 1,435,935 | 1,344,844 |
| 360.21 | 10" HDPE Force Main - Replacemen | 1997 | 190,699 | R3.0 | 75 | 22.50 | 30 | R3.0030 | 0.71294 | 53.47 | 75.97 | 0.29617 | 56,479 | 134,220 | 4,290,735 | 10,196,694 | 14,487,429 | 14,302,450 |
| 360.21 | 10" DIP Force Main - Replacemen | 2003 | 18,821 | R3.0 | 75 | 16.50 | 22 | R3.0022 | 0.78729 | 59.05 | 75.55 | 0.21840 | 4,110 | 14,710 | 310,544 | 1,111,372 | 1,421,916 | 1,411,564 |
| 360.21 | Rock Run PS Replacement - 10" DIF | 2004 | 255,730 | R3.0 | 75 | 15.50 | 21 | R3.0021 | 0.79673 | 59.75 | 75.25 | 0.20598 | 52,675 | 203,056 | 3,963,812 | 15,279,856 | 19,243,667 | 19,179,735 |
| 354.3 | Rock Run PS Replacement - Structu | 2004 | 310,397 | R4.0 | 45 | 15.50 | 34 | R4.0034 | 0.86313 | 29.84 | 45.34 | 0.34186 | 106,112 | 204,285 | 4,811,150 | 9,282,241 | 14,073,391 | 13,967,856 |
| 354.3 | Rock Run PS Replacement - Mechr | 2004 | 357,873 | R4.0 | 45 | 15.50 | 34 | R4.0034 | 0.86313 | 29.84 | 45.34 | 0.34186 | 122,343 | 235,531 | 5,547,036 | 10,678,942 | 16,225,960 | 16,104,303 |
| 353.3 | Rock Run PS Property - Parcel (Dif : 1 | 2004 | 1 | ZNonDep | 0 | 15.50 | 6 | ZNonDep000 | 0.00000 | 0 | 0 | 0 | - | - | 16 | - | - | - |
| 363.2 | 4" Laterals 2425.5 LF | 1972 | 17,570 | R3.0 | 45 | 47.50 | 106 | R3.0106 | 0.17527 | 7.89 | 55.39 | 0.85000 | 14,935 | 2,636 | 834,585 | 138,629 | 973,214 | 790,660 |
| 361.21 | 15" Asbestos Cement 5991 LF | 1972 | 164,009 | R2.5 | 80 | 47.50 | 59 | R2.5059 | 0.49155 | 39.32 | 86.82 | 0.54711 | 86,731 | 74,278 | 7,790,445 | 8,448,849 | 14,239,294 | 13,120,750 |
| 361.21 | 18" Asbestos Cement 62 LF | 1972 | 1,940 | R2.5 | 80 | 47.50 | 59 | R2.5059 | 0.49155 | 39.32 | 86.82 | 0.54711 | 1,061 | 879 | 92,140 | 76,272 | 168,412 | 155,183 |
| 361.21 | 8" Asbestos Cement 32386 LF | 1972 | 508,314 | R2.5 | 80 | 47.50 | 59 | R2.5059 | 0.49155 | 39.32 | 86.82 | 0.54711 | 277,010 | 229,305 | 24,049,937 | 19,908,284 | 43,958,221 | 40,505,157 |
| 361.23 | Manholes 172 EA | 1972 | 107,627 | R2.5 | 80 | 47.50 | 59 | R2.5059 | 0.49155 | 39.32 | 86.82 | 0.54711 | 56,884 | 48,743 | 5,112,265 | 4,231,879 | 9,344,144 | 8,610,130 |
| 363.2 | 4" Laterals 7276.5 LF | 1972 | 52,711 | R3.0 | 45 | 47.50 | 106 | R3.0106 | 0.17527 | 7.89 | 55.39 | 0.85000 | 44,804 | 7,907 | 2,503,756 | 415,887 | 2,919,643 | 2,371,975 |
| 361.21 | Westwood Basin Sewer Rehab - Exc | 2013 | 88,050 | R2.5 | 80 | 6.50 | 8 | R2.5008 | 0.92492 | 73.99 | 80.49 | 0.08076 | 7,111 | 80,939 | 572,325 | 6,514,820 | 7,087,145 | 7,044,000 |
| 361.22 | Westwood Basin Sewer Rehab - Tre | 2014 | 52,870 | R2.5 | 80 | 5.50 | 9 | R2.5009 | 0.91563 | 54.94 | 60.44 | 0.09100 | 4,811 | 48,059 | 290,785 | 2,904,678 | 3,195,463 | 3,172,200 |
| 360.21 | 2" DI Force Main 1230 LF | 2008 | 44,451 | R3.0 | 75 | 11.50 | 15 | R3.0015 | 0.85389 | 64.04 | 75.54 | 0.15224 | 6,767 | 37,684 | 511,198 | 2,846,648 | 3,357,835 | 3,333,832 |
| 360.21 | 4" DI Force Main 905 LF | 2008 | 23,863 | R3.0 | 75 | 11.50 | 15 | R3.0015 | 0.85389 | 64.04 | 75.54 | 0.15224 | 3,633 | 20,230 | 274,426 | 1,528,195 | 1,802,621 | 1,789,735 |
| 363.2 | 6" PVC Laterals 2512.5 LF | 2008 | 168,375 | R3.0 | 45 | 11.50 | 26 | R3.0026 | 0.74986 | 33.74 | 45.24 | 0.25420 | 42,801 | 125,574 | 1,936,318 | 5,680,989 | 7,617,307 | 7,576,897 |
| 361.21 | 8" SDR 35 3809 LF | 2008 | 111,120 | R2.5 | 80 | 11.50 | 14 | R2.5014 | 0.88951 | 69.56 | 81.06 | 0.14187 | 15,765 | 95,356 | 1,277,884 | 7,729,529 | 9,007,413 | 8,889,626 |
| 361.23 | Manholes 17 EA | 2008 | 86,471 | R2.5 | 80 | 11.50 | 14 | R2.5014 | 0.88951 | 69.56 | 81.06 | 0.14187 | 9,430 | 57,041 | 764,417 | 4,823,723 | 5,388,140 | 5,317,881 |
| 354.3 | Roud Hill PS#1 & PS#2 - Control Bu | 2008 | 108,534 | R4.0 | 45 | 11.50 | 26 | R4.0026 | 0.74138 | 33.36 | 44.86 | 0.25635 | 27,310 | 79,224 | 1,226,136 | 3,553,961 | 4,779,097 | 4,759,012 |
| 354.3 | Roud Hill PS#1 & PS#2 - Excavation | 2008 | 123,355 | R4.0 | 45 | 11.50 | 26 | R4.0026 | 0.74138 | 33.36 | 44.86 | 0.25635 | 31,622 | 91,733 | 1,418,579 | 4,115,112 | 5,533,691 | 5,550,961 |
| 354.3 | Roud Hill PS#1 & PS#2 - Mechanica | 2008 | 95,320 | R4.0 | 45 | 11.50 | 26 | R4.0026 | 0.74138 | 33.36 | 44.86 | 0.25635 | 24,435 | 70,884 | 1,096,175 | 3,179,600 | 4,276,035 | 4,289,379 |
| 354.3 | Roud Hill PS#1 & PS#2 - On-Site Elt | 2008 | 140,176 | R4.0 | 45 | 11.50 | 26 | R4.0026 | 0.74138 | 33.36 | 44.86 | 0.25635 | 35,934 | 104,242 | 1,612,022 | 4,676,264 | 6,286,286 | 6,307,911 |
| 354.3 | Roud Hill PS#1 & PS#2 - Precast Cc | 2008 | 28,035 | R4.0 | 45 | 11.50 | 26 | R4.0026 | 0.74138 | 33.36 | 44.86 | 0.25635 | 7,167 | 20,848 | 322,404 | 935,253 | 1,257,057 | 1,261,582 |
| 354.3 | Roud Hill PS#1 & PS#2 - Structures | 2008 | 16,821 | R4.0 | 45 | 11.50 | 26 | R4.0026 | 0.74138 | 33.36 | 44.86 | 0.25635 | 4,312 | 12,509 | 193,443 | 561,152 | 754,594 | 756,949 |
| 361.21 | 12" SDR 35 196 LF | 2008 | 52,486 | R2.5 | 80 | 11.50 | 14 | R2.5014 | 0.88951 | 69.56 | 81.06 | 0.14187 | 7,446 | 45,040 | 603,588 | 3,650,922 | 4,254,510 | 4,198,875 |
| 363.2 | 4" PVC Laterals 35 LF | 2005 | 5,698 | R3.0 | 45 | 14.50 | 32 | R3.0032 | 0.69469 | 31.26 | 45.76 | 0.31687 | 1,806 | 3,892 | 82,621 | 178,120 | 260,741 | 256,411 |
| 361.23 | Manholes 5 EA | 2005 | 16,388 | R2.5 | 80 | 14.50 | 18 | R2.5018 | 0.83306 | 66.84 | 81.14 | 0.17870 | 2,928 | 13,459 | 237,623 | 1,082,060 | 1,329,703 | 1,311,021 |
| 361.21 | 8" SDR 35 890 LF | 2005 | 37,841 | R2.5 | 80 | 14.50 | 18 | R2.5018 | 0.83306 | 66.84 | 81.14 | 0.17870 | 6,762 | 31,079 | 548,892 | 2,521,713 | 3,070,405 | 3,027,266 |
| 363.2 | 4" PVC Laterals 1425 LF | 2005 | 61,082 | R3.0 | 45 | 14.50 | 32 | R3.0032 | 0.69469 | 31.26 | 45.76 | 0.31687 | 19,355 | 41,727 | 885,884 | 1,909,412 | 2,795,096 | 2,748,674 |
| 361.21 | 8" SDR 35 7950 LF | 1993 | 173,629 | R2.5 | 80 | 26.50 | 33 | R2.5033 | 0.70063 | 56.05 | 82.55 | 0.32102 | 55,739 | 117,691 | 4,601,179 | 9,731,927 | 14,333,106 | 13,890,351 |
| 361.23 | Drop Manholes 1 EA | 1993 | 3,779 | R2.5 | 80 | 26.50 | 33 | R2.5033 | 0.70063 | 56.05 | 82.55 | 0.32102 | 1,213 | 2,566 | 100,149 | 211,825 | 311,974 | 302,337 |
| 361.23 | Manholes 45 EA | 1993 | 96,791 | R2.5 | 80 | 26.50 | 33 | R2.5033 | 0.70063 | 56.05 | 82.55 | 0.32102 | 31,072 | 65,719 | 2,564,952 | 5,425,116 | 7,990,068 | 7,743,252 |

43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61
 Pennsylvania American Water Company
 Valley Township Wastewater System
 Wastewater Collection System
 Investor-Owned Utility
 As of December 17, 2019

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 lowa-type | Normal Service Life (NSL) | Age at December 17, 2019 Appraisal Date | Age as % of NSL | lowa Lookup | lowa Condition Percent of 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 | 2020-[(45)-0.5] | Col (49) / (48) | Col (47) & (50) | Lookup lowa Curves Life Tables @ Col (51) | Col (48) * (52) | Col (46) * (53) | Col (53) / (54) | Col (46) * (55) | Col (46) * (56) | Col (46) * (49) | Col (46) * (53) | Col (46) * (54) | Col (46) * (48) |
| Acct | Descrip | Year | Original Cost | lowa | Normal Life | age | AgeP | lowaLookup | lowa 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 |
| 363.2 | 4" PVC Laterals 4340 LF | 1993 | 76,217 | R3.0 | 45 | 26.50 | 59 | R3.0059 | 0.4653 | 20.94 | 47.44 | 0.55860 | 42,575 | 33,642 | 2,019,739 | 1,595,975 | 3,615,713 | 3,429,745 |
| 360.21 | 4" Insertion Valve 1 EA | 2007 | 24,269 | R3.0 | 75 | 12.50 | 17 | R3.0017 | 0.83474 | 62.61 | 75.11 | 0.16642 | 4,039 | 20,231 | 303,368 | 1,519,512 | 1,822,880 | 1,820,210 |
| 360.21 | 4" SDR 21 Force Main 340 LF | 2007 | 16,180 | R3.0 | 75 | 12.50 | 17 | R3.0017 | 0.83474 | 62.61 | 75.11 | 0.16642 | 2,693 | 13,487 | 202,246 | 1,013,007 | 1,215,253 | 1,213,473 |
| 361.21 | 8" SDR 35 4600 LF | 2007 | 175,388 | R2.5 | 80 | 12.50 | 16 | R2.5016 | 0.85124 | 68.1 | 80.6 | 0.15509 | 27,201 | 148,187 | 2,192,353 | 11,943,937 | 14,136,290 | 14,031,057 |
| 361.23 | Manholes 31 EA | 2007 | 132,939 | R2.5 | 80 | 12.50 | 16 | R2.5016 | 0.85124 | 68.1 | 80.6 | 0.15509 | 20,617 | 112,321 | 1,661,733 | 9,053,120 | 10,714,853 | 10,635,090 |
| 363.2 | 6" PVC Laterals 1500 LF | 2007 | 86,077 | R3.0 | 45 | 12.50 | 28 | R3.0028 | 0.73133 | 32.91 | 45.41 | 0.27527 | 18,189 | 47,888 | 825,965 | 2,174,600 | 3,000,565 | 2,973,474 |
| 361.21 | 8" SDR 35 11217 LF | 1988 | 191,452 | R2.5 | 80 | 31.50 | 39 | R2.5039 | 0.64984 | 51.99 | 83.49 | 0.37729 | 72,233 | 119,219 | 6,030,730 | 9,953,575 | 15,984,305 | 15,316,138 |
| 361.21 | 10" SDR 35 5200 LF | 1988 | 246,961 | R2.5 | 80 | 31.50 | 39 | R2.5039 | 0.64984 | 51.99 | 83.49 | 0.37729 | 93,176 | 153,785 | 7,779,284 | 12,839,523 | 20,618,808 | 19,756,912 |
| 361.23 | Drop Manholes 11 EA | 1988 | 23,972 | R2.5 | 80 | 31.50 | 39 | R2.5039 | 0.64984 | 51.99 | 83.49 | 0.37729 | 9,044 | 14,928 | 755,120 | 1,246,308 | 2,001,428 | 1,917,766 |
| 361.23 | Manholes 58 EA | 1988 | 78,280 | R2.5 | 80 | 31.50 | 39 | R2.5039 | 0.64984 | 51.99 | 83.49 | 0.37729 | 29,534 | 46,746 | 2,465,822 | 4,069,780 | 6,535,602 | 6,262,405 |
| 363.2 | 4" PVC Laterals 3760 LF | 1988 | 53,815 | R3.0 | 45 | 31.50 | 70 | R3.0070 | 0.38261 | 17.22 | 48.72 | 0.64655 | 34,794 | 19,021 | 1,695,174 | 926,695 | 2,621,870 | 2,421,678 |
| 360.21 | 2" & 6" Air Release Chamber 4 EA | 2008 | 29,454 | R3.0 | 75 | 11.50 | 15 | R3.0015 | 0.85389 | 64.04 | 75.54 | 0.15224 | 4,484 | 24,970 | 338,719 | 1,886,221 | 2,224,939 | 2,209,034 |
| 360.21 | 2" SDR 21 Force Main 6185 LF | 2008 | 132,915 | R3.0 | 75 | 11.50 | 15 | R3.0015 | 0.85389 | 64.04 | 75.54 | 0.15224 | 20,235 | 112,680 | 1,528,518 | 8,511,850 | 10,040,368 | 9,966,594 |
| 360.21 | 6" Air Release Chamber 1 EA | 2008 | 4,326 | R3.0 | 75 | 11.50 | 15 | R3.0015 | 0.85389 | 64.04 | 75.54 | 0.15224 | 659 | 3,667 | 49,745 | 277,013 | 326,758 | 324,422 |
| 360.21 | 6" SDR 26 Force Main 6425 LF | 2008 | 146,264 | R3.0 | 75 | 11.50 | 15 | R3.0015 | 0.85389 | 64.04 | 75.54 | 0.15224 | 22,267 | 123,997 | 1,682,038 | 9,366,759 | 11,048,798 | 10,969,815 |
| 361.21 | 8" SDR 35 1338 LF | 2008 | 51,884 | R2.5 | 80 | 11.50 | 14 | R2.5014 | 0.86951 | 69.56 | 81.06 | 0.14187 | 7,361 | 44,523 | 596,667 | 3,609,059 | 4,205,726 | 4,150,729 |
| 361.23 | Manholes 7 EA | 2008 | 18,224 | R2.5 | 80 | 11.50 | 14 | R2.5014 | 0.86951 | 69.56 | 81.06 | 0.14187 | 2,585 | 15,638 | 209,574 | 1,267,652 | 1,477,226 | 1,457,909 |
| 361.21 | 8" SDR 35 1250 LF | 2008 | 10,001 | R2.5 | 80 | 11.50 | 14 | R2.5014 | 0.86951 | 69.56 | 81.06 | 0.14187 | 1,419 | 8,582 | 115,010 | 695,659 | 810,669 | 800,068 |
| 361.23 | Manholes 5 EA | 2008 | 82,575 | R2.5 | 80 | 11.50 | 14 | R2.5014 | 0.86951 | 69.56 | 81.06 | 0.14187 | 8,878 | 53,698 | 719,616 | 4,352,739 | 5,072,355 | 5,006,026 |
| 363.2 | 4" PVC Laterals 300 LF | 2008 | 3,478 | R3.0 | 45 | 11.50 | 26 | R3.0026 | 0.74986 | 33.74 | 45.24 | 0.25420 | 884 | 2,594 | 40,000 | 117,357 | 157,357 | 156,523 |
| 363.2 | 6" PVC Laterals 350 LF | 2008 | 55,577 | R3.0 | 45 | 11.50 | 26 | R3.0026 | 0.74986 | 33.74 | 45.24 | 0.25420 | 14,128 | 41,449 | 638,130 | 1,875,152 | 2,514,282 | 2,500,943 |
| 361.21 | 8" DIP 146 LF | 2008 | 14,250 | R2.5 | 80 | 11.50 | 14 | R2.5014 | 0.86951 | 69.56 | 81.06 | 0.14187 | 2,022 | 12,229 | 163,879 | 991,254 | 1,155,133 | 1,140,028 |
| 361.21 | 8" SDR 35 3312 LF | 2008 | 232,762 | R2.5 | 80 | 11.50 | 14 | R2.5014 | 0.86951 | 69.56 | 81.06 | 0.14187 | 33,022 | 199,740 | 2,676,766 | 16,190,941 | 18,867,706 | 18,620,976 |
| 361.23 | Manholes 14 EA | 2008 | 80,715 | R2.5 | 80 | 11.50 | 14 | R2.5014 | 0.86951 | 69.56 | 81.06 | 0.14187 | 11,451 | 69,264 | 928,225 | 5,614,550 | 6,542,774 | 6,457,216 |
| 360.21 | 1.5" HDPE Force Main 450 LF | 2017 | 29,660 | R3.0 | 75 | 2.50 | 3 | R3.0003 | 0.9705 | 72.79 | 75.29 | 0.03320 | 985 | 28,676 | 74,151 | 2,158,961 | 2,233,132 | 2,224,530 |
| 365.2 | Charles Street Bulk Meter Pit 1 EA | 1970 | 4,930 | S2.0 | 30 | 49.50 | 165 | S2.0165 | 0.15 | 4.5 | 54 | 0.85000 | 4,190 | 739 | 244,010 | 22,183 | 266,193 | 147,885 |
| 365.2 | Valley Road Bulk Meter Pit 1 EA | 1970 | 4,930 | S2.0 | 30 | 49.50 | 165 | S2.0165 | 0.15 | 4.5 | 54 | 0.85000 | 4,190 | 739 | 244,010 | 22,183 | 266,193 | 147,885 |
| 353.2 | ROWs - Original Basins 23 EA | 1973 | 3,368 | ZNonDep | 0 | 46.50 | 7,243 | ZNonDep000 | 0.00000 | 0 | 0 | 0 | - | 3,368 | 156,608 | - | - | - |
| | | | 13,389,110 | | | | | | | | | | 4,174,372 | 9,214,738 | 297,437,252 | 666,033,861 | 963,314,427 | 934,671,426 |

\\aus-dc1\Shared\water industry\PA American - Valley\Valley Wastewater System Valuation as of 12-10-2019 - Created 7-2-2020

| | 9 | 10 | 11 | 12 | 13 |
|--|---------------------|-----------------------|------------------|---------------------|---------------------|
| | (4b) | (5) | (6a) | (6b) | |
| | Normal Service Life | Economic Obsolescence | Tax Depreciation | Report Depreciation | |
| | years | % | Table | Life | |
| 353.20 Land & Land Rights - Original Basin | | | 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 | 45.00 | 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 |
| 360.23 Collection Sewers - Force - Manholes / Meter Pits | | | 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 | 45.00 | 0.00% MACRS 25.00 |
| 365.20 Flow Measuring Installations Meter Pits | | | S2.0 | 30.00 | 0.00% MACRS 25.00 |
| 364.40 Flow Measuring Devices - WWTP | | | S2.0 | 30.00 | 0.00% MACRS 25.00 |

| LOCATION | ASSET | CODE | YEAR | QUANTITY | UNITS | ORIGINAL COST |
|---------------------------|---|--------|------|----------|-------|---------------|
| | Manholes | 361.23 | 2005 | 8 | EA | \$ 44,252.15 |
| | 2" Force Main | 360.21 | 2005 | 1,030 | LF | \$ 47,398.02 |
| | 1.5" Force Main | 360.21 | 2005 | 365 | LF | \$ 14,461.06 |
| | 6" PVC Laterals | 363.20 | 2005 | 105 | LF | \$ 14,356.84 |
| Oakcrest Phase 2 | | | | | | |
| | 8" SDR 35 | 361.21 | 2005 | 2,416 | LF | \$ 90,912.35 |
| | Manholes | 361.23 | 2005 | 16 | EA | \$ 56,688.48 |
| | 6" PVC Laterals | 363.20 | 2005 | 1,860 | LF | \$ 59,933.32 |
| Hayti | | | | | | |
| | 10" Asbestos Cement | 361.21 | 1972 | 6,933 | LF | \$ 135,569.66 |
| | 15" Asbestos Cement | 361.21 | 1972 | 106 | LF | \$ 2,901.85 |
| | 8" Asbestos Cement | 361.21 | 1972 | 26,704 | LF | \$ 417,741.50 |
| | Manholes | 361.23 | 1972 | 154 | EA | \$ 95,111.90 |
| | Hayti Basin Sewer Rehab | 361.21 | 2010 | - | | \$ 224,592.00 |
| | 4" Laterals | 363.20 | 1972 | 5,759 | LF | \$ 41,714.32 |
| Rock Run | | | | | | |
| | 12" Asbestos Cement | 361.21 | 1972 | 742 | LF | \$ 17,411.11 |
| | 8" Asbestos Cement | 361.21 | 1972 | 10,094 | LF | \$ 157,904.53 |
| | Manholes | 361.23 | 1972 | 61 | EA | \$ 38,169.91 |
| | 6" CIP Force Main - Original Installation (partially abandoned) | 360.21 | 1972 | 917 | LF | \$ 17,931.25 |
| | 10" HDPE Force Main - Replacement | 360.21 | 1997 | 1,834 | LF | \$ 190,699.34 |
| | 10" DIP Force Main - Replacement | 360.21 | 2003 | 350 | LF | \$ 18,820.86 |
| | Rock Run PS Replacement - 10" DIP Force Main | 360.21 | 2004 | 724 | LF | \$ 255,729.80 |
| | Rock Run PS Replacement - Structural | 354.30 | 2004 | - | | \$ 310,396.80 |
| | Rock Run PS Replacement - Mechanical | 354.30 | 2004 | - | | \$ 357,873.40 |
| | Rock Run PS Property - Parcel ID# 38-2M-126 & 38-2M-126.1 | 353.30 | 2004 | - | | \$ - |
| | 4" Laterals | 363.20 | 1972 | 2,426 | LF | \$ 17,570.22 |
| Westwood | | | | | | |
| | 15" Asbestos Cement | 361.21 | 1972 | 5,991 | LF | \$ 164,009.37 |
| | 18" Asbestos Cement | 361.21 | 1972 | 62 | LF | \$ 1,939.78 |
| | 8" Asbestos Cement | 361.21 | 1972 | 32,366 | LF | \$ 506,314.46 |
| | Manholes | 361.23 | 1972 | 172 | EA | \$ 107,626.63 |
| | 4" Laterals | 363.20 | 1972 | 7,277 | LF | \$ 52,710.65 |
| | Westwood Basin Sewer Rehab - Excavated work | 361.21 | 2013 | - | | \$ 88,050.00 |
| | Westwood Basin Sewer Rehab - Trenchless work | 361.22 | 2014 | - | | \$ 52,870.00 |
| Round Hill | | | | | | |
| | 2" DI Force Main | 360.21 | 2008 | 1,230 | LF | \$ 44,451.09 |
| | 4" DI Force Main | 360.21 | 2008 | 905 | LF | \$ 23,863.13 |
| | 6" PVC Laterals | 363.20 | 2008 | 2,513 | LF | \$ 168,375.49 |
| | 8" SDR 35 | 361.21 | 2008 | 3,809 | LF | \$ 111,120.32 |
| | Manholes | 361.23 | 2008 | 17 | EA | \$ 66,471.01 |
| | Roud Hill PS#1 & PS#2 - Control Building Installation | 354.30 | 2008 | - | | \$ 106,533.60 |
| | Roud Hill PS#1 & PS#2 - Excavation & Site Work | 354.30 | 2008 | - | | \$ 123,354.69 |
| | Roud Hill PS#1 & PS#2 - Mechanical Equipment Installed | 354.30 | 2008 | - | | \$ 95,319.54 |
| | Roud Hill PS#1 & PS#2 - On-Site Electrical Work | 354.30 | 2008 | - | | \$ 140,175.79 |
| | Roud Hill PS#1 & PS#2 - Precast Concrete | 354.30 | 2008 | - | | \$ 28,035.16 |
| | Roud Hill PS#1 & PS#2 - Structures Installed | 354.30 | 2008 | - | | \$ 16,821.09 |
| | 12" SDR 35 | 361.21 | 2008 | 196 | LF | \$ 52,485.94 |
| Terry Funeral Home | | | | | | |
| | 4" PVC Laterals | 363.20 | 2005 | 35 | LF | \$ 5,698.02 |
| Timberlane | | | | | | |
| | Manholes | 361.23 | 2005 | 5 | EA | \$ 16,387.76 |
| | 8" SDR 35 | 361.21 | 2005 | 890 | LF | \$ 37,840.83 |
| | 4" PVC Laterals | 363.20 | 2005 | 1,425 | LF | \$ 61,081.65 |
| Valley Crossing | | | | | | |
| | 8" SDR 35 | 361.21 | 1993 | 7,950 | LF | \$ 173,629.39 |
| | Drop Manholes | 361.23 | 1993 | 1 | EA | \$ 3,779.21 |
| | Manholes | 361.23 | 1993 | 45 | EA | \$ 96,790.65 |
| | 4" PVC Laterals | 363.20 | 1993 | 4,340 | LF | \$ 76,216.55 |
| Valley Farm | | | | | | |
| | 4" Insertion Valve | 360.21 | 2007 | 1 | EA | \$ 24,269.47 |
| | 4" SDR 21 Force Main | 360.21 | 2007 | 340 | LF | \$ 16,179.64 |
| | 8" SDR 35 | 361.21 | 2007 | 4,600 | LF | \$ 175,388.21 |
| | Manholes | 361.23 | 2007 | 31 | EA | \$ 132,938.62 |
| | 6" PVC Laterals | 363.20 | 2007 | 1,500 | LF | \$ 66,077.19 |
| Valley Springs | | | | | | |
| | 8" SDR 35 | 361.21 | 1988 | 11,217 | LF | \$ 191,451.73 |

| LOCATION | ASSET | CODE | YEAR | QUANTITY | UNITS | ORIGINAL COST |
|-------------------------------------|-------------------------------|--------|------|----------|-------|-------------------------|
| | 10" SDR 35 | 361.21 | 1988 | 5,200 | LF | \$ 246,961.40 |
| | Drop Manholes | 361.23 | 1988 | 11 | EA | \$ 23,972.07 |
| | Manholes | 361.23 | 1988 | 58 | EA | \$ 78,280.06 |
| | 4" PVC Laterals | 363.20 | 1988 | 3,760 | LF | \$ 53,815.06 |
| Valley View Business Park | | | | | | |
| | 2" & 6" Air Release Chamber | 360.21 | 2008 | 4 | EA | \$ 29,453.79 |
| | 2" SDR 21 Force Main | 360.21 | 2008 | 6,185 | LF | \$ 132,914.59 |
| | 6" Air Release Chamber | 360.21 | 2008 | 1 | EA | \$ 4,325.63 |
| | 6" SDR 26 Force Main | 360.21 | 2008 | 6,425 | LF | \$ 146,264.20 |
| | 8" SDR 35 | 361.21 | 2008 | 1,338 | LF | \$ 51,884.11 |
| | Manholes | 361.23 | 2008 | 7 | EA | \$ 18,223.86 |
| Woodland Pointe | | | | | | |
| | 8" SDR 35 | 361.21 | 2008 | 1,250 | LF | \$ 10,000.85 |
| | Manholes | 361.23 | 2008 | 5 | EA | \$ 62,575.32 |
| | 4" PVC Laterals | 363.20 | 2008 | 300 | LF | \$ 3,478.28 |
| Round Hill - Robinson/Oaklyn | | | | | | |
| | 6" PVC Laterals | 363.20 | 2008 | 350 | LF | \$ 55,576.52 |
| | 8" DIP | 361.21 | 2008 | 146 | LF | \$ 14,250.35 |
| | 8" SDR 35 | 361.21 | 2008 | 3,312 | LF | \$ 232,762.23 |
| | Manholes | 361.23 | 2008 | 14 | EA | \$ 80,715.20 |
| Spruce Street | | | | | | |
| | 1.5" HDPE Force Main | 360.21 | 2017 | 450 | LF | \$ 29,660.40 |
| Bulk Meter Pits | | | | | | |
| | Charles Street Bulk Meter Pit | 365.20 | 1970 | 1 | EA | \$ 4,929.50 |
| | Valley Road Bulk Meter Pit | 365.20 | 1970 | 1 | EA | \$ 4,929.50 |
| ROWs | | | | | | |
| | ROWs - Original Basins | 353.20 | 1973 | 23 | EA | \$ 3,367.92 |
| Grand Total | | | | | | \$ 13,389,107.55 |

| | | |
|-------------------------------------|----------------|-----------------|
| Manholes | 1,031 | EA |
| Force Mains and Low Pressure Sewers | 28,661 | LF |
| GRAVITY PIPING | | |
| 6" SDR 35 | 207 | LF |
| 8" Asbestos Cement | 69,164 | LF |
| 8" DIP | 191 | LF |
| 8" SDR 35 | 109,601 | LF |
| 8" VCP | 4,431 | LF |
| 10" Asbestos Cement | 6,933 | LF |
| 10" DIP | 123 | LF |
| 10" SDR 35 | 7,044 | LF |
| 12" Asbestos Cement | 742 | LF |
| 12" SDR 35 | 196 | LF |
| 15" Asbestos Cement | 6,097 | LF |
| 18" Asbestos Cement | 62 | LF |
| GRAVITY PIPING GRAND TOTAL | 204,791 | LF |
| | | 39 Miles |

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

**Wastewater System
Appraisal Work Papers
As of December 17, 2019**

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:**

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Potential Purchaser: Investor-Owned Utility
As of December 17, 2019
Discounted Cash Flow Analysis**

| Discount Rate | | | 7.93% | | | | | | | | | | | |
|--|--------|-----|-----------|--------------|------------------|---------------------------|---|----------------------------------|---------------------------------|---------------------------|---------------------|----------------------------------|----------------|-----------------------------|
| Capitalization Rate | (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 @ 28.85% | Capital Expenditures | Change in Working Capital | Net Cash Flows | Period Present Worth Factor (PW) | PW of Cashflow | Accumulated PW of Cashflows |
| | | | | | | (3)-(4) | (5)-(5) | (7) *28.85% | | | (3)-(4)-(8)-(9)+10) | | (11)*(12) | Sum (13) |
| 1 | 0.5 | | 2,857,439 | 3,122,464 | 561,233 | (265,025) | (826,258) | (238,706) | 127,144 | 5,956 | (158,419) | 0.963 | (158,419) | (158,419) |
| 2 | 1.5 | | 2,972,157 | 3,183,945 | 565,173 | (211,788) | (776,961) | (224,464) | 128,051 | 6,195 | (122,570) | 0.892 | (109,332) | (267,751) |
| 3 | 2.5 | | 3,085,912 | 3,246,645 | 569,249 | (158,396) | (727,712) | (210,217) | 128,957 | 6,434 | (86,723) | 0.826 | (103,822) | (371,573) |
| 4 | 3.5 | | 3,199,667 | 3,310,589 | 573,465 | (105,141) | (678,563) | (196,468) | 129,862 | 6,673 | (40,850) | 0.766 | (99,389) | (470,962) |
| 5 | 4.5 | | 3,313,422 | 3,375,802 | 577,824 | (52,086) | (629,408) | (174,174) | 130,767 | 6,912 | (5,941) | 0.709 | (95,000) | (565,962) |
| 6 | 5.5 | | 3,427,177 | 3,442,275 | 582,329 | (2,086) | (580,252) | (152,480) | 131,672 | 7,151 | (48,878) | 0.657 | (90,720) | (656,682) |
| 7 | 6.5 | | 3,540,932 | 3,508,149 | 587,017 | 68,868 | (531,144) | (129,821) | 132,577 | 7,390 | (15,243) | 0.609 | (86,477) | (743,159) |
| 8 | 7.5 | | 3,654,687 | 3,567,447 | 591,937 | 220,210 | (482,037) | (107,072) | 133,482 | 7,629 | (1,108) | 0.564 | (82,242) | (825,401) |
| 9 | 8.5 | | 3,768,442 | 3,627,177 | 597,017 | 361,427 | (432,920) | (84,223) | 134,387 | 7,868 | (1,731) | 0.523 | (78,077) | (903,478) |
| 10 | 9.5 | | 3,882,197 | 3,687,447 | 602,317 | 502,636 | (383,803) | (60,474) | 135,292 | 8,107 | (1,354) | 0.484 | (73,942) | (977,420) |
| 11 | 10.5 | | 3,995,952 | 3,748,177 | 607,824 | 643,845 | (335,676) | (36,725) | 136,197 | 8,346 | (977) | 0.449 | (69,837) | (1,047,257) |
| 12 | 11.5 | | 4,109,707 | 3,809,177 | 613,540 | 784,854 | (287,527) | (12,026) | 137,102 | 8,585 | (600) | 0.416 | (65,762) | (1,113,019) |
| 13 | 12.5 | | 4,223,462 | 3,870,422 | 619,460 | 925,863 | (239,378) | (12,721) | 138,007 | 8,824 | (193) | 0.385 | (61,717) | (1,174,736) |
| 14 | 13.5 | | 4,337,217 | 3,932,177 | 625,580 | 1,066,872 | (191,229) | (13,416) | 138,912 | 9,063 | (116) | 0.357 | (57,702) | (1,232,438) |
| 15 | 14.5 | | 4,450,972 | 4,000,177 | 631,900 | 1,207,881 | (143,080) | (14,111) | 139,817 | 9,302 | (39) | 0.331 | (53,717) | (1,286,155) |
| 16 | 15.5 | | 4,564,727 | 4,074,177 | 638,616 | 1,348,890 | (94,931) | (14,806) | 140,722 | 9,541 | (92) | 0.306 | (49,762) | (1,335,917) |
| 17 | 16.5 | | 4,678,482 | 4,154,177 | 645,632 | 1,489,900 | (46,782) | (15,501) | 141,627 | 9,780 | (145) | 0.284 | (45,837) | (1,381,754) |
| 18 | 17.5 | | 4,792,237 | 4,240,177 | 652,948 | 1,630,910 | (2,363) | (16,206) | 142,532 | 10,019 | (198) | 0.263 | (41,942) | (1,423,696) |
| 19 | 18.5 | | 4,905,992 | 4,332,177 | 660,664 | 1,771,920 | (17,114) | (16,911) | 143,437 | 10,258 | (251) | 0.244 | (38,077) | (1,461,773) |
| 20 and beyond | 19.5 | | 8,582,365 | 4,485,819 | 661,489 | 4,096,546 | 3,435,057 | 992,388 | 168,713 | 3,041,007 | 4,589 | 2,850 | 8,352,940 | 19,154,327 |
| Age | | | | | 19.5 | | | | | | | | | |
| PW(Age) = 1/(1+Discount Rate) ^{Age} | | | | | 0.226 | | | | Net Plant | | 10,175,851 | | | |
| PW to Perpetuity = 1/Capitalization Rate | | | | | 12.610 | | | | ADIT | | (1,548,965) | | | |
| PW _(Total Present) = PW to Perpetuity * PW Factor _(19.5) | | | | | 2.850 | | | | Rate Base | | 8,626,886 | 0.226 | 1,949,676 | 12,751,063 |
| | | | | | | | | | Annual Plant Construction | | | | | |
| | | | | | | | | | Inflation Rate | | 0.0422 | Input | | |
| | | | | | | | | | Plant Inflation over 19.5 years | | 19,718,571 | 0.226 | 4,456,397 | 15,257,784 |
| | | | | | | | | | PP | | 13,950,000 | | | |
| | | | | | | | | | OCLD | | 9,214,738 | | | |
| | | | | | | | | | PP/OCLD | | 1,514 | | | |
| | | | | | | | | | RCNLD | | 19,252,339 | | | |
| | | | | | | | | | RCNLD/PP | | 1.380095529 | | | |
| | | | | | | | | | | | 11,905,927.12 | 0.226 | 2,690,740 | 13,492,127 |
| | | | | | | | | | Average | | | | | 15,163,825 |

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Potential Purchaser: Investor-Owned Utility
As of December 17, 2019
Discounted Cash Flow Analysis**

| Discount Rate: | | 7.93% | | | | | | | | | | | | | |
|---|------|------------|--------------|------------------|---------------------------|---|----------------------------------|-----------------------------------|---------------------------|----------------|----------------------------------|----------------|-----------------------------|---------|------------|
| Capitalization Rate: | | 6.00% | | | | | | | | | | | | | |
| (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)-(9)+(10) | (11)*(12) | Sum (13) | | |
| 20 | 19.5 | 8,582,365 | 4,485,819 | 661,489 | 4,096,546 | 3,435,057 | 992,388 | 168,713 | 4,589 | 2,930,856 | 0.226 | 662,373 | 11,463,760 | | |
| 21 | 20.5 | 9,183,131 | 4,574,753 | 642,191 | 4,608,378 | 3,966,187 | 1,145,831 | 139,935 | 32,441 | 3,290,171 | 0.209 | 687,646 | 12,151,406 | | |
| 22 | 21.5 | 9,274,962 | 4,665,459 | 647,079 | 4,609,503 | 3,962,424 | 1,144,744 | 141,278 | 4,959 | 3,318,522 | 0.194 | 643,793 | 12,795,199 | | |
| 23 | 22.5 | 9,367,712 | 4,757,971 | 652,066 | 4,609,741 | 3,957,675 | 1,143,372 | 142,632 | 5,008 | 3,318,725 | 0.180 | 597,371 | 13,392,570 | | |
| 24 | 23.5 | 10,023,452 | 4,852,326 | 657,157 | 5,171,126 | 4,513,969 | 1,304,086 | 144,000 | 35,411 | 3,687,629 | 0.166 | 612,146 | 14,004,716 | | |
| 25 | 24.5 | 10,123,687 | 4,948,559 | 662,352 | 5,175,128 | 4,512,776 | 1,303,741 | 145,381 | 5,412 | 3,720,594 | 0.154 | 572,971 | 14,577,687 | | |
| 26 | 25.5 | 10,224,924 | 5,046,708 | 146,777 | 5,178,216 | 5,031,439 | 1,453,583 | 146,777 | 5,467 | 3,572,389 | 0.143 | 510,852 | 15,088,539 | | |
| 27 | 26.5 | 10,940,669 | 5,146,813 | 136,334 | 5,793,856 | 5,657,522 | 1,634,458 | 136,334 | 38,650 | 3,984,414 | 0.132 | 525,943 | 15,614,482 | | |
| 28 | 27.5 | 11,050,076 | 5,248,910 | 137,698 | 5,801,166 | 5,663,468 | 1,636,176 | 137,698 | 5,908 | 4,021,384 | 0.123 | 494,630 | 16,109,112 | | |
| 29 | 28.5 | 11,160,577 | 5,353,043 | 139,074 | 5,807,534 | 5,668,460 | 1,637,618 | 139,074 | 5,968 | 4,024,874 | 0.114 | 458,836 | 16,567,948 | | |
| 30 | 29.5 | 11,272,183 | 5,459,248 | 140,466 | 5,812,935 | 5,672,469 | 1,638,776 | 140,466 | 6,026 | 4,027,667 | 0.105 | 422,905 | 16,990,853 | | |
| 31 | 30.5 | 11,384,905 | 5,567,570 | 141,871 | 5,817,335 | 5,675,464 | 1,639,642 | 141,871 | 6,086 | 4,029,736 | 0.098 | 394,914 | 17,385,767 | | |
| 32 | 31.5 | 11,498,754 | 5,678,049 | 143,289 | 5,820,705 | 5,677,416 | 1,640,205 | 143,289 | 6,149 | 4,031,062 | 0.090 | 362,796 | 17,748,563 | | |
| 33 | 32.5 | 11,613,742 | 5,790,730 | 144,722 | 5,823,012 | 5,678,290 | 1,640,458 | 144,722 | 6,209 | 4,031,623 | 0.084 | 338,656 | 18,087,219 | | |
| 34 | 33.5 | 11,729,879 | 5,905,655 | 158,020 | 5,824,224 | 5,666,204 | 1,636,966 | 158,020 | 6,271 | 4,022,967 | 0.078 | 313,791 | 18,401,010 | | |
| 35 | 34.5 | 11,847,178 | 6,022,870 | 159,542 | 5,824,308 | 5,664,766 | 1,636,551 | 159,542 | 6,335 | 4,021,880 | 0.072 | 289,575 | 18,690,585 | | |
| 36 | 35.5 | 11,965,650 | 6,142,420 | 161,078 | 5,823,230 | 5,662,152 | 1,635,796 | 161,078 | 6,397 | 4,019,959 | 0.067 | 269,337 | 18,959,922 | | |
| 37 | 36.5 | 12,085,307 | 6,264,352 | 162,628 | 5,820,955 | 5,658,327 | 1,634,691 | 162,628 | 6,462 | 4,017,174 | 0.062 | 249,065 | 19,208,987 | | |
| 38 | 37.5 | 12,206,160 | 6,388,713 | 164,194 | 5,817,447 | 5,653,253 | 1,633,225 | 164,194 | 6,526 | 4,013,502 | 0.057 | 228,770 | 19,437,757 | | |
| 39 | 38.5 | 12,328,222 | 6,515,552 | 165,776 | 5,812,670 | 5,646,894 | 1,631,388 | 165,776 | 6,591 | 4,008,915 | 0.053 | 212,472 | 19,650,229 | | |
| 40 | 39.5 | 12,451,504 | 6,644,919 | 167,373 | 5,806,585 | 5,639,212 | 1,629,168 | 167,373 | 6,657 | 4,003,387 | 0.049 | 196,166 | 19,846,395 | | |
| 41 | 40.5 | 12,576,019 | 6,776,863 | 156,713 | 5,799,156 | 5,642,443 | 1,630,102 | 156,713 | 6,724 | 4,005,617 | 0.045 | 180,253 | 20,026,648 | | |
| 42 | 41.5 | 12,701,779 | 6,911,437 | 158,280 | 5,790,342 | 5,632,062 | 1,627,103 | 158,280 | 6,791 | 3,998,168 | 0.042 | 167,923 | 20,194,571 | | |
| 43 | 42.5 | 12,828,797 | 7,048,693 | 166,256 | 5,780,104 | 5,613,848 | 1,621,841 | 159,862 | 6,859 | 3,991,542 | 0.039 | 155,670 | 20,350,241 | | |
| 44 | 43.5 | 12,957,085 | 7,188,685 | 174,378 | 5,768,400 | 5,594,022 | 1,616,113 | 161,461 | 6,928 | 3,983,898 | 0.036 | 143,420 | 20,493,661 | | |
| 45 | 44.5 | 13,086,656 | 7,331,466 | 176,123 | 5,755,190 | 5,579,067 | 1,611,792 | 163,077 | 6,997 | 3,973,324 | 0.034 | 135,093 | 20,628,754 | | |
| 46 | 45.5 | 13,217,523 | 7,477,093 | 177,884 | 5,740,430 | 5,562,546 | 1,607,020 | 164,707 | 7,066 | 3,961,637 | 0.031 | 122,811 | 20,751,565 | | |
| 47 | 46.5 | 13,349,698 | 7,625,622 | 192,916 | 5,724,076 | 5,531,160 | 1,597,952 | 178,626 | 7,137 | 3,940,361 | 0.029 | 114,270 | 20,865,835 | | |
| 48 | 47.5 | 13,483,195 | 7,777,113 | 194,779 | 5,706,082 | 5,511,303 | 1,592,215 | 180,351 | 7,210 | 3,926,306 | 0.027 | 106,010 | 20,971,845 | | |
| 49 | 48.5 | 13,618,027 | 7,931,622 | 196,659 | 5,686,405 | 5,489,746 | 1,585,988 | 182,092 | 7,281 | 3,911,044 | 0.025 | 97,776 | 21,069,621 | | |
| 50 | 49.5 | 13,754,207 | 8,089,211 | 198,560 | 5,664,996 | 5,466,436 | 1,579,253 | 183,852 | 7,353 | 3,894,538 | 0.023 | 89,574 | 21,159,195 | | |
| 51 | 50.5 | 13,891,749 | 8,249,942 | 200,478 | 5,641,807 | 5,441,329 | 1,572,000 | 185,628 | 7,428 | 3,876,751 | 0.021 | 81,412 | 21,240,607 | | |
| 52 | 51.5 | 14,030,666 | 8,413,877 | 202,417 | 5,616,789 | 5,414,372 | 1,564,212 | 187,423 | 7,500 | 3,857,654 | 0.020 | 77,153 | 21,317,760 | | |
| 53 | 52.5 | 14,170,973 | 8,581,080 | 204,372 | 5,589,893 | 5,385,521 | 1,555,877 | 189,233 | 7,577 | 3,837,206 | 0.018 | 69,070 | 21,386,830 | | |
| 54 | 53.5 | 14,312,683 | 8,751,616 | 192,622 | 5,561,067 | 5,368,445 | 1,550,944 | 178,354 | 7,653 | 3,824,116 | 0.017 | 65,010 | 21,451,840 | | |
| 55 | 54.5 | 14,455,810 | 8,925,552 | 194,548 | 5,530,258 | 5,335,710 | 1,541,487 | 180,137 | 7,729 | 3,800,905 | 0.016 | 60,814 | 21,512,654 | | |
| 56 | 55.5 | 14,600,368 | 9,102,957 | 196,494 | 5,497,411 | 5,300,917 | 1,531,435 | 181,939 | 7,806 | 3,776,231 | 0.014 | 52,867 | 21,565,521 | | |
| 57 | 56.5 | 14,746,372 | 9,283,898 | 198,460 | 5,462,474 | 5,264,014 | 1,520,774 | 183,759 | 7,884 | 3,750,057 | 0.013 | 48,751 | 21,614,272 | | |
| 58 | 57.5 | 14,893,836 | 9,468,446 | 200,443 | 5,425,390 | 5,224,947 | 1,509,487 | 185,595 | 7,963 | 3,722,345 | 0.012 | 44,668 | 21,658,940 | | |
| 59 | 58.5 | 15,042,774 | 9,656,674 | 202,447 | 5,386,100 | 5,183,653 | 1,497,557 | 187,451 | 8,043 | 3,693,049 | 0.012 | 44,317 | 21,703,257 | | |
| 60 | 59.5 | 15,193,202 | 9,848,855 | 204,472 | 5,344,547 | 5,140,075 | 1,484,968 | 189,326 | 8,123 | 3,662,130 | 0.013 | 509,036 | 22,212,293 | | |
| | | | | | | | | 6,688,647 | | | | | | | |
| Age | | | | 59.5 | | | | Net Plant | 4,898,902 | | | | | | |
| PW(Age) = 1/(1-Discount Rate) ^{Age} | | | | 0.011 | | | | ADIT | (833,098) | | | | | | |
| PW to Perpetuity = 1/Capitalization Rate | | | | 12.610 | | | | Rate Base | 4,065,804 | | | | | | |
| PW (Grand Total) = PW to Perpetuity * PW Factor _(13.1) | | | | 0.139 | | | | Plant Construction Inflation Rate | 0.0422 Input | | | | | | |
| | | | | | | | | | | | Plant Inflation over 59.5 years | 47,559,255 | 0.011 | 523,152 | 22,226,409 |
| | | | | | | | | | | | PP | 13,950,000 | | | |
| | | | | | | | | | | | RCNLD | 19,252,333 | | | |
| | | | | | | | | | | | RCNLD/PP | 1.38005529 | | | |
| | | | | | | | | | | | | 5,611,198.06 | 0.011 | 61,723 | 21,764,980 |

Deferred Tax

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

Wastewater System
Appraisal Work Papers
As of December 17, 2019

Income Approach
Cost of Capital / Required Return

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

**Water and Wastewater Cost of Capital
First Quarter 2020 (1-1-2020)**

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 | 26% | Market | 3.23% | Market | 28.89% | 71.11% | 0.60% |
| Equity | 74% | Market | 9.90% | Market | 0.0% | 100.0% | 7.33% |
| Total Capital r | 100.0% | | | | | | 7.93% |
| Growth (g) | | | | | | | 1.82% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | 6.00% |

**Water and Wastewater Cost of Capital
First Quarter 2020 (1-1-2020)**

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 | 26% | Market | 3.23% | Market | Not Applicable | Not Applicable | 0.84% |
| Equity | 74% | Market | 9.90% | Market | Not Applicable | Not Applicable | 7.33% |
| Total Capital r | 100.0% | | | | | | 8.17% |
| Growth (g) | | | | | | | 1.82% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | 6.23% |

**Water and Wastewater Cost of Capital
First Quarter 2020 (1-1-2020)**

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 | 45% | Embedded | 3.23% | Embedded | Not Applicable | Not Applicable | 1.45% |
| Equity | 55% | Embedded | 9.90% | Market | Not Applicable | Not Applicable | 5.45% |
| Total Capital r | 100.0% | | | | | | 6.90% |
| Growth (g) | | | | | | Not Applicable | 0.00% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | 6.90% |

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Potential Purchaser: Investor-Owned Utility
As of December 17, 2019
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 | Rate-making 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 | 2,857,439 | 3,122,464 | 334,635 | 193,069 | (792,729) | (229,019) | (370,641) | (563,710) | 13,742,509 | 154,302 | (65,465) | 13,831,346 | -2.68% | 16,448,763 | -3.43% |
| 2 | 1.5 | 2,972,157 | 3,183,945 | 336,430 | 188,526 | (736,744) | (212,845) | (335,373) | (523,899) | 13,535,130 | 160,497 | (131,549) | 13,564,078 | -2.47% | 15,924,864 | -3.29% |
| 3 | 2.5 | 3,685,912 | 3,246,645 | 336,344 | 184,597 | (81,674) | (23,596) | 126,519 | (58,078) | 13,329,773 | 199,039 | (198,835) | 13,329,977 | 0.95% | 15,866,786 | -0.37% |
| 4 | 3.5 | 3,833,891 | 3,310,589 | 336,291 | 178,443 | 8,568 | 2,475 | 184,536 | 6,093 | 13,126,432 | 207,030 | (267,354) | 13,066,108 | 1.41% | 15,872,878 | 0.04% |
| 5 | 4.5 | 3,987,810 | 3,375,802 | 337,616 | 172,495 | 101,897 | 29,438 | 244,954 | 72,459 | 12,923,762 | 215,342 | (336,750) | 12,802,354 | 1.91% | 15,945,338 | 0.45% |
| 6 | 5.5 | 4,730,060 | 3,438,275 | 339,161 | 166,745 | 785,879 | 227,041 | 725,583 | 558,838 | 12,721,571 | 255,423 | (407,002) | 12,569,992 | 5.77% | 16,504,176 | 3.39% |
| 7 | 6.5 | 4,900,956 | 3,502,149 | 338,655 | 161,187 | 898,965 | 259,711 | 800,441 | 639,254 | 12,532,938 | 264,652 | (479,592) | 12,317,998 | 6.50% | 17,143,431 | 3.73% |
| 8 | 7.5 | 5,078,027 | 3,567,447 | 338,111 | 155,814 | 1,016,655 | 293,712 | 878,757 | 722,943 | 12,346,989 | 274,214 | (553,818) | 12,067,385 | 7.28% | 17,866,374 | 4.05% |
| 9 | 8.5 | 5,566,177 | 3,634,194 | 341,247 | 150,620 | 1,440,116 | 416,049 | 1,174,687 | 1,024,067 | 12,160,076 | 300,574 | (628,663) | 11,831,987 | 9.93% | 18,890,441 | 5.42% |
| 10 | 9.5 | 5,767,282 | 3,702,414 | 340,526 | 145,600 | 1,578,742 | 456,099 | 1,268,243 | 1,122,643 | 11,976,086 | 311,433 | (705,290) | 11,582,229 | 10.95% | 20,013,083 | 5.61% |
| 11 | 10.5 | 5,975,653 | 3,772,132 | 342,317 | 140,746 | 1,720,458 | 497,040 | 1,364,164 | 1,223,418 | 11,792,545 | 322,685 | (783,020) | 11,332,210 | 12.04% | 21,236,502 | 5.76% |
| 12 | 11.5 | 6,550,091 | 3,843,375 | 342,025 | 136,055 | 2,228,636 | 643,853 | 1,720,838 | 1,584,783 | 11,611,564 | 353,704 | (862,506) | 11,102,762 | 15.50% | 22,821,285 | 6.94% |
| 13 | 12.5 | 6,786,745 | 3,916,168 | 343,617 | 131,520 | 2,395,440 | 692,043 | 1,834,917 | 1,703,397 | 11,431,294 | 366,485 | (943,254) | 10,854,525 | 16.90% | 24,524,682 | 6.95% |
| 14 | 13.5 | 7,031,949 | 3,990,540 | 343,121 | 127,136 | 2,571,152 | 742,806 | 1,955,482 | 1,828,346 | 11,253,857 | 379,726 | (1,025,919) | 10,607,664 | 18.43% | 26,353,028 | 6.94% |
| 15 | 14.5 | 7,707,929 | 4,066,518 | 343,908 | 122,898 | 3,174,605 | 917,143 | 2,380,360 | 2,257,462 | 11,078,004 | 416,228 | (1,110,183) | 10,384,049 | 22.92% | 28,610,490 | 7.89% |
| 16 | 15.5 | 7,785,008 | 4,147,105 | 344,319 | 118,801 | 3,174,783 | 917,195 | 2,376,389 | 2,257,588 | 10,892,644 | 420,390 | (1,194,127) | 10,118,907 | 23.48% | 30,868,078 | 7.31% |
| 17 | 16.5 | 7,862,858 | 4,229,296 | 345,334 | 114,841 | 3,173,387 | 916,792 | 2,371,436 | 2,256,595 | 10,708,654 | 424,594 | (1,279,616) | 9,853,632 | 24.07% | 33,124,673 | 6.81% |
| 18 | 17.5 | 8,413,258 | 4,313,124 | 345,516 | 111,013 | 3,643,605 | 1,052,638 | 2,701,980 | 2,590,967 | 10,526,902 | 454,316 | (1,366,945) | 9,614,273 | 28.10% | 35,715,640 | 7.25% |
| 19 | 18.5 | 8,497,391 | 4,398,620 | 343,901 | 107,313 | 3,647,557 | 1,053,779 | 2,701,991 | 2,593,778 | 10,349,222 | 458,859 | (1,456,689) | 9,351,392 | 28.88% | 38,309,419 | 6.77% |
| 20 | 19.5 | 8,582,365 | 4,485,819 | 342,083 | 103,736 | 3,650,727 | 1,054,695 | 2,699,768 | 2,596,032 | 10,175,851 | 463,448 | (1,548,965) | 9,090,334 | 29.70% | 40,905,450 | 6.35% |

2,299,742.38

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Potential Purchaser: Investor-Owned Utility
As of December 17, 2019
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 | Rate Making 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 | 8,582,365 | 4,485,819 | 342,083 | 103,736 | 3,650,727 | 1,054,695 | 2,699,768 | 2,596,032 | 10,175,851 | 463,448 | (1,548,965) | 9,090,334 | 29.70% | 40,905,450 | 6.35% |
| 20 | 20.5 | 9,183,131 | 4,574,753 | 344,751 | 100,278 | 4,163,349 | 1,202,791 | 3,060,836 | 2,960,558 | 9,971,035 | 495,889 | (1,634,895) | 8,832,029 | 34.66% | 43,866,008 | 6.75% |
| 20 | 21.5 | 9,274,962 | 4,665,459 | 340,935 | 96,935 | 4,171,633 | 1,205,185 | 3,063,383 | 2,966,448 | 9,771,378 | 500,848 | (1,723,340) | 8,548,886 | 35.83% | 46,832,456 | 6.33% |
| 20 | 22.5 | 9,367,712 | 4,757,971 | 339,520 | 93,704 | 4,176,517 | 1,206,596 | 3,063,625 | 2,969,921 | 9,574,490 | 505,856 | (1,813,635) | 8,266,711 | 37.06% | 49,802,377 | 5.96% |
| 20 | 23.5 | 10,023,452 | 4,852,326 | 338,894 | 90,581 | 4,741,651 | 1,369,863 | 3,462,369 | 3,371,788 | 9,379,596 | 541,267 | (1,905,581) | 8,015,282 | 43.20% | 53,174,165 | 6.34% |
| 20 | 24.5 | 10,123,687 | 4,948,559 | 337,957 | 87,561 | 4,749,610 | 1,372,162 | 3,465,009 | 3,377,448 | 9,187,020 | 546,679 | (1,999,298) | 7,734,401 | 44.80% | 56,551,613 | 5.97% |
| 20 | 25.5 | 10,224,924 | 5,046,708 | 336,458 | 84,643 | 4,757,115 | 1,374,331 | 3,467,427 | 3,382,784 | 8,997,339 | 552,146 | (1,944,500) | 7,604,985 | 45.59% | 59,934,397 | 5.64% |
| 20 | 26.5 | 10,940,669 | 5,146,813 | 332,437 | 81,821 | 5,379,598 | 1,554,166 | 3,907,253 | 3,825,432 | 8,801,236 | 590,796 | (1,887,846) | 7,504,186 | 52.07% | 63,759,829 | 6.00% |
| 20 | 27.5 | 11,050,076 | 5,248,910 | 328,875 | 79,094 | 5,393,197 | 1,558,095 | 3,914,196 | 3,835,102 | 8,610,060 | 596,704 | (1,832,615) | 7,374,149 | 53.08% | 67,594,932 | 5.67% |
| 20 | 28.5 | 11,160,577 | 5,353,043 | 327,907 | 76,457 | 5,403,170 | 1,560,976 | 3,918,651 | 3,842,194 | 8,421,227 | 602,672 | (1,778,061) | 7,245,838 | 54.08% | 71,437,126 | 5.38% |
| 20 | 29.5 | 11,272,183 | 5,459,248 | 324,455 | 73,909 | 5,414,571 | 1,564,269 | 3,924,211 | 3,850,302 | 8,237,238 | 608,698 | (1,724,906) | 7,121,030 | 55.11% | 75,287,428 | 5.11% |
| 20 | 30.5 | 11,384,905 | 5,567,570 | 319,773 | 71,445 | 5,426,117 | 1,567,605 | 3,929,957 | 3,858,512 | 8,059,336 | 614,784 | (1,673,510) | 7,000,610 | 56.14% | 79,145,940 | 4.88% |
| 20 | 31.5 | 11,498,754 | 5,678,049 | 316,458 | 69,064 | 5,435,183 | 1,570,225 | 3,934,022 | 3,864,958 | 7,886,167 | 620,933 | (1,623,482) | 6,883,618 | 57.15% | 83,010,898 | 4.66% |
| 20 | 32.5 | 11,613,742 | 5,790,730 | 314,870 | 66,761 | 5,441,381 | 1,572,015 | 3,936,127 | 3,869,366 | 7,716,019 | 627,142 | (1,574,326) | 6,768,835 | 58.15% | 86,880,264 | 4.45% |
| 20 | 33.5 | 11,729,879 | 5,905,655 | 310,317 | 64,536 | 5,449,371 | 1,574,323 | 3,939,584 | 3,875,048 | 7,563,722 | 633,413 | (1,530,327) | 6,666,808 | 59.09% | 90,755,312 | 4.27% |
| 20 | 34.5 | 11,847,178 | 6,022,870 | 306,421 | 62,385 | 5,455,502 | 1,576,094 | 3,941,793 | 3,879,408 | 7,416,843 | 639,748 | (1,487,893) | 6,568,698 | 60.01% | 94,634,720 | 4.10% |
| 20 | 35.5 | 11,965,650 | 6,142,420 | 303,487 | 60,305 | 5,459,438 | 1,577,232 | 3,942,511 | 3,882,206 | 7,274,434 | 646,145 | (1,446,751) | 6,473,828 | 60.90% | 98,516,926 | 3.94% |
| 20 | 36.5 | 12,085,307 | 6,264,352 | 301,837 | 58,295 | 5,460,823 | 1,577,632 | 3,941,486 | 3,883,191 | 7,135,225 | 652,607 | (1,406,534) | 6,381,298 | 61.77% | 102,400,117 | 3.79% |
| 20 | 37.5 | 12,206,160 | 6,388,713 | 297,100 | 56,352 | 5,463,995 | 1,578,548 | 3,941,799 | 3,885,447 | 7,002,320 | 659,133 | (1,368,137) | 6,293,316 | 62.63% | 106,285,565 | 3.66% |
| 20 | 38.5 | 12,328,222 | 6,515,552 | 292,383 | 54,474 | 5,465,813 | 1,579,073 | 3,941,214 | 3,886,740 | 6,875,712 | 665,724 | (1,331,560) | 6,209,876 | 63.47% | 110,172,304 | 3.53% |
| 20 | 39.5 | 12,451,504 | 6,644,919 | 289,735 | 52,658 | 5,464,192 | 1,578,605 | 3,938,245 | 3,885,587 | 6,753,350 | 672,381 | (1,296,210) | 6,129,521 | 64.25% | 114,057,891 | 3.41% |
| 20 | 40.5 | 12,576,019 | 6,776,863 | 290,911 | 50,903 | 5,457,342 | 1,576,626 | 3,931,619 | 3,880,716 | 6,619,153 | 679,105 | (1,257,440) | 6,040,818 | 65.08% | 117,938,608 | 3.29% |
| 20 | 41.5 | 12,701,779 | 6,911,437 | 286,983 | 49,206 | 5,454,153 | 1,575,705 | 3,927,654 | 3,878,448 | 6,490,450 | 685,896 | (1,220,258) | 5,956,088 | 65.94% | 121,817,056 | 3.18% |
| 20 | 42.5 | 12,828,797 | 7,048,693 | 284,592 | 47,566 | 5,447,946 | 1,573,912 | 3,921,600 | 3,874,034 | 6,365,720 | 692,755 | (1,186,071) | 5,872,404 | 66.78% | 125,691,090 | 3.08% |
| 20 | 43.5 | 12,957,085 | 7,188,685 | 281,800 | 45,980 | 5,440,620 | 1,571,795 | 3,914,805 | 3,868,825 | 6,245,381 | 699,683 | (1,155,037) | 5,790,027 | 67.61% | 129,559,915 | 2.99% |
| 20 | 44.5 | 13,086,656 | 7,331,466 | 279,705 | 44,447 | 5,431,038 | 1,569,027 | 3,906,458 | 3,862,011 | 6,128,753 | 706,680 | (1,125,112) | 5,710,321 | 68.41% | 133,421,926 | 2.89% |
| 20 | 45.5 | 13,217,523 | 7,477,093 | 277,422 | 42,966 | 5,420,042 | 1,565,850 | 3,897,158 | 3,854,192 | 6,016,038 | 713,746 | (1,096,355) | 5,633,429 | 69.18% | 137,276,118 | 2.81% |
| 20 | 46.5 | 13,349,698 | 7,625,622 | 275,374 | 41,534 | 5,407,168 | 1,562,131 | 3,886,571 | 3,845,037 | 5,919,290 | 720,883 | (1,072,533) | 5,567,640 | 69.81% | 141,121,155 | 2.72% |
| 20 | 47.5 | 13,483,195 | 7,777,113 | 274,409 | 40,149 | 5,391,524 | 1,557,611 | 3,874,062 | 3,833,913 | 5,825,232 | 728,093 | (1,049,528) | 5,503,797 | 70.39% | 144,955,068 | 2.64% |
| 20 | 48.5 | 13,618,027 | 7,931,622 | 271,601 | 38,811 | 5,375,993 | 1,553,124 | 3,861,680 | 3,822,869 | 5,735,724 | 735,374 | (1,027,877) | 5,443,221 | 70.94% | 148,777,938 | 2.57% |
| 20 | 49.5 | 13,754,207 | 8,089,211 | 268,563 | 37,517 | 5,358,916 | 1,548,191 | 3,848,242 | 3,810,725 | 5,651,013 | 742,727 | (1,007,653) | 5,386,087 | 71.45% | 152,588,663 | 2.50% |
| 20 | 50.5 | 13,891,749 | 8,249,942 | 268,949 | 36,267 | 5,336,591 | 1,541,741 | 3,831,117 | 3,794,850 | 5,567,691 | 750,155 | (987,872) | 5,329,974 | 71.88% | 156,383,512 | 2.43% |
| 20 | 51.5 | 14,030,666 | 8,413,877 | 266,993 | 35,058 | 5,314,738 | 1,535,428 | 3,814,368 | 3,779,310 | 5,488,122 | 757,655 | (969,216) | 5,276,561 | 72.29% | 160,162,823 | 2.36% |
| 20 | 52.5 | 14,170,973 | 8,581,080 | 264,791 | 33,889 | 5,291,213 | 1,528,631 | 3,796,471 | 3,762,582 | 5,412,563 | 765,232 | (951,760) | 5,226,035 | 72.65% | 163,925,404 | 2.30% |
| 20 | 53.5 | 14,312,683 | 8,751,616 | 263,353 | 32,760 | 5,264,954 | 1,521,045 | 3,776,669 | 3,743,909 | 5,327,565 | 772,885 | (931,326) | 5,169,124 | 73.06% | 167,669,314 | 2.23% |
| 20 | 54.5 | 14,455,810 | 8,925,552 | 260,638 | 31,668 | 5,237,952 | 1,513,244 | 3,756,376 | 3,724,708 | 5,247,064 | 780,614 | (912,232) | 5,115,446 | 73.43% | 171,394,022 | 2.17% |
| 20 | 55.5 | 14,600,368 | 9,102,957 | 258,072 | 30,612 | 5,208,742 | 1,504,806 | 3,734,548 | 3,703,936 | 5,170,946 | 788,420 | (894,447) | 5,064,919 | 73.73% | 175,097,958 | 2.12% |
| 20 | 56.5 | 14,746,372 | 9,283,898 | 257,942 | 29,592 | 5,174,940 | 1,495,040 | 3,709,492 | 3,679,900 | 5,096,763 | 796,304 | (877,262) | 5,015,805 | 73.96% | 178,777,858 | 2.06% |
| 20 | 57.5 | 14,893,836 | 9,468,444 | 255,227 | 28,605 | 5,141,558 | 1,485,396 | 3,684,767 | 3,656,162 | 5,027,131 | 804,267 | (861,435) | 4,969,963 | 74.14% | 182,434,200 | 2.00% |
| 20 | 58.5 | 15,042,774 | 9,656,674 | 252,644 | 27,652 | 5,105,804 | 1,475,067 | 3,658,389 | 3,630,737 | 4,961,938 | 812,310 | (846,933) | 4,927,315 | 74.25% | 186,064,757 | 1.95% |
| 20 | 59.5 | 15,193,202 | 9,848,655 | 252,362 | 26,730 | 5,065,455 | 1,463,410 | 3,628,775 | 3,602,045 | 4,898,902 | 820,433 | (833,098) | 4,886,237 | 74.27% | 189,666,802 | 1.90% |

Unit: \$1,000,000 (United States Dollars) | Pennsylvania American Water Company | Valley Township Wastewater System | Valuation as of 12-31-2019 | Created 7-7-2020

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Historical Purchaser - Investor-Owned Utility
As of December 31, 2019

| | Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| End Balance | | | | | | | | | | | | | | | | | |
| End Balance Check | | | | | | | | | | | | | | | | | |
| Net Plant | | | | | | | | | | | | | | | | | |
| Begin Balance | | | | | | | | | | | | | | | | | |
| End Balance | | | | | | | | | | | | | | | | | |
| Total Asset | | | | | | | | | | | | | | | | | |
| Tax Depreciation of Property, Plant, & Equipment | | | | | | | | | | | | | | | | | |
| Total MACRS Depreciation | | | | | | | | | | | | | | | | | |
| Begin Balance | | | | | | | | | | | | | | | | | |
| Depreciation | | | | | | | | | | | | | | | | | |
| Retirements | | | | | | | | | | | | | | | | | |
| End Balance | | | | | | | | | | | | | | | | | |
| End Balance Check | | | | | | | | | | | | | | | | | |
| Net Plant | | | | | | | | | | | | | | | | | |
| Begin Balance | | | | | | | | | | | | | | | | | |
| End Balance | | | | | | | | | | | | | | | | | |
| Tax | | | | | | | | | | | | | | | | | |
| Rate | | | | | | | | | | | | | | | | | |

Balance Statement

| | | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|--|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Liabilities | | | | | | | | | | | | | | | | | |
| Current Liabilities | | | | | | | | | | | | | | | | | |
| Current Liabilities | | | | | | | | | | | | | | | | | |
| Cl. as % of Revenues | 22.80% | 22.80% | 22.80% | 22.80% | 22.80% | 22.80% | 22.80% | 22.80% | 22.80% | 22.80% | 22.80% | 22.80% | 22.80% | 22.80% | 22.80% | 22.80% | 22.80% |
| Noncurrent Liabilities | | | | | | | | | | | | | | | | | |
| Long Term Debt, Notes payable, net of current portion | 5,977,155.00 | | | | | | | | | | | | | | | | |
| Additional Debt | | | | | | | | | | | | | | | | | |
| Debt Retirement | | | | | | | | | | | | | | | | | |
| Debt Retirement years | 30.00 | | | | | | | | | | | | | | | | |
| End Long Term Debt, Notes payable, net of current portion | | | | | | | | | | | | | | | | | |
| Equity | | | | | | | | | | | | | | | | | |
| Proportion of Capital | 78% | | | | | | | | | | | | | | | | |
| Beginning Equity Capital | 17,022,473 | | | | | | | | | | | | | | | | |
| Additions to Equity (Retained Earnings) | | | | | | | | | | | | | | | | | |
| Deductions from Equity Dividends | | | | | | | | | | | | | | | | | |
| Additional Paid in Capital | | | | | | | | | | | | | | | | | |
| Ending Equity Capital | | | | | | | | | | | | | | | | | |
| Operating Income | | | | | | | | | | | | | | | | | |
| Return On Equity | 3.64% | | | | | | | | | | | | | | | | |
| Capital Expenditures and Changes in Working Capital | | | | | | | | | | | | | | | | | |
| Capital Expenditures | | | | | | | | | | | | | | | | | |
| Changes to Working Capital | | | | | | | | | | | | | | | | | |
| Current Assets | | | | | | | | | | | | | | | | | |
| Current Liabilities | | | | | | | | | | | | | | | | | |
| Working Capital | | | | | | | | | | | | | | | | | |
| Changes to Working Capital | | | | | | | | | | | | | | | | | |
| CASH FLOW | | | | | | | | | | | | | | | | | |
| Income from Operations | | | | | | | | | | | | | | | | | |
| Non-Cash Expenses (Depreciation) | | | | | | | | | | | | | | | | | |
| Capital Expenditures | | | | | | | | | | | | | | | | | |
| Change in Working Capital | | | | | | | | | | | | | | | | | |
| Net Cash Flows | | | | | | | | | | | | | | | | | |
| Period | | | | | | | | | | | | | | | | | |
| Rate Factor | | | | | | | | | | | | | | | | | |
| Discount Rate with growth | 8.17% | | | | | | | | | | | | | | | | |
| Discount Rate without growth | 6.23% | | | | | | | | | | | | | | | | |
| Period Present Worth Factor (PW) | | | | | | | | | | | | | | | | | |
| PW of Cashflow | | | | | | | | | | | | | | | | | |

Valley Wastewater Income Approach Assumptions and Projections for the period 2015 to 2025 (Created 01/20/2025)

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Potential Purchaser: Investor-Owned Utility
As of December 31, 2019

| | Base | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Accumulated P/W of Cash Flows | 20,993,324 | | | | | | | | | |
| CASH FLOW | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Capital Expenditure | (2,224,400) | (1,627,511) | (2,281,893) | (3,460,844) | (2,448,029) | (3,566,427) | (2,132,545) | (1,720,848) | (2,308,063) | (2,940,921) |
| Change in Working Capital | | | | | | | | | | |
| Net Cash Flow | 18,768,924 | 15,362,489 | 14,718,107 | 14,539,156 | 12,091,126 | 8,524,699 | 6,803,853 | 5,083,005 | 2,774,936 | 1,179,060 |
| Present Value Factor (10%) | | 0.913 | 0.822 | 0.742 | 0.673 | 0.613 | 0.562 | 0.518 | 0.480 | 0.446 |
| Present Value of Cash Flows | | 17,125,852 | 12,630,965 | 10,774,427 | 9,774,861 | 5,195,867 | 3,792,139 | 2,632,129 | 1,335,291 | 523,907 |
| Assumed P/W of Cash Flows | 19,899,674 | | | | | | | | | |
| Wastewater Revenue | 22,000,000 | 22,000,000 | 22,000,000 | 22,000,000 | 22,000,000 | 22,000,000 | 22,000,000 | 22,000,000 | 22,000,000 | 22,000,000 |
| Operating Expenses | (5,000,000) | (5,000,000) | (5,000,000) | (5,000,000) | (5,000,000) | (5,000,000) | (5,000,000) | (5,000,000) | (5,000,000) | (5,000,000) |
| Depreciation & Amortization | (2,000,000) | (2,000,000) | (2,000,000) | (2,000,000) | (2,000,000) | (2,000,000) | (2,000,000) | (2,000,000) | (2,000,000) | (2,000,000) |
| Interest Expense | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) |
| Income Tax Expense | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) |
| Change in Net Debt | | | | | | | | | | |
| Net Income | 17,000,000 | 17,000,000 | 17,000,000 | 17,000,000 | 17,000,000 | 17,000,000 | 17,000,000 | 17,000,000 | 17,000,000 | 17,000,000 |
| Present Value Factor (10%) | | 0.913 | 0.822 | 0.742 | 0.673 | 0.613 | 0.562 | 0.518 | 0.480 | 0.446 |
| Present Value of Net Income | | 15,526,600 | 14,014,000 | 12,566,000 | 11,276,000 | 10,125,000 | 9,088,000 | 8,148,000 | 7,310,000 | 6,562,000 |
| Assumed P/W of Net Income | 16,000,000 | | | | | | | | | |
| Revenue | 22,000,000 | 22,000,000 | 22,000,000 | 22,000,000 | 22,000,000 | 22,000,000 | 22,000,000 | 22,000,000 | 22,000,000 | 22,000,000 |
| Operating Expenses | (5,000,000) | (5,000,000) | (5,000,000) | (5,000,000) | (5,000,000) | (5,000,000) | (5,000,000) | (5,000,000) | (5,000,000) | (5,000,000) |
| Depreciation & Amortization | (2,000,000) | (2,000,000) | (2,000,000) | (2,000,000) | (2,000,000) | (2,000,000) | (2,000,000) | (2,000,000) | (2,000,000) | (2,000,000) |
| Interest Expense | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) |
| Income Tax Expense | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) | (1,000,000) |
| Change in Net Debt | | | | | | | | | | |
| Net Income | 17,000,000 | 17,000,000 | 17,000,000 | 17,000,000 | 17,000,000 | 17,000,000 | 17,000,000 | 17,000,000 | 17,000,000 | 17,000,000 |
| Present Value Factor (10%) | | 0.913 | 0.822 | 0.742 | 0.673 | 0.613 | 0.562 | 0.518 | 0.480 | 0.446 |
| Present Value of Net Income | | 15,526,600 | 14,014,000 | 12,566,000 | 11,276,000 | 10,125,000 | 9,088,000 | 8,148,000 | 7,310,000 | 6,562,000 |
| Assumed P/W of Net Income | 16,000,000 | | | | | | | | | |

Pennsylvania American Water Company
 Valley Township Wastewater System
 Wastewater Collection System
 Potential Purchaser - Investor-Owned Utility
 As of December 31, 2019

| Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|------|-------|-------|-------|-------|-----------|-----------|-----------|-----------|
| Equity | | | | | | | | | |
| Additional Equity (Source: Proceeds from Regulator) Divide by 100 for Regulator Use Rules) | 6.15 | 15.59 | 22.26 | 27.33 | 16.40 | 43.46 | 47.13 | 14.40 | 0 |
| Funds Provided from Operations | | | | | | | | | |
| Source(s) of Funds: | | | | | | | | | |
| Net Revenue (Less Regulator - Source: Proceeds) | | | | | | 745,767 | 1,221,899 | 748,076 | 5,093 |
| Transmitted Revenue (Source: Regulator) | | | | | | 336,435 | 156,490 | 156,364 | 108,751 |
| Current Loans (Less: Source: Proceeds) | | | | | | 24,915 | 25,926 | 183,109 | 33,589 |
| Total and Other(s) of Funds | | | | | | 258,117 | 1,404,315 | 1,087,549 | 172,421 |
| Source(s) of Funds: | | | | | | 258,117 | 1,404,315 | 1,087,549 | 172,421 |
| Current Loans (Less: Source: Proceeds) | | | | | | 258,117 | 1,404,315 | 1,087,549 | 172,421 |
| Uses of Funds | | | | | | | | | |
| Capital Assets (Increase - Use) | | | | | | 10,061 | 31,111 | 39,061 | 43,147 |
| Fixed Assets (Increase - Use) | | | | | | 171,144 | 139,261 | 170,987 | 137,951 |
| Other Uses of Funds | | | | | | 156,812 | 132,173 | 177,501 | 178,363 |
| Funds by Financing Activities | | | | | | | | | |
| Changes in Debt: | | | | | | | | | |
| Increase in Long-Term Debt | | | | | | 198,500 | 179,960 | 190,000 | 118,337 |
| Decrease in Long-Term Debt | | | | | | (198,500) | (179,960) | (190,000) | (118,337) |
| Increase in Equity | | | | | | 0 | 0 | 0 | 0 |
| Additional Paid-in Capital (Increase) | | | | | | 0 | 0 | 0 | 0 |
| Total Funds from Financing Activities | | | | | | 0 | 0 | 0 | 0 |
| Total Funds Needed | | | | | | 198,500 | 179,960 | 190,000 | 118,337 |
| Financing | | | | | | | | | |
| Debt | 10% | | | | | 198,500 | 179,960 | 190,000 | 118,337 |
| Equity | 14% | | | | | 0 | 0 | 0 | 0 |
| Funds Provided by Financing | | | | | | 198,500 | 179,960 | 190,000 | 118,337 |

Us-0110-WaterUtilityVA America - Valley Wastewater System Valuations as of 12-30-2019 - Created 7-2-2020

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Potential Purchaser - Investor-Owned Utility
As of December 31, 2019

| Rate | 1:0 | Periods 6-15 | 16-19 | 20 | 21 | 22 | 23 | 24 | 25 |
|--|-------------------|-----------------|-------|-------|-------|-------|-------|-------|-------|
| Income Statement | | | | | | | | | |
| Revenues | | | | | | | | | |
| Annual Revenue Growth rate | | | | | | | | | |
| Subscriber Growth Rate (Annually) | 4.0% | 3.8% | 3.0% | 3.0% | 3.0% | 3.0% | 3.0% | 3.0% | 3.0% |
| Periodic Subscriber Growth | | | | | | | | | |
| Growth | 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) | Calculated in DOC | | | | | | | | |
| Proposed Rate Increase | 9.5% | 11.9% | 18.9% | 21.0% | 23.5% | 29.2% | 29.2% | 33.4% | 33.4% |
| Total Revenue Adjustments | Calculated | | | | | | | | |
| Base and Forecast | | | | | | | | | |
| Operating Expenses | 63,226 | 1.0% | -1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Office Labor 14 Rate of Change | 5,423 | 1.0% | -1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Office (Phone, Telephones / activities (2, 3, 4) | 27,303 | 1.0% | -1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Contract Services S.A. 7, 13 | 2,966,229 | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% |
| Contract Service S.A. 7, 13 Rate of Change | 22,989,828 | 1.0% | -1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Treatment (1) (1) Rate of Change | | | | | | | | | |
| Property Taxes | | | | | | | | | |
| 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 (Calculations) | | | | | | | | | |
| Operating Expenses less Depreciation | | | | | | | | | |
| Operating Income | | | | | | | | | |
| Nonoperating Revenues (Expenses) | | | | | | | | | |
| Interest Income | | | | | | | | | |
| Interest Expense | | | | | | | | | |
| Interest Exp as % of Debt | | | | | | | | | |
| 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 plus Interest | | | | | | | | | |
| Earnings before Interest, Taxes, Depreciation, & Amortization | | | | | | | | | |
| Income (loss) before State and Federal Taxes | | | | | | | | | |
| Tax Depreciation | | | | | | | | | |
| Deferred Tax over Book Depreciation | | | | | | | | | |
| Income Adjusted for Tax Depreciation | | | | | | | | | |
| Income Tax Rate | | | | | | | | | |
| Income After Tax | | | | | | | | | |
| Deferred Income Taxes | | | | | | | | | |
| Accumulated Deferred Income Taxes | | | | | | | | | |
| Income After Taxes (Book Depreciation) | | | | | | | | | |
| Plus Interest | | | | | | | | | |
| After Tax Income Debt Free | | | | | | | | | |
| Balance Statement | | | | | | | | | |
| Assets | | | | | | | | | |
| Current Assets | | | | | | | | | |
| Balance Statement | | | | | | | | | |
| Property Plant & Equipment | | | | | | | | | |
| Total PM&E | | | | | | | | | |
| Reserve | | | | | | | | | |
| End Balance | | | | | | | | | |
| Book Depreciation of Property Plant & Equipment | | | | | | | | | |
| Total Book Depreciation | | | | | | | | | |
| Reserve | | | | | | | | | |

DOC Investor Owned

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Respective Purchaser / Investor/Owner/Utility
As of December 31, 2016

| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 |
|----------------------------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|
| Accumulated PV of Cashflow | 20,922,521 | | | 4,874,242 | 8,137,209 | 5,469,881 | 3,855,262 | 6,899,188 | 7,995,562 | 8,322,548 | 8,851,682 | 5,572,868 | 10,246,318 | 10,231,221 | 12,572,777 | 40,219,427 | 49,162,890 | 58,986,117 | 68,976,767 | |
| CASH FLOW | | | | | | | | | | | | | | | | | | | | |
| Income from Operations | 538,536 | 1,031,092 | 1,269,116 | 1,524,644 | 1,628,875 | 1,555,031 | 1,630,967 | 2,046,171 | 2,178,218 | 2,177,889 | 2,178,218 | 2,177,889 | 2,178,218 | 2,177,889 | 2,178,218 | 2,179,048 | 2,178,218 | 2,178,218 | 2,178,218 | 2,178,218 |
| Depreciation | (802,176) | (811,373) | (817,158) | (823,126) | (829,273) | (835,182) | (840,880) | (847,281) | (853,384) | (859,189) | (864,799) | (870,213) | (875,532) | (880,756) | (885,887) | (890,925) | (895,870) | (900,722) | (905,491) | (910,167) |
| Capital Expenditures | (11,511) | (56,776) | (112,964) | (169,367) | (225,864) | (282,572) | (339,489) | (396,616) | (453,953) | (511,500) | (569,256) | (627,223) | (685,499) | (744,084) | (802,977) | (862,178) | (921,685) | (981,497) | (1,041,614) | (1,099,234) |
| Change in Working Capital | 10,859 | (1,322) | 31,019 | (1,278) | (1,783) | (2,342) | (2,953) | (3,615) | (4,286) | (4,966) | (5,654) | (6,350) | (7,054) | (7,766) | (8,485) | (9,211) | (9,944) | (10,684) | (11,431) | (12,184) |
| Net Cash Flow | 1,172,420 | 1,111,616 | 1,458,231 | 1,513,844 | 1,370,207 | 1,461,077 | 1,521,377 | 1,878,752 | 1,817,191 | 1,817,191 | 1,817,191 | 1,817,191 | 1,817,191 | 1,817,191 | 1,817,191 | 1,817,191 | 1,817,191 | 1,817,191 | 1,817,191 | 1,817,191 |
| Initial PV Factor | 8% | 8.5% | 9% | 9.5% | 10% | 10.5% | 11% | 11.5% | 12% | 12.5% | 13% | 13.5% | 14% | 14.5% | 15% | 15.5% | 16% | 16.5% | 17% | 17.5% |
| PV Factor | 0.7346 | 0.7575 | 0.7814 | 0.8062 | 0.8320 | 0.8588 | 0.8865 | 0.9152 | 0.9448 | 0.9754 | 1.0070 | 1.0396 | 1.0731 | 1.1075 | 1.1428 | 1.1790 | 1.2160 | 1.2538 | 1.2925 | 1.3320 |
| Discount Rate (assumed) | 8.00% | 8.50% | 9.00% | 9.50% | 10.00% | 10.50% | 11.00% | 11.50% | 12.00% | 12.50% | 13.00% | 13.50% | 14.00% | 14.50% | 15.00% | 15.50% | 16.00% | 16.50% | 17.00% | 17.50% |
| Discount Rate (actual growth) | 8.00% | 8.50% | 9.00% | 9.50% | 10.00% | 10.50% | 11.00% | 11.50% | 12.00% | 12.50% | 13.00% | 13.50% | 14.00% | 14.50% | 15.00% | 15.50% | 16.00% | 16.50% | 17.00% | 17.50% |
| Period Present Value Factor (PV) | 0.6618 | 0.6938 | 0.7266 | 0.7602 | 0.7946 | 0.8300 | 0.8663 | 0.9035 | 0.9416 | 0.9805 | 1.0202 | 1.0607 | 1.1020 | 1.1442 | 1.1872 | 1.2310 | 1.2757 | 1.3212 | 1.3675 | 1.4146 |
| PV of Cashflow | 442,138 | 849,788 | 1,148,748 | 1,167,964 | 1,117,022 | 1,214,867 | 1,297,391 | 1,611,039 | 1,663,596 | 1,663,596 | 1,663,596 | 1,663,596 | 1,663,596 | 1,663,596 | 1,663,596 | 1,663,596 | 1,663,596 | 1,663,596 | 1,663,596 | 1,663,596 |
| Accumulated PV of Cashflow | 19,908,299 | | | 2,767,186 | 5,653,552 | 4,517,514 | 3,655,243 | 7,677,801 | 8,561,764 | 11,214,474 | 13,019,666 | 14,855,183 | 19,122,139 | 19,122,139 | 23,447,767 | 33,244,767 | 42,128,028 | 50,986,956 | 59,962,092 | |

Rate Lake Forecast

| | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|-------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
| Rate Base | | 24,027,889.00 | 24,227,832.00 | 24,735,973.00 | 24,969,457.00 | 25,189,993.00 | 25,548,664.00 | 25,743,866.00 | 25,866,678.00 | 25,928,012.00 | 25,956,728.00 | 25,982,010.00 | 25,989,430.00 | 25,991,778.00 | 25,992,012.00 | 25,992,012.00 | 25,992,012.00 | 25,992,012.00 | 25,992,012.00 | 25,992,012.00 | |
| Plant in Service | | 24,027,889.00 | 24,227,832.00 | 24,735,973.00 | 24,969,457.00 | 25,189,993.00 | 25,548,664.00 | 25,743,866.00 | 25,866,678.00 | 25,928,012.00 | 25,956,728.00 | 25,982,010.00 | 25,989,430.00 | 25,991,778.00 | 25,992,012.00 | 25,992,012.00 | 25,992,012.00 | 25,992,012.00 | 25,992,012.00 | 25,992,012.00 | |
| Accumulated Book Depreciation | | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | (2,361,768.41) | |
| Working Capital | | 11,433.00 | 12,845.00 | 15,768.00 | 16,485.00 | 17,126.00 | 17,712.00 | 18,254.00 | 18,752.00 | 19,206.00 | 19,616.00 | 20,082.00 | 20,504.00 | 20,882.00 | 21,216.00 | 21,506.00 | 21,752.00 | 21,954.00 | 22,112.00 | 22,226.00 | |
| Accumulated Deferred Income Tax | | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | (302,796.00) | |
| Rate Base | | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | 17,662,239.59 | |
| Cost of Sale | | 789,374.00 | 812,112.00 | 837,000.00 | 864,176.00 | 892,748.00 | 922,816.00 | 954,384.00 | 987,456.00 | 1,022,032.00 | 1,058,112.00 | 1,094,696.00 | 1,131,784.00 | 1,169,376.00 | 1,207,472.00 | 1,246,072.00 | 1,285,176.00 | 1,324,784.00 | 1,364,896.00 | 1,405,512.00 | |
| Rate of Return | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% | |
| Income from Operations | | 1,077,865.59 | 1,110,127.59 | 1,154,239.59 | 1,200,464.00 | 1,249,491.00 | 1,300,424.00 | 1,353,152.00 | 1,407,784.00 | 1,464,328.00 | 1,522,672.00 | 1,582,816.00 | 1,644,664.00 | 1,708,304.00 | 1,773,728.00 | 1,840,944.00 | 1,909,952.00 | 1,980,768.00 | 2,053,376.00 | 2,127,784.00 | 2,204,096.00 |
| Depreciation Expense | | (802,176.00) | (811,373.00) | (817,158.00) | (823,126.00) | (829,273.00) | (835,182.00) | (840,880.00) | (847,281.00) | (853,384.00) | (859,189.00) | (864,799.00) | (870,213.00) | (875,532.00) | (880,756.00) | (885,887.00) | (890,925.00) | (895,870.00) | (900,722.00) | (905,491.00) | |
| Working Capital | | 10,859.00 | (1,322.00) | 31,019.00 | (1,278.00) | (1,783.00) | (2,342.00) | (2,953.00) | (3,615.00) | (4,286.00) | (4,966.00) | (5,654.00) | (6,350.00) | (7,054.00) | (7,766.00) | (8,485.00) | (9,211.00) | (9,944.00) | (10,684.00) | (11,431.00) | |
| Change in Working Capital | | 10,859.00 | (1,322.00) | 31,019.00 | (1,278.00) | (1,783.00) | (2,342.00) | (2,953.00) | (3,615.00) | (4,286.00) | (4,966.00) | (5,654.00) | (6,350.00) | (7,054.00) | (7,766.00) | (8,485.00) | (9,211.00) | (9,944.00) | (10,684.00) | (11,431.00) | |
| Net Cash Flow | | 1,099,613.59 | 1,097,432.59 | 1,186,118.59 | 1,175,888.00 | 1,177,435.00 | 1,169,151.00 | 1,160,278.00 | 1,150,907.00 | 1,141,142.00 | 1,131,012.00 | 1,120,512.00 | 1,109,744.00 | 1,098,728.00 | 1,087,472.00 | 1,075,984.00 | 1,064,272.00 | 1,052,336.00 | 1,040,176.00 | 1,027,896.00 | 1,015,496.00 |
| Initial PV Factor | | 0.7346 | 0.7575 | 0.7814 | 0.8062 | 0.8320 | 0.8588 | 0.8865 | 0.9152 | 0.9448 | 0.9754 | 1.0070 | 1.0396 | 1.0731 | 1.1075 | 1.1428 | 1.1790 | 1.2160 | 1.2538 | 1.2925 | |
| PV Factor | | 0.7346 | 0.7575 | 0.7814 | 0.8062 | 0.8320 | 0.8588 | 0.8865 | 0.9152 | 0.9448 | 0.9754 | 1.0070 | 1.0396 | 1.0731 | 1.1075 | 1.1428 | 1.1790 | 1.2160 | 1.2538 | 1.2925 | |
| PV of Cashflow | | 801,541.59 | 823,758.59 | 920,764.59 | 945,356.00 | 972,187.50 | 1,000,262.00 | 1,029,484.00 | 1,060,142.00 | 1,092,196.00 | 1,125,536.00 | 1,160,176.00 | 1,196,112.00 | 1,233,344.00 | 1,271,872.00 | 1,311,696.00 | 1,352,816.00 | 1,395,232.00 | 1,438,944.00 | 1,483,952.00 | 1,530,264.00 |
| Accumulated PV of Cashflow | | 1,099,613.59 | | | 801,541.59 | 1,603,083.18 | 2,603,624.68 | 3,604,166.18 | 4,604,707.68 | 5,605,249.18 | 6,605,790.68 | 7,606,332.18 | 8,606,873.68 | 9,607,415.18 | 10,607,956.68 | 11,608,498.18 | 12,609,039.68 | 13,609,581.18 | 14,610,122.68 | 15,610,664.18 | 16,611,205.68 |

Changes in Business Asset Accounts

| | | | | | | | | | | | | | | | | | | | | |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Change in Current Assets / Liabilities | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Change in Capital Assets / Liabilities | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Change in Working Capital | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Change in Accumulated Depreciation | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Change in Current Liabilities | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Change in Capital Liabilities | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Change in Working Capital | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |

Table 6.13: Sewer/Water Rates/Payments Schedule - Wastewater System - Updated 12/12/2018 - Created 7/2/2020

Pennsylvania American Water Company
 Valley Township Wastewater System
 Wastewater Collection System
 Potential Purchaser: Investor-Owned Utility
 As of December 31, 2019

| Year | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Equity | | | | | | | | | | | | | | | | |
| Additional to Equity (Source: Positive) / (Use: Negative) | | | | | | | | | | | | | | | | |
| (Excludes Source Negative - Use Positive) | | | | | | | | | | | | | | | | |
| Funds Provided from Operations | | | | | | | | | | | | | | | | |
| Source of Funds | | | | | | | | | | | | | | | | |
| Net Income (Use Negative) / Source Positive | 122,843 | 1,271,618 | 1,368,781 | 1,701,957 | 1,828,196 | 2,251,842 | 2,227,588 | 2,256,995 | 2,590,967 | 2,581,728 | 2,596,012 | 2,960,918 | 2,866,448 | 2,909,752 | 3,372,788 | 3,177,848 |
| Depreciation (Source) / (Use: Negative) | 860,224 | 762,227 | 812,225 | 768,421 | 841,212 | 819,828 | 848,229 | 849,198 | 841,124 | 843,895 | 843,243 | 848,174 | 840,923 | 899,200 | 848,894 | 837,813 |
| Current (Source) / (Source Positive) | 45,652 | 47,092 | 29,823 | 53,644 | 55,474 | 152,732 | 17,722 | 17,598 | 324,397 | 19,014 | 19,264 | 18,774 | 20,753 | 20,362 | 48,187 | 22,401 |
| Net Income and Uses of Funds | 1,008,919 | 1,822,827 | 2,260,831 | 2,525,117 | 2,726,883 | 3,262,342 | 3,112,127 | 3,123,791 | 3,666,871 | 3,554,545 | 3,459,529 | 3,827,129 | 3,728,183 | 3,829,254 | 4,369,767 | 4,038,062 |
| Source of Funds | | | | | | | | | | | | | | | | |
| (Excludes Use: (Source Positive)) | | | | | | | | | | | | | | | | |
| Uses of Funds | | | | | | | | | | | | | | | | |
| Current Assets - (Use: Negative) | 146,099 | 18,244 | 140,862 | 86,787 | 86,577 | 189,274 | 22,262 | 21,788 | 147,222 | 21,557 | 23,798 | 148,221 | 148,221 | 15,122 | 25,916 | 183,628 |
| Fixed Assets - (Source) / (Use: Negative) | 156,237 | 158,726 | 145,084 | 158,947 | 183,588 | 148,056 | 128,269 | 143,898 | 112,764 | 136,220 | 148,222 | 119,921 | 142,228 | 142,822 | 142,822 | 142,822 |
| Total Uses of Funds | 302,336 | 317,170 | 285,946 | 245,734 | 270,165 | 337,330 | 150,531 | 165,686 | 260,186 | 157,777 | 172,020 | 268,142 | 290,449 | 167,948 | 168,740 | 326,450 |
| Funds from Financing Activities | | | | | | | | | | | | | | | | |
| Changes in Debt | | | | | | | | | | | | | | | | |
| Increase in Long Term Debt | 1150,240 | (1,952,491) | (140,438) | (1,191,717) | (1,811,207) | (1,128,830) | (1,122,402) | (1,128,325) | (1,818,263) | (1,116,744) | (1,127,284) | (1,121,486) | 310,236 | (78,762) | (91,478) | (86,262) |
| Decrease in Long Term Debt | | | | | | | | | | | | | | | | |
| Funds from Equity | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dividends Paid (Use) | | | | | | | | | | | | | | | | |
| Additional Paid in Capital (Source) | 150,248,000 | (145,249,000) | (180,408,000) | (119,727,000) | (111,301,500) | (126,840,000) | (122,867,000) | (118,518,000) | (114,845,000) | (110,746,000) | (107,054,000) | (103,486,000) | (100,018,000) | (96,702,000) | (93,478,000) | (90,262,000) |
| Total Funds from Financing Activities | 150,398,240 | (147,201,491) | (180,548,438) | (120,918,717) | (112,112,707) | (127,968,830) | (123,989,402) | (119,536,325) | (114,863,263) | (111,862,744) | (108,178,284) | (104,607,486) | (101,708,236) | (98,780,262) | (95,576,678) | (92,348,262) |
| Total Funds Needed | 1140,325,000 | 1,290,634,000 | 1,464,117,000 | 1,735,129,000 | 1,901,119,000 | 2,149,198,000 | 2,316,164,000 | 2,370,866,000 | 2,829,037,000 | 2,676,310,000 | 2,577,549,000 | 3,029,647,000 | 2,828,609,000 | 2,829,254,000 | 3,269,091,000 | 3,144,746,000 |
| Financing | | | | | | | | | | | | | | | | |
| Debt | 2,978,840,000 | (3,233,119,000) | (1,114,118,000) | (4,111,111,000) | (3,811,111,000) | (3,811,111,000) | (3,811,111,000) | (3,811,111,000) | (4,111,111,000) | (3,811,111,000) | (3,811,111,000) | (3,811,111,000) | (3,811,111,000) | (3,811,111,000) | (3,811,111,000) | (3,811,111,000) |
| Equity | 347,681,000 | (825,442,000) | (1,129,829,000) | (1,284,018,000) | (1,117,989,000) | (1,479,787,000) | (1,500,000,000) | (1,569,749,000) | (1,718,826,000) | (1,867,200,000) | (1,767,438,000) | (1,218,536,000) | (1,017,398,000) | (1,078,042,000) | (1,247,919,000) | (1,372,984,000) |
| Funds Provided by Financing | (1,145,515,000) | (1,250,659,000) | (1,194,117,000) | (1,179,159,000) | (1,861,119,000) | (2,290,903,000) | (2,118,184,000) | (2,117,866,000) | (2,629,937,000) | (2,678,310,000) | (2,578,577,000) | (3,029,647,000) | (2,828,609,000) | (2,829,254,000) | (3,269,091,000) | (3,144,746,000) |

State of Pennsylvania Dept. of Environmental Protection - Valley Wastewater System (revision of 12/10/2018) - Covered 7/2000

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Ratepayer Purchase Interest Owned Utility
As of December 31, 2009

| Rate | Period | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | | | |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Accumulated PV of Cashflow | 22,281,523 | 18,827,473 | 12,997,788 | 10,549,857 | 87,854,214 | 104,772,498 | 112,511,807 | 115,441,175 | 125,774,364 | 125,977,969 | 129,888,708 | 133,946,959 | 137,874,643 | 141,735,355 | 144,123,508 | 147,717,656 | 149,994,063 |
| CASH FLOW | | | | | | | | | | | | | | | | | |
| Operating Revenues | 3,527,887 | 3,644,887 | 3,871,048 | 3,976,777 | 3,987,136 | 4,006,018 | 4,068,099 | 4,090,358 | 4,090,358 | 4,090,358 | 4,090,358 | 4,090,358 | 4,090,358 | 4,090,358 | 4,090,358 | 4,090,358 | 4,090,358 |
| Operating Costs | (3,096,771) | (3,096,771) | (3,096,771) | (3,096,771) | (3,096,771) | (3,096,771) | (3,096,771) | (3,096,771) | (3,096,771) | (3,096,771) | (3,096,771) | (3,096,771) | (3,096,771) | (3,096,771) | (3,096,771) | (3,096,771) | (3,096,771) |
| Capital Expenditures | (496,727) | (496,727) | (496,727) | (496,727) | (496,727) | (496,727) | (496,727) | (496,727) | (496,727) | (496,727) | (496,727) | (496,727) | (496,727) | (496,727) | (496,727) | (496,727) | (496,727) |
| Change in Working Capital | 5,467 | 20,852 | 3,908 | 3,908 | 3,908 | 3,908 | 3,908 | 3,908 | 3,908 | 3,908 | 3,908 | 3,908 | 3,908 | 3,908 | 3,908 | 3,908 | 3,908 |
| Net Cash Flow | 4,133,200 | 3,976,249 | 4,968,466 | 4,978,000 | 4,978,000 | 4,978,000 | 4,978,000 | 4,978,000 | 4,978,000 | 4,978,000 | 4,978,000 | 4,978,000 | 4,978,000 | 4,978,000 | 4,978,000 | 4,978,000 | 4,978,000 |
| Rate | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% |
| Discount Rate with growth | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% |
| Discount Rate without growth | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% |
| Present Value of Cash Flow (PV) | 7,339,543 | 7,339,543 | 7,339,543 | 7,339,543 | 7,339,543 | 7,339,543 | 7,339,543 | 7,339,543 | 7,339,543 | 7,339,543 | 7,339,543 | 7,339,543 | 7,339,543 | 7,339,543 | 7,339,543 | 7,339,543 | 7,339,543 |
| Accumulated PV of Cashflow | 19,150,289 | 18,827,473 | 12,997,788 | 10,549,857 | 87,854,214 | 104,772,498 | 112,511,807 | 115,441,175 | 125,774,364 | 125,977,969 | 129,888,708 | 133,946,959 | 137,874,643 | 141,735,355 | 144,123,508 | 147,717,656 | 149,994,063 |

Multi-Year Forecasts

| Item Name | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | | | | | |
|---------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--------------|
| Rate Base | 21,832,330.00 | 25,921,222.64 | 28,312,647.00 | 28,720,149.00 | 28,188,628.20 | 26,293,275.00 | 26,188,364.30 | 24,488,669.00 | 26,599,833.10 | 26,999,217.00 | 26,823,274.00 | 24,733,665.00 | 27,071,712.00 | 27,231,074.00 | 27,247,499.00 | 27,146,021.00 | 27,146,021.00 | |
| Accumulated Book Depreciation | 14,812,900.00 | 17,178,786.19 | 17,462,257.84 | 17,381,961.98 | 17,186,129.47 | 16,827,972.00 | 16,746,762.00 | 15,076,117.00 | 16,076,117.00 | 16,076,117.00 | 16,076,117.00 | 15,076,117.00 | 16,076,117.00 | 16,076,117.00 | 16,076,117.00 | 16,076,117.00 | 16,076,117.00 | |
| Working Capital | 592,124.00 | 592,124.00 | 592,124.00 | 592,124.00 | 592,124.00 | 592,124.00 | 592,124.00 | 592,124.00 | 592,124.00 | 592,124.00 | 592,124.00 | 592,124.00 | 592,124.00 | 592,124.00 | 592,124.00 | 592,124.00 | 592,124.00 | |
| Accumulated Depreciation on Rate Base | 11,844,000.00 | 13,887,886.00 | 14,879,853.00 | 14,798,200.00 | 14,170,000.00 | 13,170,000.00 | 13,088,637.70 | 11,400,000.00 | 12,482,000.00 | 12,482,000.00 | 12,482,000.00 | 11,400,000.00 | 12,482,000.00 | 12,482,000.00 | 12,482,000.00 | 12,482,000.00 | 12,482,000.00 | |
| Rate Base | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | 7,004,905.12 | |
| Accumulated Depreciation on Rate Base | 524,784.00 | 517,789.00 | 508,824.00 | 499,968.00 | 491,112.00 | 482,256.00 | 473,400.00 | 464,544.00 | 455,688.00 | 446,832.00 | 437,976.00 | 429,120.00 | 420,264.00 | 411,408.00 | 402,552.00 | 393,696.00 | 384,840.00 | |
| Rate Base | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | 7,165,491.12 | |
| Accumulated Depreciation on Rate Base | 84,643.00 | 81,821.00 | 79,296.00 | 76,871.00 | 74,446.00 | 72,021.00 | 69,596.00 | 67,171.00 | 64,746.00 | 62,321.00 | 59,896.00 | 57,471.00 | 55,046.00 | 52,621.00 | 50,196.00 | 47,771.00 | 45,346.00 | |
| Operating Revenues | 3,597,533.86 | 3,714,533.86 | 3,940,694.86 | 4,046,423.86 | 4,056,782.86 | 4,075,664.86 | 4,137,745.86 | 4,160,004.86 | 4,160,004.86 | 4,160,004.86 | 4,160,004.86 | 4,160,004.86 | 4,160,004.86 | 4,160,004.86 | 4,160,004.86 | 4,160,004.86 | 4,160,004.86 | 4,160,004.86 |
| Operating Costs | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | (3,096,771.00) | |
| Capital Expenditures | (496,727.00) | (496,727.00) | (496,727.00) | (496,727.00) | (496,727.00) | (496,727.00) | (496,727.00) | (496,727.00) | (496,727.00) | (496,727.00) | (496,727.00) | (496,727.00) | (496,727.00) | (496,727.00) | (496,727.00) | (496,727.00) | (496,727.00) | |
| Change in Working Capital | 5,467.00 | 20,852.00 | 3,908.00 | 3,908.00 | 3,908.00 | 3,908.00 | 3,908.00 | 3,908.00 | 3,908.00 | 3,908.00 | 3,908.00 | 3,908.00 | 3,908.00 | 3,908.00 | 3,908.00 | 3,908.00 | 3,908.00 | |
| Net Cash Flow | 4,133,200.00 | 3,976,249.00 | 4,968,466.00 | 4,978,000.00 | 4,978,000.00 | 4,978,000.00 | 4,978,000.00 | 4,978,000.00 | 4,978,000.00 | 4,978,000.00 | 4,978,000.00 | 4,978,000.00 | 4,978,000.00 | 4,978,000.00 | 4,978,000.00 | 4,978,000.00 | 4,978,000.00 | |
| Rate | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | |
| Discount Rate with growth | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | |
| Discount Rate without growth | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | 8.2% | |
| Present Value of Cash Flow (PV) | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | 7,339,543.00 | |
| Accumulated PV of Cashflow | 19,150,289.00 | 18,827,473.00 | 12,997,788.00 | 10,549,857.00 | 87,854,214.00 | 104,772,498.00 | 112,511,807.00 | 115,441,175.00 | 125,774,364.00 | 125,977,969.00 | 129,888,708.00 | 133,946,959.00 | 137,874,643.00 | 141,735,355.00 | 144,123,508.00 | 147,717,656.00 | 149,994,063.00 | |

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Water & Sewer - Investor-Owned Utilities
As of December 31, 2019**

| Row | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Funds | | | | | | | | | | | | | | | | | | |
| Additions to Equity (Source Positive) / Use Negative | | | | | | | | | | | | | | | | | | |
| Dividend (Source Negative) / Use Positive | | | | | | | | | | | | | | | | | | |
| Funds Provided from Operations | | | | | | | | | | | | | | | | | | |
| Source of Funds | | | | | | | | | | | | | | | | | | |
| Net Income (Can be Negative - Source Positive) | 1,262,194 | 1,425,412 | 1,891,152 | 1,842,194 | 1,840,402 | 1,954,153 | 1,864,766 | 1,869,164 | 1,871,034 | 1,879,408 | 1,882,214 | 1,881,791 | 1,885,441 | 1,884,742 | 1,885,281 | 1,885,714 | 1,885,281 | 1,885,714 |
| Depreciation (Source Positive / Use Negative) | 135,454 | 142,837 | 138,875 | 127,990 | 124,456 | 119,271 | 114,456 | 114,810 | 110,317 | 109,821 | 109,447 | 101,811 | 107,166 | 107,161 | 106,725 | 106,912 | 106,912 | 106,912 |
| Current Assets (Source Positive) | 22,886 | 161,748 | 24,776 | 24,874 | 24,221 | 35,478 | 21,729 | 25,788 | 24,247 | 26,509 | 26,774 | 27,267 | 27,313 | 27,313 | 27,313 | 27,313 | 27,313 | 27,313 |
| Source and Uses of Funds | 1,420,534 | 1,729,997 | 2,054,803 | 2,095,058 | 2,089,080 | 2,129,902 | 2,005,951 | 2,019,732 | 2,005,558 | 2,015,738 | 2,018,841 | 2,015,873 | 2,020,720 | 2,020,326 | 2,020,720 | 2,020,326 | 2,020,720 | 2,020,720 |
| Uses of Funds | | | | | | | | | | | | | | | | | | |
| Current Assets (Use Negative) | (28,341) | (124,404) | (45,634) | (60,361) | (1,194) | (11,262) | (1,876) | (2,187) | (1,714) | (1,884) | (1,112) | (1,704) | (1,834) | (1,834) | (1,834) | (1,834) | (1,834) | (1,834) |
| Fund Assets, Acquis, Increase (Use) | 146,777 | 116,334 | 137,646 | 139,074 | 140,464 | 141,871 | 141,265 | 144,722 | 149,021 | 158,442 | 163,078 | 167,628 | 164,544 | 163,719 | 167,171 | 167,171 | 167,171 | 167,171 |
| Total Uses of Funds | 178,124 | 128,762 | 148,212 | 170,015 | 170,210 | 170,210 | 170,210 | 170,210 | 170,210 | 170,210 | 170,210 | 170,210 | 170,210 | 170,210 | 170,210 | 170,210 | 170,210 | 170,210 |
| Funds from Financing Activities | | | | | | | | | | | | | | | | | | |
| Change in Total | | | | | | | | | | | | | | | | | | |
| Increase (Long Term Debt) | 87,257 | 184,473 | 161,624 | 178,903 | 176,211 | 174,725 | 171,211 | 168,971 | 166,621 | 164,381 | 162,274 | 160,769 | 158,533 | 156,216 | 154,443 | 152,211 | 150,211 | 148,211 |
| Funds from Equity | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Application of Cash in Capital Structure | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Funds from Financing Activities | 87,257 | 184,473 | 161,624 | 178,903 | 176,211 | 174,725 | 171,211 | 168,971 | 166,621 | 164,381 | 162,274 | 160,769 | 158,533 | 156,216 | 154,443 | 152,211 | 150,211 | 148,211 |
| Total Funds Needed | 1,420,534 | 1,729,997 | 2,054,803 | 2,095,058 | 2,089,080 | 2,129,902 | 2,005,951 | 2,019,732 | 2,005,558 | 2,015,738 | 2,018,841 | 2,015,873 | 2,020,720 | 2,020,326 | 2,020,720 | 2,020,326 | 2,020,720 | 2,020,720 |
| Financing | | | | | | | | | | | | | | | | | | |
| Debt | 190,700 | (1,013,596) | 3,124,674 | (1,026,001) | (1,027,118) | (1,028,115) | (1,029,112) | (1,030,109) | (1,031,106) | (1,032,103) | (1,033,100) | (1,034,097) | (1,035,094) | (1,036,091) | (1,037,088) | (1,038,085) | (1,039,082) | (1,040,079) |
| Equity | 2,474,940 | (1,888,492) | (4,111,814) | (2,930,155) | (2,931,476) | (2,932,797) | (2,934,118) | (2,935,439) | (2,936,760) | (2,938,081) | (2,939,402) | (2,940,723) | (2,942,044) | (2,943,365) | (2,944,686) | (2,946,007) | (2,947,328) | (2,948,649) |
| Funds Provided by Financing | 3,479,640 | (1,898,492) | (9,988,140) | (3,957,155) | (3,959,593) | (3,956,922) | (3,955,251) | (3,953,580) | (3,951,909) | (3,950,238) | (3,948,567) | (3,946,896) | (3,945,225) | (3,943,554) | (3,941,883) | (3,940,212) | (3,938,541) | (3,936,870) |

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Potential Purchaser: Investor-Owned Utility
As of December 31, 2019

| | Rate | 15 | Periods 6-12 | 16-19 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 |
|--|--------------------|----|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Income Statement | | | | | | | | | | | | | | | | | | | | |
| Revenues | | | | | | | | | | | | | | | | | | | | |
| Annual Revenue Growth rate | | | | | | | | | | | | | | | | | | | | |
| Subscriber Growth Rate (Annually) | 4.0% | | 3.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Periodic Subscriber Growth | | | | | | | | | | | | | | | | | | | | |
| Growth | 0.0% | | 0.0% | 0.0% | | | | | | | | | | | | | | | | |
| Period for Periodic Growth | 3 | | | | | | | 0.0% | | | | | | | | | | | | |
| Rate Case Assumptions | | | | | | | | | | | | | | | | | | | | |
| Periodic Rate Case (years) | Calculated in DOCI | | | | | | | | | | | | | | | | | | | |
| Required Rate Increase | | | | | 38.77% | 48.40% | 38.02% | 37.62% | 47.22% | 36.79% | 46.86% | 35.92% | 35.48% | 35.00% | 34.50% | 34.00% | 33.57% | 33.00% | 32.59% | 32.07% |
| Proposed Rate Increase | | | | | 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% |
| Total Revenue Adjustments | | | | | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Rate and Forecast | 2,927,149 | | 12,901,179 | 12,878,797 | 12,957,085 | 13,086,556 | 13,217,527 | 13,349,998 | 13,483,136 | 13,616,027 | 13,748,267 | 13,881,169 | 14,013,666 | 14,145,913 | 14,278,043 | 14,410,015 | 14,541,810 | 14,673,468 | 14,805,032 | 14,936,557 |
| Operating Expenses | | | | | | | | | | | | | | | | | | | | |
| Office Labor 14 Rate of Change | 63,226 | | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% |
| Office Labor 14 Rate of Change | | | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Office (Phone, Telephone Facilities (2, 3, 4) Rate of Change | 5,423 | | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Office (Phone, Telephone Facilities (2, 3, 4) Rate of Change | | | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Contract Services 5.6, 7, 13 Rate of Change | 27,363 | | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Contract Services 5.6, 7, 13 Rate of Change | | | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Contract Service 5.6, 7, 13 Rate of Change | 27,363 | | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Contract Service 5.6, 7, 13 Rate of Change | | | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Treatment (1) Rate of Change | 2,966,229 | | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% |
| Treatment (1) 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% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% |
| Property Taxes | | | | | | | | | | | | | | | | | | | | |
| Begin Plant | 6,819,153 | | 6,496,450 | 6,365,720 | 6,243,381 | 6,128,751 | 6,016,058 | 5,919,799 | 5,825,232 | 5,735,724 | 5,651,013 | 5,571,691 | 5,498,122 | 5,428,868 | 5,363,653 | 5,302,153 | 5,243,043 | 5,187,004 | 5,133,916 | 5,082,662 |
| IFT 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% | 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) | | | | | | | | | | | | | | | | | | | | |
| 2006-2083 | 286,983 | | 284,592 | 283,803 | 283,700 | 283,427 | 282,974 | 282,439 | 281,822 | 281,122 | 280,348 | 279,501 | 278,583 | 277,597 | 276,545 | 275,429 | 274,252 | 273,018 | 271,730 | 270,383 |
| 2006-2083 | | | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 |
| 2006-2083 | | | 37,376 | 37,376 | 37,376 | 37,376 | 37,376 | 37,376 | 37,376 | 37,376 | 37,376 | 37,376 | 37,376 | 37,376 | 37,376 | 37,376 | 37,376 | 37,376 | 37,376 | 37,376 |
| 2006-2083 | | | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 | 4,911,437 |
| 2006-2083 | | | 5,503,359 | 5,496,512 | 5,486,600 | 5,473,485 | 5,456,702 | 5,435,673 | 5,410,804 | 5,382,822 | 5,351,384 | 5,316,411 | 5,278,824 | 5,238,653 | 5,196,032 | 5,151,102 | 5,103,957 | 5,054,732 | 5,003,581 | 4,950,559 |
| Nonoperating Revenues (Expenses) | | | | | | | | | | | | | | | | | | | | |
| Interest Expense | | | | | | | | | | | | | | | | | | | | |
| Interest Expense | | | 49,206 | 47,568 | 45,980 | 44,447 | 42,866 | 41,334 | 40,319 | 38,811 | 37,517 | 36,267 | 35,058 | 33,889 | 32,760 | 31,668 | 30,612 | 29,592 | 28,604 | 27,649 |
| Interest Exp. as % of Debt | 1.23% | | 1.23% | 1.23% | 1.23% | 1.23% | 1.23% | 1.23% | 1.23% | 1.23% | 1.23% | 1.23% | 1.23% | 1.23% | 1.23% | 1.23% | 1.23% | 1.23% | 1.23% | 1.23% |
| Total nonoperating revenues (expenses) | | | 49,206 | 47,568 | 45,980 | 44,447 | 42,866 | 41,334 | 40,319 | 38,811 | 37,517 | 36,267 | 35,058 | 33,889 | 32,760 | 31,668 | 30,612 | 29,592 | 28,604 | 27,649 |
| Income (Loss) before State and Federal Taxes | | | | | | | | | | | | | | | | | | | | |
| Income (Loss) before State and Federal Taxes | | | 5,454,153 | 5,447,966 | 5,440,820 | 5,432,088 | 5,422,042 | 5,410,168 | 5,395,324 | 5,378,991 | 5,360,916 | 5,341,391 | 5,320,428 | 5,298,181 | 5,274,664 | 5,250,002 | 5,225,222 | 5,200,372 | 5,175,492 | 5,150,592 |
| State and Federal Taxes | | | | | | | | | | | | | | | | | | | | |
| 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% | 28.89% | 28.89% | 28.89% | 28.89% | 28.89% | 28.89% | 28.89% | 28.89% | 28.89% |
| 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% | 28.89% | 28.89% | 28.89% | 28.89% | 28.89% | 28.89% | 28.89% | 28.89% |
| Income After Taxes | | | 3,876,488 | 3,874,024 | 3,888,482 | 3,862,011 | 3,854,187 | 3,845,037 | 3,833,953 | 3,822,869 | 3,810,725 | 3,798,860 | 3,787,160 | 3,775,699 | 3,764,381 | 3,753,214 | 3,742,207 | 3,731,360 | 3,720,673 | 3,710,147 |
| Income After Taxes and Interest | | | 3,927,654 | 3,922,600 | 3,934,802 | 3,906,458 | 3,897,138 | 3,886,571 | 3,874,062 | 3,860,180 | 3,844,942 | 3,829,117 | 3,812,868 | 3,797,172 | 3,781,069 | 3,765,518 | 3,750,518 | 3,736,073 | 3,721,938 | 3,708,199 |
| Earnings before Interest, Taxes, Depreciation, & Amortization | | | | | | | | | | | | | | | | | | | | |
| Earnings before Interest, Taxes, Depreciation, & Amortization | | | 2,638,352 | 2,632,280 | 2,634,830 | 2,631,136 | 2,628,790 | 2,626,814 | 2,625,060 | 2,623,157 | 2,621,604 | 2,620,292 | 2,619,228 | 2,618,313 | 2,617,533 | 2,616,887 | 2,616,365 | 2,615,868 | 2,615,497 | 2,615,141 |
| Income (Loss) before State and Federal Taxes | | | | | | | | | | | | | | | | | | | | |
| Income (Loss) before State and Federal Taxes | | | 5,454,153 | 5,447,966 | 5,440,820 | 5,432,088 | 5,422,042 | 5,410,168 | 5,395,324 | 5,378,991 | 5,360,916 | 5,341,391 | 5,320,428 | 5,298,181 | 5,274,664 | 5,250,002 | 5,225,222 | 5,200,372 | 5,175,492 | 5,150,592 |
| Book Depreciation | | | | | | | | | | | | | | | | | | | | |
| Book Depreciation | | | 286,983 | 284,592 | 283,803 | 283,700 | 283,427 | 282,974 | 282,439 | 281,822 | 281,122 | 280,348 | 279,501 | 278,583 | 277,597 | 276,545 | 275,429 | 274,252 | 273,018 | 271,730 |
| Tax Depreciation | | | | | | | | | | | | | | | | | | | | |
| Tax Depreciation | | | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 | 2,892,285 |
| Deferred Tax (Net Book Depreciation) | | | | | | | | | | | | | | | | | | | | |
| Deferred Tax (Net Book Depreciation) | | | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 | 5,962,866 |
| Income Adjusted for Tax Depreciation | | | | | | | | | | | | | | | | | | | | |
| Income Adjusted for Tax Depreciation | | | 28,898 | 28,898 | 28,898 | 28,898 | 28,898 | 28,898 | 28,898 | 28,898 | 28,898 | 28,898 | 28,898 | 28,898 | 28,898 | 28,898 | 28,898 | 28,898 | 28,898 | 28,898 |
| Income Tax Rate | | | | | | | | | | | | | | | | | | | | |
| Income Tax Rate | | | 1.612,887 | 1,608,099 | 1,602,829 | 1,598,922 | | | | | | | | | | | | | | |

Table B-3 (continued) - Valuation of Wastewater System as of December 31, 2018

Penobscot American Water Company
Valley Wastewater Wastewater System
Wastewater Collection System
Potential Purchaser - Investor-Owned Utility
As of December 31, 2018

Table with columns for years 2019 through 2027 and rows for Accumulated PW of Cash Flows, Cash Flow, Income from Operations, Capital Expenditures, Changes in Working Capital, Net Cash Flows, Dividend Payout, Dividend Rate, Dividend Rate with growth, Dividend Rate without growth, Return on Equity, and Accumulated PW of Cash Flows.

Rate Case Forecasts

Table with columns for years 2019 through 2027 and rows for Rate Base, PW of Rate Base, Accumulated PW of Rate Base, Rate Base, Operating Income, Depreciation, Interest, State & Federal Taxes, After Tax Income, Capital Expenditures, Depreciation, Interest, State & Federal Taxes, After Tax Income, Operating Income, Depreciation, Interest, State & Federal Taxes, After Tax Income, Required Rate Increase, and Required Rate Increase.

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Potential Purchase Investor-Owned Utility
As of December 31, 2019**

| Year | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Funds | | | | | | | | | | | | | | | | | | | |
| Additions to Equity (Source Pluses) - (See Register for Detailed Source Negative) - (See Pluses) | | | | | | | | | | | | | | | | | | | |
| Funds Provided from Generation | | | | | | | | | | | | | | | | | | | |
| Source of Funds | | | | | | | | | | | | | | | | | | | |
| Net Income (Loss) (Regain or (Loss) Paid out) | 1,878,468 | 1,874,094 | 1,868,825 | 1,864,011 | 1,858,792 | 1,853,531 | 1,848,311 | 1,843,099 | 1,837,889 | 1,832,679 | 1,827,469 | 1,822,259 | 1,817,049 | 1,811,839 | 1,806,629 | 1,801,419 | 1,796,209 | 1,790,999 | |
| Depreciation (Source plus) or (Loss) negative) | 288,781 | 284,282 | 283,802 | 279,301 | 277,422 | 275,314 | 274,409 | 271,601 | 270,461 | 268,791 | 268,000 | 264,791 | 264,791 | 263,321 | 262,629 | 258,021 | 258,021 | 258,021 | 257,982 |
| Current Capital (Source Pluses) | 78,822 | 78,706 | 78,991 | 79,281 | 79,576 | 79,872 | 80,172 | 80,472 | 80,772 | 81,072 | 81,372 | 81,672 | 81,972 | 82,272 | 82,572 | 82,872 | 83,172 | 83,472 | 83,772 |
| Source and Uses of Funds | 4,195,871 | 4,187,082 | 4,179,618 | 4,172,609 | 4,165,586 | 4,158,587 | 4,151,588 | 4,144,589 | 4,137,590 | 4,130,591 | 4,123,592 | 4,116,593 | 4,109,594 | 4,102,595 | 4,095,596 | 4,088,597 | 4,081,598 | 4,074,599 | 4,067,600 |
| Uses of Funds | | | | | | | | | | | | | | | | | | | |
| Current Assets - (Increase) (Decrease) | 34,211 | 23,383 | 15,921 | 74,246 | 36,842 | 37,009 | 37,180 | 37,351 | 37,522 | 37,693 | 37,864 | 38,035 | 38,206 | 38,377 | 38,548 | 38,719 | 38,890 | 39,061 | 39,232 |
| Fixed Assets - (Increase) (Decrease) | 148,382 | 159,497 | 167,461 | 167,677 | 166,701 | 166,626 | 166,551 | 166,476 | 166,401 | 166,326 | 166,251 | 166,176 | 166,101 | 166,026 | 165,951 | 165,876 | 165,801 | 165,726 | 165,651 |
| Total Uses of Funds | 192,593 | 182,880 | 183,382 | 241,923 | 203,543 | 203,635 | 203,727 | 203,819 | 203,911 | 204,003 | 204,095 | 204,187 | 204,279 | 204,371 | 204,463 | 204,555 | 204,647 | 204,739 | 204,831 |
| Funds from Financing Activities | | | | | | | | | | | | | | | | | | | |
| Changes in Cash | | | | | | | | | | | | | | | | | | | |
| Proceeds from Long Term Debt | | | | | | | | | | | | | | | | | | | |
| Amortization of Long Term Debt | | | | | | | | | | | | | | | | | | | |
| Proceeds from Payables | 50,780 | 49,361 | 47,651 | 46,869 | 46,103 | 45,362 | 44,641 | 43,941 | 43,261 | 42,601 | 41,961 | 41,341 | 40,741 | 40,161 | 39,591 | 39,031 | 38,481 | 37,941 | 37,411 |
| Dividends Paid (Loss) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Additional Paid in Capital (Losses) | | | | | | | | | | | | | | | | | | | |
| Total Funds from Financing Activities | 50,780 | 49,361 | 47,651 | 46,869 | 46,103 | 45,362 | 44,641 | 43,941 | 43,261 | 42,601 | 41,961 | 41,341 | 40,741 | 40,161 | 39,591 | 39,031 | 38,481 | 37,941 | 37,411 |
| Total Funds Available | 1,999,888 | 1,947,818 | 1,928,185 | 1,925,710 | 1,921,501 | 1,916,924 | 1,912,947 | 1,908,970 | 1,904,993 | 1,901,016 | 1,897,039 | 1,893,062 | 1,889,085 | 1,885,108 | 1,881,131 | 1,877,154 | 1,873,177 | 1,869,200 | 1,865,223 |
| Financing | | | | | | | | | | | | | | | | | | | |
| Cash | 1,026,891 | 1,025,218 | 1,023,944 | 1,023,051 | 1,022,158 | 1,021,265 | 1,020,372 | 1,019,479 | 1,018,586 | 1,017,693 | 1,016,800 | 1,015,907 | 1,015,014 | 1,014,121 | 1,013,228 | 1,012,335 | 1,011,442 | 1,010,549 | 1,009,656 |
| Equity | 1,972,899 | 1,922,600 | 1,911,241 | 1,900,659 | 1,890,346 | 1,880,284 | 1,870,473 | 1,860,912 | 1,851,601 | 1,842,540 | 1,833,729 | 1,825,168 | 1,816,857 | 1,808,796 | 1,800,985 | 1,793,424 | 1,786,113 | 1,779,052 | 1,772,241 |
| Funds Provided by Financing | 1,999,890 | 1,947,818 | 1,928,186 | 1,925,710 | 1,921,501 | 1,916,924 | 1,912,947 | 1,908,970 | 1,904,993 | 1,901,016 | 1,897,039 | 1,893,062 | 1,889,085 | 1,885,108 | 1,881,131 | 1,877,154 | 1,873,177 | 1,869,200 | 1,865,223 |

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Potential Purchaser - Investor-Owned Utility
As of December 31, 2019

| | Year | 1-5 | Periods 6-25 | 16-19 | 58 | 59 | 60 |
|---|----------------------|--------|-----------------|--------|-----------------|-----------------|-----------------|
| Income Statement | | | | | | | |
| Revenues | | | | | | | |
| Annual Revenue Growth rate | | | | | | | |
| Subscriber Growth Rate (Annually) | | 4.0% | 3.6% | 1.0% | 1.0% | 1.0% | 1.0% |
| Periodic Subscriber Growth | | | | | | | |
| Growth | 0.2% | 0.2% | 0.0% | 0.0% | | | 0.0% |
| Period for Periodic Growth | 5 | | | | | | |
| Rate Case Activities | | | | | | | |
| Periodic Rate Case (years) | Periodically 3 years | | | | | | |
| Required Rate Increase | Calculated in DCF | | | | 11.55% | 11.07% | 10.46% |
| Proposed Rate Increase | Calculated in DCF | | | | 0.0% | 0.0% | 0.0% |
| Total Revenue Adjustments | Calculated | | | | 1.0% | 1.0% | 1.0% |
| Rate and Forecast | | | | | 14,893,836 | 15,042,774 | 15,193,202 |
| Operating Expenses | | | | | 5% | 5% | 5% |
| Office Labor 54 | 63,226 | | | | 75,145 | 75,917 | 76,679 |
| Office Labor 14 Rate of Change | | 1.0% | -1.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Office (Print, Telephone, Facilities (2, 3, 4) | 5,423 | | | | 6,447 | 6,511 | 6,576 |
| Office (Print, Telephone, Facilities (2, 3, 4) Rate of Change | | 1.0% | 0.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Contract Service 5.6, 7, 13 | 27,303 | | | | 32,461 | 32,780 | 33,134 |
| Contract Service 5.6, 7, 13 Rate of Change | | 1.0% | -0.0% | 1.0% | 1.0% | 1.0% | 1.0% |
| Treatment (1) | 2,966,229 | | | | 9,384,373 | 9,541,460 | 9,732,289 |
| Treatment (1) Rate of Change | | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% |
| Property Taxes | 22,985,828 | | | | | | |
| Begin Plant | | | | | 5,096,763 | 5,027,131 | 4,961,938 |
| PT Rate % of beginning net plant | 0.050% | | | | 0.050% | 0.050% | 0.050% |
| Book Depreciation (based on Beginning Year Property, Plant & Equipment) | | | | | 255,227 | 252,644 | 252,362 |
| Total Covering Expenses | | | | | 9,723,679 | 9,809,338 | 10,101,057 |
| Cost of Operation as % of Revenues (Calculation) | | | | | 65.3% | 65.9% | 66.5% |
| Operating Expenses less Depreciation | | | | | 9,468,456 | 9,556,674 | 9,848,655 |
| Operating Income | | | | | 5,170,163 | 5,133,456 | 5,092,185 |
| Nonoperating Revenues (Expenses) | | | | | | | |
| Interest Income | | | | | 28,605 | 27,652 | 26,730 |
| Interest Expense | | | | | | | |
| Interest Exp. as % of Debt | 3.23% | | | | 3.23% | 3.23% | 3.23% |
| Total nonoperating revenues (expenses) | | | | | 28,605.00 | 27,652.00 | 26,730.00 |
| Income (loss) before State and Federal Taxes | | | | | 5,141,558 | 5,105,804 | 5,065,455 |
| State and Federal Taxes | | | | | 1,485,396 | 1,475,067 | 1,463,430 |
| State and Federal Tax Rate | 28.89% | | | | 28.89% | 28.89% | 28.89% |
| Income After Taxes | | | | | 3,656,162 | 3,630,737 | 3,602,025 |
| Income After Taxes plus Interest | | | | | 3,684,767 | 3,658,389 | 3,628,775 |
| Earnings before Interest, Taxes, Depreciation & Amortization | | | | | 2,454,538 | 2,435,966 | 2,417,727 |
| Income (loss) before State and Federal Taxes | | | | | | | |
| Book Depreciation | | | | | 5,141,558 | 5,105,804 | 5,065,455 |
| Tax Depreciation | | | | | (255,227) | (252,644) | (252,362) |
| Difference Tax over Book Depreciation | | | | | (262,443) | (252,647) | (254,472) |
| Income Adjusted for Tax Depreciation | | | | | 1,196,342 | 1,156,001 | 1,113,345 |
| Income Tax Rate | | | | | 28.89% | 28.89% | 28.89% |
| Income Taxes | | | | | 1,351,223 | 1,488,569 | 1,477,285 |
| Income After Tax | | | | | 1,695,119 | 1,666,432 | 1,636,100 |
| Deferred Income Taxes | | | | | 15,827 | 14,502 | 13,895 |
| Accumulated Deferred Income Taxes | | | | | (863,455) | (846,933) | (833,098) |
| Income After Taxes (Book Depreciation) | | | | | 1,656,162 | 1,630,737 | 1,602,045 |
| Plus Deferred Taxes | | | | | 15,827 | 14,502 | 13,895 |
| Plus Interest | | | | | 28,605 | 27,652 | 26,730 |
| After Tax Income Debt Free | | | | | 1,648,940 | 1,614,887 | 1,614,940 |
| Balance Statement | | | | | | | |
| Assets | | | | | | | |
| Current Assets | | | | | | | |
| Current Asset Balance | 709,202 | | | | 4,170,274 | 4,213,971 | 4,254,097 |
| 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 | | | | | 29,223,324.00 | 29,346,896.00 | 29,471,705.00 |
| Additions | | | | | 185,195.00 | 187,491.00 | 189,326.00 |
| Retirements | | | | | (82,023.00) | (82,642.00) | (83,266.00) |
| End Balance | 22,985,828.00 | | | | 29,346,896.00 | 29,471,705.00 | 29,597,765.00 |
| End Balance Check | | | | | 29,346,896.00 | 29,471,705.00 | 29,597,765.00 |
| Book Depreciation of Property, Plant & Equipment | | | | | | | |
| Total Book Depreciation | | | | | | | |
| Begin Balance | | | | | (24,126,566.72) | (24,129,754.81) | (24,109,767.05) |
| Depreciation | | | | | (255,227.11) | (252,644.22) | (252,363.85) |
| Retirements | | | | | 62,023.00 | 62,642.00 | 63,266.00 |

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Potential Purchaser - Investor-Owned Utility
As of December 31, 2019**

| | Total | 15 | Periods: 6-15 | 16-19 | 18 | 19 | 20 |
|--|-------|----|------------------|-------|---------------------|---------------------|---------------------|
| End Balance | | | | | | | |
| End Balance Check | | | | | (24,319,764.83) | (24,509,787.05) | (24,698,862.90) |
| Net Plant | | | | | | | |
| Begin Balance | | | | | 3,096,769.28 | 3,027,131.17 | 4,961,937.95 |
| End Balance | | | | | 3,027,131.17 | 4,961,937.95 | 4,898,902.20 |
| Total Asset | | | | | 9,197,405.17 | 9,174,914.91 | 9,152,999.10 |
| Tax Depreciation of Property, Plant, & Equipment | | | | | | | |
| Total MACRS Depreciation | | | | | | | |
| Begin Balance | | | | | (200,447.60) | (202,447.08) | (204,472.08) |
| Depreciation | | | | | 62,629.00 | 62,642.00 | 61,266.00 |
| Restorations | | | | | (1,38,419.60) | (1,39,805.28) | (141,206.08) |
| End Balance Check | | | | | (1,38,419.60) | (1,39,805.28) | (141,206.08) |
| Net Plant | | | | | 79,223,124.00 | 79,346,896.00 | 79,471,705.00 |
| End Balance | | | | | 79,208,476.40 | 79,311,899.92 | 79,456,558.92 |
| Tax | | | | | (200,447.60) | (202,447.08) | (204,472.08) |
| Disc | | | | | (54,786.51) | (50,197.14) | (47,889.77) |

Balance Statement

| | | | | | | | |
|--|--------------|--------|--------|--------|--------------|--------------|--------------|
| Liabilities | | | | | | | |
| Current Liabilities | | | | | | | |
| Current Liabilities | 625,856 | | | | 3,366,007 | 3,999,667 | 3,413,664 |
| % of Revenues | 22.60% | 22.60% | 22.60% | 22.60% | 22.6% | 22.6% | 22.6% |
| Noncurrent Liabilities | | | | | | | |
| Long Term Debt, Notes payable, net of current portion | 5,977,353.00 | | | | 885,610.00 | 856,090.00 | 827,554.00 |
| Additional Debt | | | | | | | |
| Debt Repayment | 30.00 | | | | (275,520) | (28,536) | (27,585) |
| Debt Repayment years | | | | | 80.00 | 80.00 | 80.00 |
| End Long Term Debt, Notes payable, net of current portion | | | | | 858,090.00 | 827,554.00 | 799,969.00 |
| Total noncurrent liabilities | | | | | | | |
| Deferred Tax Liabilities | | | | | | | |
| Begin Balance | | | | | 877,262 | 861,435 | 846,933 |
| Additions to Deferred Asset | | | | | (51,847.71) | (24,502) | (53,855) |
| Total Deferred Tax Liability | | | | | 861,435 | 846,933 | 833,098 |
| Total Liabilities | | | | | 5,088,532.00 | 5,074,154.00 | 5,086,731.00 |
| Equity | | | | | | | |
| Proportion of Capital | 78% | | | | | | |
| Beginning Equity Capital | 17,012,473 | | | | 178,777,868 | 182,438,020 | 186,864,757 |
| Additions to Equity (Retained Earnings) | | | | | 8,656,162 | 8,830,737 | 9,802,065 |
| Deductions from Equity Dividends | 0 | | | | 0 | 0 | 0 |
| Additional Paid in Capital | | | | | 0 | 0 | 0 |
| Ending Equity Capital | | | | | 187,434,030 | 191,268,757 | 196,666,862 |
| Operating Income | | | | | 5,170,163 | 5,133,454 | 5,092,185 |
| Return On Equity | | | | | 2.83% | 2.76% | 2.58% |
| Total Liabilities & Stockholders Equity | | | | | 187,512,562 | 191,338,911 | 194,753,593 |
| Assets | | | | | | | |
| Liabilities & Stockholders Equity less Assets | | | | | 9,197,405 | 9,174,915 | 9,152,999 |
| Dividend | | | | | 178,820,147 | 181,964,998 | 185,340,534 |
| Final Stockholder Equity | | | | | 9,197,405 | 9,174,915 | 9,152,999 |
| Capital Expenditures and Changes in Working Capital | | | | | | | |
| Capital Expenditures | | | | | 185,595.00 | 187,451.00 | 189,326.00 |
| Changes to Working Capital | | | | | | | |
| Current Assets | 769,202 | | | | 4,170,278 | 4,211,977 | 4,254,087 |
| Current Liabilities | 620,856 | | | | 3,366,007 | 3,999,667 | 3,413,664 |
| Working Capital | 148,346 | | | | 804,267 | 812,310 | 820,423 |
| Changes to Working Capital | | | | | 7,963 | 8,043 | 8,123 |
| Cash Flow | | | | | | | |
| Income from Operations | | | | | 3,684,767 | 3,658,389 | 3,628,775 |
| Non-Cash Expense (Impairment) | | | | | 205,217 | 232,644 | 232,362 |
| Capital Expenditures | | | | | (185,595) | (187,451) | (189,326) |
| Change in Working Capital | | | | | 7,963 | 8,043 | 8,123 |
| Net Cash Flows | | | | | 3,706,436 | 4,715,599 | 3,683,688 |
| Period | | | | | 17.5 | 18.5 | 19.5 |
| PW Factor | | | | | | | |
| Discount Rate with growth | 8.17% | | | | 8.17% | 8.17% | 8.17% |
| Discount Rate without growth | 6.23% | | | | 6.23% | 6.23% | 6.23% |
| Period Present Worth Factor (PW) | | | | | 18.051 | 18.051 | 18.051 |
| PW of Cashflow | | | | | 661,474 | 596,381 | 532,342 |

Pennsylvania American Water Company
Valley Forge Wastewater System
Wastewater Collection System
Revenue, Purchases, Invoiced, Owned Utility
As of December 31, 2019

| | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
|--------------------------------------|------------|------|------|------------|------------|------------|------|------|------|------|------|
| Actual Total PW of Customers | 20,191,323 | | | | | | | | | | |
| CASH FLOW | | | | | | | | | | | |
| Positive from Operations | | | | 3,959,129 | 5,068,432 | 5,356,100 | | | | | |
| Investment | | | | (250,000) | (102,000) | (108,421) | | | | | |
| Capital Expenditures | | | | (185,595) | (187,497) | (189,876) | | | | | |
| Change in Working Capital | | | | 1,793 | 8,243 | 8,243 | | | | | |
| Net Cash Flow | | | | 3,728,327 | 4,787,178 | 5,066,246 | | | | | |
| Revenue | | | | 37.5 | 58.5 | 60.1 | | | | | |
| Rate of Return | | | | 8.1% | 8.1% | 8.1% | | | | | |
| Operating Costs | 4.3% | | | 4.3% | 4.3% | 4.3% | | | | | |
| Interest Expense | 1.7% | | | 1.7% | 1.7% | 1.7% | | | | | |
| Dividend Payout Ratio (Based on PPE) | | | | 0.2% | 0.2% | 0.2% | | | | | |
| Rate of Capital | | | | 6.9% | 6.9% | 6.9% | | | | | |
| Actual Total PW of Customers | 19,129,493 | | | 18,992,890 | 18,582,461 | 17,168,787 | | | | | |
| Rate of Return | | | | 8.90% | 8.90% | 8.90% | | | | | |
| Operating Costs | | | | 4.30% | 4.30% | 4.30% | | | | | |
| Interest Expense | | | | 1.70% | 1.70% | 1.70% | | | | | |
| Dividend Payout Ratio (Based on PPE) | | | | 0.20% | 0.20% | 0.20% | | | | | |
| Rate of Capital | | | | 6.90% | 6.90% | 6.90% | | | | | |
| Operating Costs | | | | 4.30% | 4.30% | 4.30% | | | | | |
| Interest Expense | | | | 1.70% | 1.70% | 1.70% | | | | | |
| Dividend Payout Ratio (Based on PPE) | | | | 0.20% | 0.20% | 0.20% | | | | | |
| Rate of Capital | | | | 6.90% | 6.90% | 6.90% | | | | | |
| Operating Costs | | | | 4.30% | 4.30% | 4.30% | | | | | |
| Interest Expense | | | | 1.70% | 1.70% | 1.70% | | | | | |
| Dividend Payout Ratio (Based on PPE) | | | | 0.20% | 0.20% | 0.20% | | | | | |
| Rate of Capital | | | | 6.90% | 6.90% | 6.90% | | | | | |
| Operating Costs | | | | 4.30% | 4.30% | 4.30% | | | | | |
| Interest Expense | | | | 1.70% | 1.70% | 1.70% | | | | | |
| Dividend Payout Ratio (Based on PPE) | | | | 0.20% | 0.20% | 0.20% | | | | | |
| Rate of Capital | | | | 6.90% | 6.90% | 6.90% | | | | | |
| Operating Costs | | | | 4.30% | 4.30% | 4.30% | | | | | |
| Interest Expense | | | | 1.70% | 1.70% | 1.70% | | | | | |
| Dividend Payout Ratio (Based on PPE) | | | | 0.20% | 0.20% | 0.20% | | | | | |
| Rate of Capital | | | | 6.90% | 6.90% | 6.90% | | | | | |

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Financials - Investor-Owned Utility
As of December 31, 2019**

| | Year | Period 6/15 | 18-19 | 18 | 19 | 16 |
|---|------|----------------|------------------|------------------|------------------|-------|
| Funds | | | | | | |
| Additions to Equity (Source Positive) - Like Negative | | | | | | |
| Dividends (Source Negative) - Like Positive | | | | | | |
| Funds Provided from Operations | | | | | | |
| Sources of Funds | | | | | | |
| Net Income (Total Negative) - Source Positive | | | 1,635,162 | 1,632,717 | 1,622,045 | |
| Depreciation (Source Positive) - Like Negative | | | 252,214 | 252,866 | 252,362 | |
| Current Liabilities (Source Positive) | | | 43,227 | 33,662 | 33,997 | |
| Sources and Uses of Funds | | | 1,930,599 | 1,919,245 | 1,908,404 | |
| Sources of Funds | | | | | | |
| Current Liabilities (Source Positive) | | | | | | |
| Uses of Funds | | | | | | |
| Current Assets Increase (Use) | | | 49,390 | 41,804 | 42,130 | |
| Fixed Assets, Assets Increase (Use) | | | 185,575 | 187,451 | 189,126 | |
| Total Uses of Funds | | | 234,965 | 229,255 | 231,256 | |
| Funds from Financing Activities | | | | | | |
| Changes in Debt | | | | | | |
| Retirement of Long-Term Debt | | | | | | |
| Repayment of Long-Term Debt | | | (29,529) | (28,516) | (27,385) | |
| Funds from Equity | | | | | | |
| Dividends Paid (Use) | | | 0 | 0 | 0 | |
| Additional Paid-in Capital (Use) | | | | | | |
| Total Funds from Financing Activities | | | (29,529) | (28,516) | (27,385) | |
| Total Funds Needed | | | 1,640,311 | 1,615,111 | 1,629,171 | |
| Financing | | | | | | |
| Debt | 35% | | 958,962 | 953,443 | 953,647 | 1,000 |
| Equity | 65% | | 2,799,852 | 2,727,922 | 2,685,186 | 1,000 |
| Funds Provided by Financing | | | 3,648,311 | 3,681,365 | 3,638,833 | |

Paradee Water Treatment Plant
Valley Wastewater Treatment System
Wastewater Collection System
December 31, 2023

100% Ownership
December 31, 2023

| Item | Year | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 |
|--------------------|------|-----------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Revenue | | 2,000,000 | 2,000,000 | | | | | | | | | | | | | | | |
| Operating Expenses | | 2,000,000 | 2,000,000 | | | | | | | | | | | | | | | |
| Net Income | | 0 | 0 | | | | | | | | | | | | | | | |

| Item | Year | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 |
|----------------------|------|-----------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Operating Expenses | | 2,000,000 | 2,000,000 | | | | | | | | | | | | | | | |
| Capital Expenditures | | 0 | 0 | | | | | | | | | | | | | | | |
| Net Cash Flow | | 0 | 0 | | | | | | | | | | | | | | | |

| Item | Year | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Working Capital | | 0 | 0 | | | | | | | | | | | | | | | |
| Current Assets | | 0 | 0 | | | | | | | | | | | | | | | |
| Current Liabilities | | 0 | 0 | | | | | | | | | | | | | | | |

| Property, Plant, and Equipment | Year | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 |
|--------------------------------|------|-------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Land and Buildings | | 10,000,000 | 10,000,000 | | | | | | | | | | | | | | | |
| Equipment | | 5,000,000 | 5,000,000 | | | | | | | | | | | | | | | |
| Accumulated Depreciation | | (1,000,000) | (1,000,000) | | | | | | | | | | | | | | | |
| Net Book Value | | 14,000,000 | 14,000,000 | | | | | | | | | | | | | | | |

Foothill Water Treatment Company
 10000 Technology Center, Suite 200
 San Diego, California 92121
 December 31, 2020

SDG Capital
 20,000,000

| Item | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Operating Revenue | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Operating Expenses | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) |
| Operating Profit | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Capital Expenditures | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) |
| Depreciation | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) |
| Income Before Tax | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Tax | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) |
| Net Income | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |

SDG Capital
 20,000,000
 20,000,000

| Item | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Operating Revenue | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Operating Expenses | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) |
| Operating Profit | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Capital Expenditures | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) |
| Depreciation | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) |
| Income Before Tax | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Tax | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) |
| Net Income | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |

| Item | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Operating Revenue | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Operating Expenses | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) |
| Operating Profit | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Capital Expenditures | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) | (0.2) |
| Depreciation | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) |
| Income Before Tax | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Tax | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) |
| Net Income | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |

| Financial Statement Details | | 2018 | | 2018 Financial Statement | | | | | | | | | | |
|---|-----|------|-----|--------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Valley Wastewater System | | 2018 | | 2018 | | | | | | | | | | |
| Income Statement | | 2018 | | 2018 | | | | | | | | | | |
| December 31, 2018 | | 2018 | | 2018 | | | | | | | | | | |
| 2018 Financial Statement | | 2018 | | 2018 | | | | | | | | | | |
| Revenue | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Expenses | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Net Income | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Detailed breakdown of revenue and expenses for various service areas, including Sewerage, Stormwater, and Solid Waste, with corresponding financial statement references. | | | | | | | | | | | | | | |

Pennsylvania American Water Company
Valley Township, Pennsylvania

Wastewater Fund (08)

| Account | Description | 2015 | 2016 | 2017 | 2018 | 2019 | Projections | Forecast Parameters for Periods | | | | | | | | | | |
|--------------------------------------|---|---------------------|---------------------|---------------------|---------------------|---------------------|---|---------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | | | | | | 1-5 | 6-15 | 6-15 | 16-20 | 21-26 | 27-33 | 34-40 | 40-46 | 47-53 | 54-60 | |
| Revenues | | | | | | | See Rate Increase Schedule on tab: DCF Investor Owned Cells: L263:B5263 | | | | | | | | | | | |
| 08.341.0000 | Interest Earning | | | 8,918.48 | 8,346.27 | 3,191.70 | | | | | | | | | | | | |
| 08.350.0400 | PA DCED Grant Funding | | | | | | | | | | | | | | | | | |
| 08.364.1000 | Sewer Charges | 2,748,087.00 | 2,772,044.00 | 2,738,281.99 | 2,770,573.75 | 2,663,203.34 | | | | | | | | | | | | |
| | Insurance Claim | | | | 65,900.00 | | | | | | | | | | | | | |
| | | 2,748,087.00 | 2,772,044.00 | 2,738,281.99 | 2,836,473.75 | 2,663,203.34 | | | | | | | | | | | | |
| 08.364.1209 | Connection Fees | | | 17,906.28 | 3,829.22 | 972.92 | | | | | | | | | | | | |
| 08.364.1240 | Conveyance Fees | | | 14,083.95 | 20,976.41 | 15,444.15 | | | | | | | | | | | | |
| 08.364.1900 | Miscellaneous Revenues | | | 2,730.71 | 0.10 | 64,336.75 | | | | | | | | | | | | |
| Total Revenues | | | | | | | | | | | | | | | | | | |
| | | 2,748,087.00 | 2,772,044.00 | 2,781,921.41 | 2,869,625.75 | 2,747,148.86 | 2,747,148.86 | 4.0% | 3.6% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | |
| | | | 0.9% | 0.4% | 3.2% | -4.3% | 0.1% | | | | | | | | | | | |
| Total Reported Revenues | | | | | | | 3,119,464.49 | | | | | | | | | | | |
| Non-operating revenues | | | | | | | 372,315.63 | | | | | | | | | | | |
| Operating Revenues Check | | | | | | | 2,747,148.86 | | | | | | | | | | | |
| Expenses | | | | | | | | | | | | | | | | | | |
| 08.429.1100 | Salaries- Wages Secretaries | | | 61,991.71 | 56,809.41 | 63,225.89 | 14 Office Labor 14 | 63,225.89 | 1.0% | -3.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | |
| 08.429.1200 | Third Party Plumbing Inspector | | | | | | | | | | | | | | | | | |
| | | | | | | | Office | | | | | | | | | | | |
| | | | | | | | (Print, Telephone, Facil | | | | | | | | | | | |
| 08.429.2100 | Printing & Postage | | | 4,288.43 | 1,564.41 | 2,240.53 | ities (2, 3, 4) | 5,422.85 | 1.0% | -3.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | |
| 08.429.2200 | Bank Charges | | | 15.00 | | | | | | | | | | | | | | |
| 08.429.2300 | Telephone | | | 3,514.22 | 3,138.64 | 3,182.32 | 3 | | | | | | | | | | | |
| | | | | | | | Contract Service 5,6, | | | | | | | | | | | |
| 08.429.3109 | Engineering | | | 24,998.75 | 34,016.25 | 21,148.25 | 5 7, 13 | 27,303.17 | 1.0% | -3.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | |
| 08.429.3200 | Legal | | | | 92.50 | 342.25 | 6 | | | | | | | | | | | |
| 08.429.3300 | Audit | | | 4,800.00 | 32,817.24 | 5,812.67 | 7 | | | | | | | | | | | |
| 08.429.3400 | Facilities & Office Expense | | | 56.23 | | | 4 | | | | | | | | | | | |
| 08.429.3410 | Benefit Allocation | | | | | | | | | | | | | | | | | |
| 08.429.4300 | Sewage Treatment Costs | | | 2,147,130.01 | 3,183,866.04 | 2,966,228.92 | 1 Treatment (1) | 2,966,228.92 | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | |
| 08.429.4500 | Electricity | | | 15,927.38 | 17,198.06 | 16,932.16 | 10 | | | | | | | | | | | |
| | | | | | | | Operations (Maint 8, | | | | | | | | | | | |
| | | | | | | | Road Crew 9, | | | | | | | | | | | |
| | | | | | | | Electricity 10, | | | | | | | | | | | |
| 08.429.4600 | Maintenance & Repair | | | 49,168.65 | 72,992.61 | 68,700.47 | 8 Supplies 11) | 87,280.43 | 1.0% | -3.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | |
| 08.429.4610 | Road Crew Salaries | | | 63,405.47 | 37,568.12 | | 9 | | | | | | | | | | | |
| 08.429.4620 | I&I | | | | 625.00 | | 13 | | | | | | | | | | | |
| 08.429.4630 | Upgrade to System - PA DCED GRA | | | | | | | | | | | | | | | | | |
| 08.429.4700 | Supplies & Equipment | | | 5,658.17 | 4,348.51 | 1,647.80 | 11 | | | | | | | | | | | |
| 08.429.4900 | Miscellaneous | | | 1,643.00 | | | | | | | | | | | | | | |
| 08.429.5000 | Theft Loss | | | 76,231.47 | | | | | | | | | | | | | | |
| 08.429.0100 | Interfund nTransfer to Gen Fund - Benefit A | | | 112,700.00 | | | | | | | | | | | | | | |
| Total Expenditures | | | | | | | | 3,149,461.26 | | | | | | | | | | |
| | | 2,282,897.00 | 2,532,858.00 | 2,571,528.49 | 3,445,036.79 | 3,149,461.26 | | | | | | | | | | | | |
| | | | | | 3,445,036.79 | 3,425,259.77 | | | | | | | | | | | | |
| | | | | | 3,445,036.79 | 3,149,461.26 | | | | | | | | | | | | |
| Excess Revenues over Expenses | | | | | | | | (402,312.40) | | | | | | | | | | |
| | | 465,190.00 | 239,186.00 | 210,392.92 | (575,411.04) | (402,312.40) | | | | | | | | | | | | |
| | | | | | | | Working Capital | | | | | | | | | | | |
| | | | | | | | Current Assets | 28.0% | 28.0% | 28.0% | 28.0% | 28.0% | 28.0% | 28.0% | 28.0% | 28.0% | 28.0% | 28.0% |
| | | | | | | | Current Liabilities | 22.6% | 22.6% | 22.6% | 22.6% | 22.6% | 22.6% | 22.6% | 22.6% | 22.6% | 22.6% | 22.6% |

Income Approach - Valley Wastewater

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

**Wastewater System
Appraisal Work Papers
As of December 17, 2019**

Market 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: weinertj@auswest.net**

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Comparable Sales Approach

Market Sales Data

Central Tendency and Reliability Analysis

Market Sales Analysis - PP/OCLD

| | Simple | Weighted |
|--------------------|----------------|----------|
| Mean | 2.082 | 1.9992 |
| Standard Deviation | 0.8607 | 0.6008 |
| Median | 1.608 | 1.5598 |
| Mode | Not Applicable | 1.5601 |

Conclusion 2.0000 AUS Input

Valley Township Wastewater System OCLD 9,214,738 Cost Approach - OCLD

Market Value Indication 18,429,476

Market Sales Analysis - PP/Customer

| | Simple | Weighted |
|--------------------|----------------|----------|
| Mean | 7441 | 9,157 |
| Standard Deviation | 4031 | 3,158 |
| Median | 8221 | 6,312 |
| Mode | Not Applicable | 7,825 |
| Forecast | 7,293 | |

Conclusion 7,300 Valley Wastewater Info

Valley Township Wastewater System Customers 1,596 AUS Input

Market Value Indication 11,650,800

Market Sales Analysis - PP/Cash Flows (EBITDA)

| | Simple | Weighted |
|--------------------|----------------|----------------|
| Mean | 22.38 | 21.58 |
| Standard Deviation | 11.60 | 8.02 |
| Median | 20.93 | 13.00 |
| Mode | Not Applicable | Not Applicable |
| Forecast | | |

Conclusion 22.00 AUS Input

Valley Township Wastewater System Cash Flows 685,766 Income Approach

Market Value Indication 15,086,845

Summary of Market Analyses

| Indicators | |
|-------------------|-------------------|
| OCLD | 18,429,476 |
| CORLD | 17,931,623 |
| Customers | 11,650,800 |
| Cash Flows | 15,086,845 |
| Value Line | 19,443,097 |
| Mean | 16,508,368 |
| Median | 17,931,623 |
| Conclusion | 17,931,623 |

Market Sales Analysis - PP/CORLD

| | Simple | Weighted |
|--------------------|----------------|----------|
| Mean | 0.813 | 0.9285 |
| Standard Deviation | 0.1852 | 0.1086 |
| Median | 0.8908 | 0.9637 |
| Mode | Not Applicable | 0.9919 |

Conclusion 0.9314 AUS Input

Valley Township Wastewater System CORLD 19,252,333 Cost Approach - CORLD

Market Value Indication 17,931,623

Financial Basis¹

| 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 |

Valley Township Wastewater System OCLD 9,214,738 Cost Approach - OCLD

Market Value Indication 19,443,097

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

**Wastewater System
Appraisal Work Papers
As of December 17, 2019**

**Market Approach
Comparable Sales Method**

**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**

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Comparable Sales Approach

Market Sales Analysis - PP/OCLD

| Property Acquired | | 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 Squared |
|--|-----------------------|---------------------|---------------------------------------|--|-----------------------------|-------------------------|----------------------|------------------|
| New Garden Wastewater System | Wastewater | 29,500,000 | 6% | 18,567,728 | 1.5888 | 0.4932 | 0.4104 | 0.1684 |
| McKeesport Wastewater System | Wastewater | 159,000,000 | 32% | 101,915,080 | 1.5601 | 0.5219 | 0.4391 | 0.1928 |
| Limerick Wastewater System | Wastewater | 75,100,000 | 15% | 46,153,867 | 1.6272 | 0.4548 | 0.372 | 0.1384 |
| Mahoning Water System | Water | 4,734,800 | 1% | 1,194,489 | 3.9639 | 1.8819 | 1.9647 | 3.86 |
| Mahoning Wastewater System | Wastewater | 4,765,200 | 1% | 1,658,678 | 2.8729 | 0.7909 | 0.8737 | 0.7634 |
| East Bradford Wastewater Collection System | Wastewater | 5,000,000 | 1% | 5,383,591 | 0.9287 | 1.1533 | -1.0705 | 1.146 |
| Sadsbury Wastewater Collection System | Wastewater | 8,600,000 | 2% | 6,128,876 | 1.4032 | 0.6788 | 0.596 | 0.3552 |
| Exeter Wastewater Collection System | Wastewater | 96,000,000 | 19% | 40,057,634 | 2.3965 | 0.3145 | 0.3973 | 0.1578 |
| Steelton Water System | Water | 21,750,000 | 4% | 14,433,435 | 1.5069 | -0.5751 | -0.4923 | 0.2424 |
| Cheltenham Wastewater Collection System | Wastewater collection | 50,250,000 | 10% | 15,784,463 | 3.1835 | 1.1015 | 1.1843 | 1.4026 |
| East Norriton Wastewater | Wastewater collection | 21,000,000 | 4% | 8,407,007 | 2.4979 | 0.4159 | 0.4987 | 0.2487 |
| Kane Wastewater | Wastewater | 17,560,000 | 4% | 12,070,455 | 1.4548 | 0.6272 | 0.5444 | 0.2964 |
| | | 493,260,000 | 100% | 271,755,303 | 1.8151 | | | 8.9721 |
| Simple Mean | | | | | | 2.082 | | |
| Standard Deviation | | | | | | 0.8607 | | 2.995346 |
| Simple Median | | | | | | 1.608 | | 12 |
| Simple Mode | | | | | | Not Applicable | | 0.249612 |
| Weighted Mean | | | | | | 1.999 | | |
| Standard Deviation | | | | | | 0.6008 | | |
| Wtd Median | | | | | | 1.5598 | | |
| Wtd Mode | | | | | | 1.5601 | | |

| Property Acquired | | Depreciated Original Cost (OCLD) (AUS Consultants Determination) | Purchase Price to (PP/OCLD) | Accumulated OCLD |
|---|--|--|-----------------------------|------------------|
| East Bradford Wastewater Collection System | | 5,383,591 | 0.9287 | 5,383,591 |
| Kane Wastewater | | 12,070,455 | 1.4548 | 17,454,046 |
| Sadsbury Wastewater Collection System | | 6,128,876 | 1.5092 | 23,582,922 |
| Steelton Water System | | 14,433,435 | 1.5589 | 38,016,357 |
| McKeesport Wastewater System | | 101,915,080 | 1.5601 | 139,931,437 |
| New Garden Wastewater System | | 18,567,728 | 1.5888 | 158,499,165 |
| Limerick Wastewater System | | 46,153,867 | 1.6272 | 204,653,032 |
| Exeter Wastewater Collection System | | 40,057,634 | 2.3965 | 244,710,666 |
| East Norriton Wastewater | | 8,407,007 | 2.4979 | 253,117,673 |
| Mahoning Wastewater System | | 1,658,678 | 2.8729 | 254,776,351 |
| Cheltenham Wastewater Collection System | | 15,784,463 | 3.1835 | 270,560,814 |
| Mahoning Water System | | 1,194,489 | 3.9639 | 271,755,303 |
| Middle OCLD | | | | 135,877,651 |
| Bottom value of the range containing the Middle Value | | | 1.5589 | 38,016,357 |
| Top value of the range containing the Middle Value | | | 1.5601 | 139,931,437 |
| Range containing the middle value | | | 0.0012 | 101,915,080 |
| Range from bottom value to middle value | | | 0.0009 | 97,861,294 |
| Median Value | | | 1.5598 | |

| | | |
|-------------|-----------------------|--------|
| Simple Mean | Water | 2.7354 |
| | Wastewater | 1.7290 |
| | Wastewater Collection | 2.8407 |
| Median | Water | |
| | Wastewater | 1.7290 |
| | Wastewater Collection | 2.8407 |

Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
 Investor-Owned Utility
 As of December 17, 2019

Comparable Sales Approach

Market Sales Analysis - PP/CORLD

| Property Acquired | | 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 Squared |
|--|-----------------------|---------------------|---------------------------------------|--|-------------------------|-------------------------|----------------------|------------------|
| New Garden Wastewater System | Wastewater | 29,500,000 | 6% | 30,615,410 | 0.9636 | 0.1506 | 0.0351 | 0.0012 |
| McKeesport Wastewater System | Wastewater | 159,000,000 | 32% | 160,301,491 | 0.9919 | 0.1789 | 0.0634 | 0.0004 |
| Limerick Wastewater System | Wastewater | 75,100,000 | 15% | 86,086,756 | 0.8724 | 0.0594 | -0.0561 | 0.0031 |
| Mahoning Water System | Water | 4,734,800 | 1% | 8,899,336 | 0.532 | 0.2810 | 0.3965 | 0.1572 |
| Mahoning Wastewater System | Wastewater | 4,765,200 | 1% | 7,991,234 | 0.5963 | 0.2167 | -0.3322 | 0.1104 |
| East Bradford Wastewater Collection System | Wastewater | 5,000,000 | 1% | 9,236,581 | 0.5413 | 0.2717 | 0.3872 | 0.1499 |
| Sadsbury Wastewater Collection System | Wastewater | 8,600,000 | 2% | 8,517,587 | 1.0097 | 0.1967 | 0.0812 | 0.0066 |
| Exeter Wastewater Collection System | Wastewater | 96,000,000 | 19% | 99,589,819 | 0.964 | 0.1510 | 0.0355 | 0.0013 |
| Steeltown Water System | Water | 21,750,000 | 4% | 23,921,473 | 0.9092 | 0.0962 | 0.0193 | 0.0004 |
| Cheltenham Wastewater Collection System | Wastewater collection | 50,250,000 | 10% | 49,940,486 | 1.0062 | 0.1932 | 0.0777 | 0.006 |
| East Norriton Wastewater | Wastewater collection | 21,000,000 | 4% | 27,461,356 | 0.7647 | 0.0483 | 0.1638 | 0.0268 |
| Kane Wastewater | Wastewater | 17,560,000 | 4% | 29,015,055 | 0.6052 | 0.2078 | 0.3233 | 0.1045 |
| | | 493,260,000 | 100% | 541,576,584 | 0.9108 | | | |
| Simple Mean | | | | | 0.8130 | | | |
| Standard Deviation | | | | | 0.1852 | | | |
| Simple Median | | | | | 0.8908 | | | |
| Simple Mode | | | | | Not Applicable | | | |
| Weighted Mean | | | | | 0.9285 | | | |
| Standard Deviation | | | | | 0.1086 | | | |
| Wtd Median | | | | | 0.9637 | | | |
| Wtd Mode | | | | | 0.9919 | | | |

| Property Acquired | | Replacement Cost New less Depreciation (CORLD) | Purchase Price to CORLD | Accumulated CORLD |
|---|--|--|-------------------------|-------------------|
| Steeltown Water System | | 8,899,336 | 0.532 | 8,899,336 |
| New Garden Wastewater System | | 9,236,581 | 0.5413 | 18,135,917 |
| McKeesport Wastewater System | | 7,991,234 | 0.5963 | 26,127,151 |
| Mahoning Water System | | 29,015,055 | 0.6052 | 55,142,206 |
| Cheltenham Wastewater Collection System | | 27,461,356 | 0.7647 | 82,603,562 |
| Sadsbury Wastewater Collection System | | 86,086,756 | 0.8724 | 168,690,318 |
| East Norriton Wastewater | | 23,921,473 | 0.9406 | 192,611,791 |
| East Bradford Wastewater Collection System | | 30,615,410 | 0.9636 | 223,227,201 |
| Exeter Wastewater Collection System | | 99,589,819 | 0.964 | 322,817,020 |
| Kane Wastewater | | 160,301,491 | 0.9919 | 483,118,511 |
| Mahoning Wastewater System | | 49,940,486 | 1.0062 | 533,058,997 |
| Limerick Wastewater System | | 8,517,587 | 1.086 | 541,576,584 |
| | | 541,576,584 | | |
| Middle OCLD | | | | 270,788,292 |
| Bottom value of the range containing the Middle Value | | | 0.9636 | 223,227,201 |
| Top value of the range containing the Middle Value | | | 0.9640 | 322,817,020 |
| Range containing the middle value | | | 0.0004 | 99,589,819 |
| Range from bottom value to middle value | | | 0.0001 | 47,561,091 |
| Median Value | | | 0.9637 | |

| Property Acquired | | Replacement Cost New less Depreciation (CORLD) | Purchase Price to CORLD | Accumulated CORLD |
|-------------------|-----------------------|--|-------------------------|-------------------|
| Simple Mean | Water | | 0.7206 | |
| | Wastewater | | 0.8181 | |
| | Wastewater Collection | | 0.8855 | |
| Wtd Mean | Water | 26,484,800 | 32,820,809 | 0.806951 |
| | Wastewater | 395,525,200 | 431,353,933 | 0.916939 |
| | Wastewater Collection | 71,250,000 | 77,401,842 | 0.920521 |
| | | 493,260,000 | 541,576,584 | 0.910785 |

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Comparable Sales Approach

Market Sales Analysis - PP/Customer

| Property Acquired | | 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 Squared |
|--|-----------------------|-------------------------------------|---------------------|---------------------------------------|-------------|-----------------------------|-------------------------|----------------------|------------------|
| New Garden Wastewater System | Wastewater | 2016 59 | 29,500,000 | 6% | 2,100 | 14,048 | 6,607 | 4,891 | 23,921,881 |
| McKeesport Wastewater System | Wastewater | 2016 67 | 159,000,000 | 32% | 20,320 | 7,825 | 384 | (1,332) | 1,774,224 |
| Limerick Wastewater System | Wastewater | 2018 57 | 75,100,000 | 15% | 5,434 | 13,820 | 6,379 | 4,663 | 21,743,569 |
| Mahoning Water System | Water | 2017 79 | 4,734,800 | 1% | 2,806 | 1,687 | (5,754) | (7,470) | 55,800,900 |
| Mahoning Wastewater System | Wastewater | 2017 79 | 4,765,200 | 1% | 2,806 | 1,698 | (5,743) | (7,459) | 55,636,681 |
| East Bradford Wastewater Collection System | Wastewater | 2017 97 | 5,000,000 | 1% | 1,248 | 4,006 | (3,435) | (5,151) | 26,532,801 |
| Sadsbury Wastewater Collection System | Wastewater | 2019 19 | 8,600,000 | 2% | 998 | 8,617 | 1,176 | (540) | 291,600 |
| Exeter Wastewater Collection System | Wastewater | 2018 41 | 96,000,000 | 19% | 9,000 | 10,667 | 3,226 | 1,510 | 2,280,100 |
| Steelton Water System | Water | 2018 87 | 21,750,000 | 4% | 2,412 | 9,017 | 1,576 | (140) | 19,600 |
| Cheltenham Wastewater Collection System | Wastewater collection | 2018 42 | 50,250,000 | 10% | 10,219 | 4,917 | (2,524) | (4,240) | 17,977,600 |
| East Norriton Wastewater | Wastewater collection | 2018 76 | 21,000,000 | 4% | 4,952 | 4,241 | (3,200) | (4,916) | 24,167,056 |
| Kane Wastewater | Wastewater | 2019 75 | 17,560,000 | 4% | 2,006 | 8,754 | 1,313 | (403) | 162,409 |
| | | | 493,260,000 | 100% | 64,301 | 7,671 | | | |

| | | |
|--------------------|---------------------|----------------|
| Simple Mean | | 7441 |
| Standard Deviation | | 4031 |
| Simple Median | | 8,271 |
| Simple Mode | | Not Applicable |
| Weighted Mean | | 9157 |
| Standard Deviation | | 3158 |
| Wtd Median | | 6,312 |
| Wtd Mode | | 7825 |
| Forecast | 2019 944064 2021 | 7,293 7,201 |

| Property Acquired | Customers | Purchase Price to Customers | Accumulated Customers |
|---|-----------|-----------------------------|-----------------------|
| Mahoning Water System | 2,806 | 1,687 | 2,806 |
| Cheltenham Wastewater Collection System | 2,806 | 1,698 | 5,612 |
| Sadsbury Wastewater Collection System | 1,248 | 4,006 | 6,860 |
| Mahoning Wastewater System | 4,952 | 4,241 | 11,812 |
| Kane Wastewater | 10,219 | 4,917 | 22,031 |
| New Garden Wastewater System | 20,320 | 7,825 | 42,351 |
| Limerick Wastewater System | 2,006 | 8,754 | 44,357 |
| East Norriton Wastewater | 998 | 9,269 | 45,355 |
| Exeter Wastewater Collection System | 2,412 | 3,328 | 47,767 |
| East Bradford Wastewater Collection System | 9,000 | 10,667 | 56,767 |
| McKeesport Wastewater System | 5,434 | 13,820 | 62,201 |
| Steelton Water System | 2,100 | 14,048 | 64,301 |
| | 64,301 | | |
| Middle OCLD | | | 32,151 |
| Bottom value of the range containing the Middle Value | | 4,917 | 22,031 |
| Top value of the range containing the Middle Value | | 7,825 | 42,351 |
| Range containing the middle value | | 7,908 | 20,320 |
| Range from bottom value to middle value | | 1,395 | 10,120 |
| Median Value | | 6,312 | |

| | | |
|-------------|-----------------------|-------|
| Simple Mean | Water | 5,352 |
| | Wastewater | 8,679 |
| | Wastewater Collection | 4,579 |

| | |
|--------------------|--|
| Standard Deviation | |
| Simple Median | |
| Simple Mode | |

| | |
|--------------------|--|
| Weighted Mean | |
| Standard Deviation | |
| Wtd Median | |
| Wtd Mode | |

Forecast

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
As of December 17, 2019**

Comparable Sales Approach

Market Sales Analysis - PP/Cash Flow (EBITDA)

| Property Acquired | | Asset Purchase | | Proportion of Purchase | | Cash Flows (EBITDA) | Purchase Price to Cash Flow | Variance to Simple Mean | Variance to Wtd Mean | Variance Squared |
|--|-----------------------|----------------------|---------------------|------------------------|--------------------|---------------------|-----------------------------|-------------------------|----------------------|------------------|
| | | Agreement (APA) Date | Purchase Price (PP) | Price to Total | Price to Cash Flow | | | | | |
| New Garden Wastewater System | Wastewater | 2016/59 | 29,500,000 | 7% | 1,409,768 | 20.93 | (1.45) | (0.65) | 0.42 | |
| McKeesport Wastewater System | Wastewater | 2016/67 | 159,000,000 | 39% | 5,247,843 | 30.30 | 7.92 | 8.72 | 76.04 | |
| Limerick Wastewater System | Wastewater | 2018/57 | 75,100,000 | | | | | | | |
| Mahoning Water System | Water | 2017/79 | 4,734,800 | | | | | | | |
| Mahoning Wastewater System | Wastewater | 2017/79 | 4,765,200 | | | | | | | |
| East Bradford Wastewater Collection System | Wastewater | 2017/97 | 5,000,000 | 1% | 100,053 | 49.97 | 27.59 | 28.39 | 805.99 | |
| Sadsbury Wastewater Collection System | Wastewater | 2019/19 | 8,600,000 | 2% | 580,238 | 14.82 | (7.56) | (6.76) | 45.70 | |
| Exeter Wastewater Collection System | Wastewater | 2018/41 | 96,000,000 | 23% | 7,099,396 | 13.52 | (8.86) | (8.06) | 64.96 | |
| Steeltown Water System | Water | 2018/87 | 21,750,000 | 5% | 1,568,999 | 13.86 | (8.52) | (7.72) | 59.60 | |
| Cheltenham Wastewater Collection System | Wastewater-collection | 2018/42 | 50,250,000 | 12% | 5,270,576 | 9.53 | (12.85) | (12.05) | 145.20 | |
| East Norriton Wastewater | Wastewater-collection | 2018/76 | 21,000,000 | 5% | 925,477 | 22.69 | 0.31 | 1.11 | 1.23 | |
| Kane Wastewater | Wastewater | 2019/75 | 17,560,000 | 4% | 680,463 | 25.81 | 3.43 | 4.23 | 17.89 | |
| | | | 408,660,000 | 100% | 22,882,813 | 17.86 | | | | |

| | |
|--------------------|----------------|
| Simple Mean | 22.38 |
| Standard Deviation | 11.60 |
| Simple Median | 20.93 |
| Simple Mode | Not Applicable |

| | |
|--------------------|----------------|
| Weighted Mean | 21.58 |
| Standard Deviation | 8.07 |
| Wtd Median | 13.00 |
| Wtd Mode | Not Applicable |

| | | |
|----------|-------------|-------|
| Forecast | 2019 944064 | 17.74 |
| | 2021 | 13.95 |

| Property Acquired | | Asset Purchase | | Proportion of Purchase | | Cash Flows (EBITDA) | Purchase Price to Cash Flow | Accumulated Customers |
|--|--|----------------------|---------------------|------------------------|--------------------|---------------------|-----------------------------|-----------------------|
| | | Agreement (APA) Date | Purchase Price (PP) | Price to Total | Price to Cash Flow | | | |
| Cheltenham Wastewater Collection System | | | 50,250,000 | 12.3% | 5,270,576 | 9.53 | 5,270,576 | |
| Exeter Wastewater Collection System | | | 96,000,000 | 23.5% | 7,099,396 | 13.52 | 12,369,972 | |
| Steeltown Water System | | | 21,750,000 | 5.3% | 1,568,999 | 13.86 | 13,938,971 | |
| Sadsbury Wastewater Collection System | | | 8,600,000 | 2.1% | 580,238 | 14.82 | 14,519,209 | |
| New Garden Wastewater System | | | 29,500,000 | 7.2% | 1,409,768 | 20.94 | 15,928,977 | |
| East Norriton Wastewater | | | 21,000,000 | 5.1% | 925,477 | 22.69 | 16,854,454 | |
| Kane Wastewater | | | 17,560,000 | 4.3% | 680,463 | 25.81 | 17,534,917 | |
| McKeesport Wastewater System | | | 159,000,000 | 38.9% | 5,247,843 | 30.3 | 22,782,760 | |
| East Bradford Wastewater Collection System | | | 5,000,000 | 1.2% | 100,053 | 49.97 | 22,882,813 | |
| | | | 408,660,000 | 99.9% | 22,882,813 | 17.86 | | |

| | |
|---|------------|
| Middle Cash Flow | 11,441,407 |
| Bottom value of the range containing the Middle Value | 9.53 |
| Top value of the range containing the Middle Value | 13.52 |
| Range containing the middle value | 3.99 |
| Range from bottom value to middle value | 3.47 |
| Median Value | 13.00 |

| | |
|-----------------------|-------|
| Simple Mean | |
| Water | 13.86 |
| Wastewater | 25.89 |
| Wastewater Collection | 16.11 |

| | |
|--------------------|--|
| Standard Deviation | |
| Simple Median | |
| Simple Mode | |

| | |
|--------------------|--|
| Weighted Mean | |
| Standard Deviation | |
| Wtd Median | |
| Wtd Mode | |

Forecast

Source: ES&S of Pacific Industries, PA American Valley Valley Wastewater System, November 17, 2010, 2018. Created: 7/2/2020

| Acquirer | Appraisal Date | Asset Name | SEFC | Location | Type of Under-Write | Actual Purchase Price | Total Purchase Price | Number of Total Customers | QCR Market Value per Customer | Relationship to the Issuer | Average Purchase Price per Customer | Acq. Market Value per Customer | Engineer's Assessment | Original Cost | COG2 Depreciation | Original Cost less Depreciation | Purchase Price to COG2 | COG2 to Acquisition | Cost New | Replacement Cost less Depreciation | Cost New less Depreciation | Acquiree Price to COG2 | Price Paid (or Premium) as PA PUF |
|----------|----------------|-------------------|------------------------|------------|---|-----------------------|----------------------|---------------------------|-------------------------------|----------------------------|-------------------------------------|--------------------------------|---|---------------|-------------------|---------------------------------|------------------------|---------------------|---------------|------------------------------------|----------------------------|------------------------|-----------------------------------|
| 20 | 6/7/2016 | PA American Water | City of McKeesport | Allegheny | Collection and Treatment Wastewater | 180,000,000 | 159,000,000 | 21,951 | 7,297 | Pass | 7,242.75 | 7,241 | K&I Engineers Inc | 108,711,170 | 74.0% | 80,085,607 | 1.4854 | | 218,199,930 | 48.4% | 156,528,969 | 1.0158 | 158,000,000 |
| 21 | 8/1/2010 | Acqui PA | New Garden Twp 1A | Chemster | Collection and Treatment | 29,500,000 | 29,500,000 | 2,308 | 12,808 | Pass | 12,007.80 | 12,008 | AMS Consultants | 27,146,892 | 58.4% | 18,567,728 | 1.5888 | 7.219 | 60,212,051.00 | 50.8% | 40,625,816 | 0.9635 | 29,500,000 |
| 22 | 12/12/2017 | Acqui PA | Lemerc Township | Montgomery | Collection and Treatment | 64,378,000 | 64,373,000 | 5,434 | 11,846 | Pass | 9,264 | 11,868 | | | | 41,816,934 | 1.8264 | | | | 78,068,177 | 0.8810 | 64,373,000 |
| 23 | 12/30/2017 | Acqui PA | East Bradford Township | Chemster | Wastewater Collection and plant for treatment | 5,000,000 | 5,000,000 | 1,288 | 4,006 | Pass | 4,006.41 | 4,006 | | 8,254,910 | 64.9% | 5,183,591 | 0.9187 | 1.917 | 15,071,739 | 61.9% | 9,246,581 | 0.9411 | 5,000,000 |
| 24 | N/A | Mkt | Muhlenberg | Carbon | Water Treatment and Distribution System | 4,734,800 | 4,734,800 | 1,806 | | Pass | | 1,687 | | | | | | | | | 8,899,116 | 0.5320 | |
| 25 | N/A | N/A | Muhlenberg | Carbon | Collection and Treatment Wastewater | 4,750,200 | 4,750,200 | 2,808 | | Pass | | 1,944 | | | | | | | | | 7,991,234 | 0.5861 | |
| 26 | 6/1/2018 | Acqui PA | Chatham | Montgomery | Collection and Treatment | 50,250,000 | 50,250,000 | 10,500 | | Pass | 4,789.71 | 4,789 | Boyer & James Inc | 19,818,218 | 73.0% | 15,784,461 | 1.161% | 1.142 | 145,511,651 | 44.9% | 49,940,496 | 1.0067 | |
| 27 | 11/14/2018 | PA American Water | York | Dauphin | Water Treatment and Treatment | 22,500,000 | 21,750,000 | 2,32% | | Pass | 9,358.84 | 9,358 | Hornberger, Alexander & Gruber, Inc (HAG) | 19,739,906 | 71.1% | 14,413,435 | 1.5069 | 2.626 | 11,436,768 | 46.1% | 21,321,473 | 0.704% | |
| 28 | | PA American Water | Scrubbs | Chemster | Collection Wastewater | 9,250,000 | 8,600,000 | 998 | | Pass | 8,617.24 | 8,617 | Hornberger, Alexander & Gruber, Inc (HAG) | 7,480,601 | 81.9% | 6,328,876 | 1.40 | 1.424 | 10,652,193 | 80.0% | 8,517,987 | 1.0097 | |
| 29 | 5/28/2018 | PA American Water | Lebanon | Lebanon | Collection and Treatment Wastewater | 16,000,000 | 16,000,000 | 9,000 | | Pass | 10,666.67 | 10,667 | Connell Fleming | 68,804,341 | 49.8% | 40,967,618 | 2.3965 | 3.061 | 209,641,218 | 41.5% | 99,389,819 | 0.9640 | |
| 30 | 12/12/2018 | Acqui PA | East Newton | Montgomery | Collection Wastewater | 21,000,000 | 21,000,000 | 4,950 | | Pass | 4,242.42 | | Connell Engineering Corporation | 16,246,826 | 51.1% | 8,407,007 | 1.4919 | 4.356 | 70,770,233 | 58.8% | 27,461,356 | 2.7647 | |
| 31 | 8/10/2018 | PA American | Altoona | Mifflin | Collection and Treatment | 17,840,000 | 17,160,000 | 2005 | | Pass | 8,557.74 | | Connell Fleming | 21,023,521 | 57.4% | 11,070,453 | 1.4948 | 3.642 | 55,516,558 | 52.2% | 28,011,055 | 0.8052 | |

Notes: 1. Total Purchase Price reflects the agreed upon purchase price authorized to settle the acquisition application.

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

**Wastewater System
Appraisal Work Papers
As of December 17, 2019**

**Market Approach
Value Line Investment Surveys
Water Industry
Market and Financial Ratios**

**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**

**Pennsylvania American Water Company
Valley Township Wastewater System
Wastewater Collection System
Investor-Owned Utility
December 17, 2019**

Comparable Sales Approach

Financial Basis¹

| | Industry Averages | American & Aqua Averages | American States Water | American Water | Aqua America | California Water | Consol. Water Co. | Middlesex Water | SJW Corp | York | |
|---|-------------------|-----------------------------|--------------------------|----------------|--------------|------------------|-------------------|--------------------|----------|----------|------------|
| 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 Information General

Appraisal Work Papers

Cost Indices

**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
ail: weinertj@auswest.net**

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

**Wastewater System
Appraisal Work Papers
As of December 17, 2019**

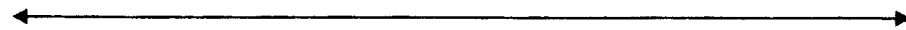
**Handy Whitman Index of Public System
Construction Costs
Water Industry – Northeastern United States**

**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
ail: weinertj@auswest.net**

Bulletin No. 191

1912 to January 1, 2020

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



Trends of Construction Costs

COMPILED & PUBLISHED BY
Whitman, Requardt & Associates, LLP
Engineers, Architects and Planners
801 South Caroline Street
Baltimore, Maryland 21231
410-235-3450

FOREWORD

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.

FOREWORD

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. 191

During the twelve-month period ending January 1, 2020, the average index of all geographical regions for Total Gas Plant increased 7.0%, and the comparable index for Electric Plant-All Steam Generation increased 1.1%.

May 2020

Whitman, Requardt and Associates, LLP

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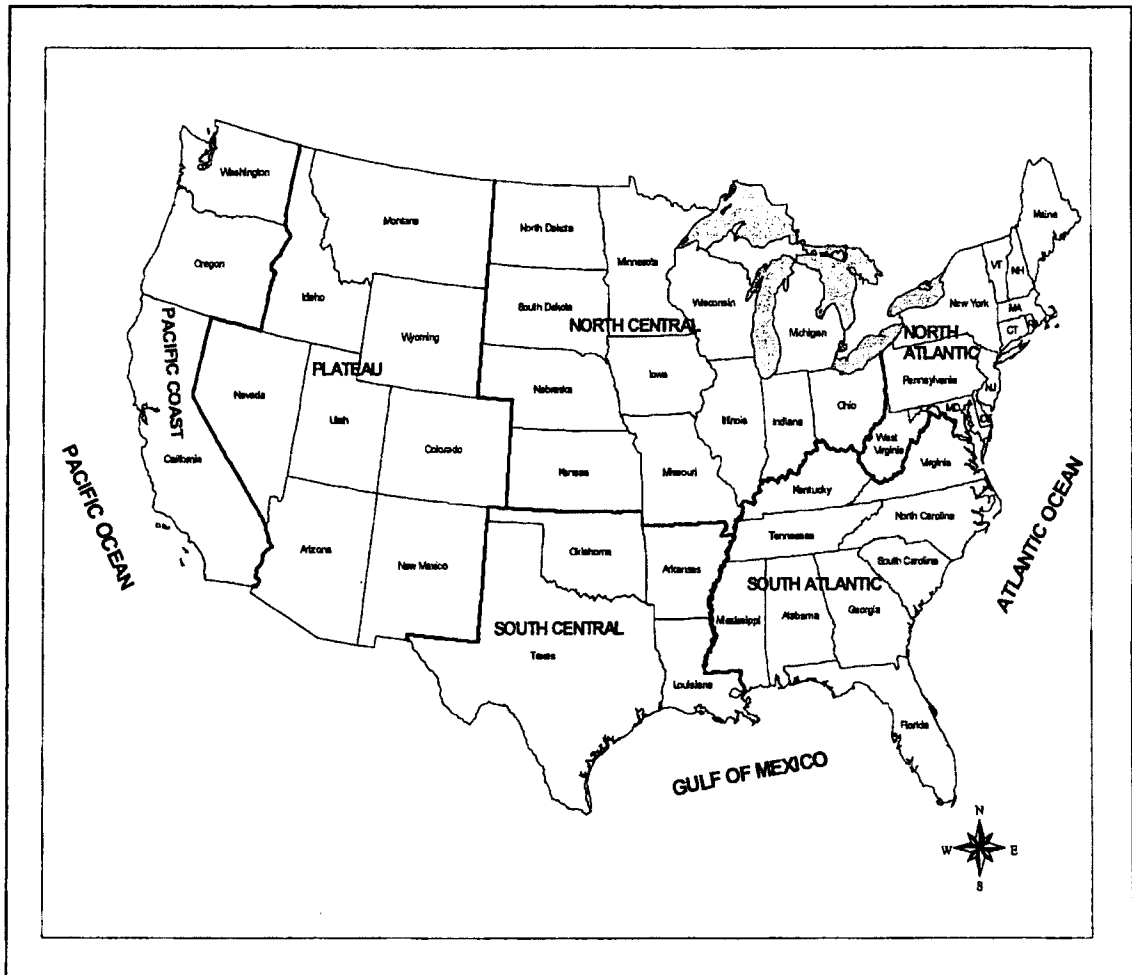
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TRENDS OF PUBLIC UTILITY CONSTRUCTION COSTS

GEOGRAPHIC REGIONS



Cost Trends Of

Water Utility Construction

**COST TREND TABLES
1912 to January 1, 2020**

W-1

COST TRENDS OF WATER UTILITY CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

| L i n e | CONSTRUCTION AND EQUIPMENT | N A R U C | COST INDEX NUMBERS | | | | | | | | | | | | | | |
|------------------|----------------------------------|-----------------------|--------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| 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 | | | | | | | | | | | | | | | | | |

| L i n e | CONSTRUCTION AND EQUIPMENT | N A R U C | COST INDEX NUMBERS | | | | | | | | | | | | | |
|------------------|----------------------------------|-----------------------|--------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| 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 | | | | | | | | | | | | | | | | |

| L i n e | CONSTRUCTION AND EQUIPMENT | N A R U C | COST INDEX NUMBERS | | | | | | | | | | | | | |
|------------------|----------------------------------|-----------------------|--------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 |
| | | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 |
| 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 | | | | | | | | | | | | | | | | |

| Line | CONSTRUCTION AND EQUIPMENT | N A R U C | COST INDEX NUMBERS | | | | | | | | | | | | | |
|------|----------------------------------|-----------------------|--------------------|----|----|----|----|----|----|----|----|----|----|-----|-----|----|
| | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | | | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | | | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 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 | 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 | | | | | | | | | | | | | | | | |
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| 56 | | | | | | | | | | | | | | | | |

| L i n e | CONSTRUCTION AND EQUIPMENT | N A R U C | COST INDEX NUMBERS | | | | | | | | | | | | | | |
|------------------|----------------------------------|-----------------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| 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 | | | | | | | | | | | | | | | | | |
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| 56 | | | | | | | | | | | | | | | | | |

| L i n e | CONSTRUCTION AND EQUIPMENT | N A R U C | COST INDEX NUMBERS | | | | | | | | | | | | | | |
|------------------|----------------------------------|-----------------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 9 | 9 | 9 | 9 | 9 | 9 | |
| | | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | |
| 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 | | | | | | | | | | | | | | | | | |
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W-1

COST TRENDS OF WATER UTILITY CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

| Line | CONSTRUCTION AND EQUIPMENT | N | COST INDEX NUMBERS | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|----------------------------------|---|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|------|---|------|---|---|---|---|---|------|------|------|------|------|------|
| | | | A | R | U | C | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2005 | | 2006 | | 2007 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | Jan. | Jul. | Jan. | Jul. | Jan. | Jul. |
| | | | | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 55 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 56 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| L i n e | CONSTRUCTION AND EQUIPMENT | N A R U C | 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 | 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 | | | | | | | | | | | | | | | | |

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

Cost Trends Of

Building

Construction

COST TREND TABLES
1912 to January 1, 2020

B-1

COST TRENDS OF BUILDING CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

| L i n e | CONSTRUCTION, MATERIAL, AND LABOR | COST INDEX NUMBERS | | | | | | | | | | | | | | | |
|------------------|--------------------------------------|--------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 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 | | | | | | | | | | | | | | | | | |

| L i n e | CONSTRUCTION, MATERIAL, AND LABOR | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
|------------------|--------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | | 8 | 9 | 0 | 1 | 2 | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 |
| 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)

| L i n e | CONSTRUCTION, MATERIAL, AND LABOR | COST INDEX NUMBERS | | | | | | | | | | | | | | | |
|------------------|--------------------------------------|--------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| | | 1 9 4 4 | 1 9 4 5 | 1 9 4 6 | 1 9 4 7 | 1 9 4 8 | 1 9 4 9 | 1 9 5 0 | 1 9 5 1 | 1 9 5 2 | 1 9 5 3 | 1 9 5 4 | 1 9 5 5 | 1 9 5 6 | 1 9 5 7 | 1 9 5 8 | 1 9 5 9 |
| 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 | 41 |
| 22 | Plumbers | 18 | 18 | 19 | 22 | 25 | 27 | 28 | 29 | 30 | 32 | 34 | 35 | 37 | 38 | 40 | 41 |
| 23 | | | | | | | | | | | | | | | | | |

| L i n e | CONSTRUCTION, MATERIAL, AND LABOR | COST INDEX NUMBERS | | | | | | | | | | | | | | | |
|------------------|--------------------------------------|--------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| | | 1 9 6 0 | 1 9 6 1 | 1 9 6 2 | 1 9 6 3 | 1 9 6 4 | 1 9 6 5 | 1 9 6 6 | 1 9 6 7 | 1 9 6 8 | 1 9 6 9 | 1 9 7 0 | 1 9 7 1 | 1 9 7 2 | 1 9 7 3 | 1 9 7 4 | 1 9 7 5 |
| 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 | 84 | 91 | 91 | 100 | 157 | 156 | 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 | | | | | | | | | | | | | | | | | |

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COST TRENDS OF BUILDING CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

| L i n e | CONSTRUCTION, MATERIAL, AND LABOR | COST INDEX NUMBERS | | | | | | | | | | | | | | | |
|------------------|--------------------------------------|--------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| | | 1 9 7 6 | 1 9 7 7 | 1 9 7 8 | 1 9 7 9 | 1 9 8 0 | 1 9 8 1 | 1 9 8 2 | 1 9 8 3 | 1 9 8 4 | 1 9 8 5 | 1 9 8 6 | 1 9 8 7 | 1 9 8 8 | 1 9 8 9 | 1 9 9 0 | 1 9 9 1 |
| 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 | | | | | | | | | | | | | | | | | |

| L i n e | CONSTRUCTION, MATERIAL, AND LABOR | | | | | | | | | | | | | | | 2005 | |
|------------------|--------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------|-----------|--|
| | | 1 9 9 2 | 1 9 9 3 | 1 9 9 4 | 1 9 9 5 | 1 9 9 6 | 1 9 9 7 | 1 9 9 8 | 1 9 9 9 | 2 0 0 0 | 2 0 0 1 | 2 0 0 2 | 2 0 0 3 | 2 0 0 4 | Jan. 1 | Jul. 1 | |
| 1 | Building Construction | | | | | | | | | | | | | | | | |
| 2 | Reinf. Conc. Bldg. Construction | 262 | 279 | 298 | 305 | 311 | 322 | 324 | 330 | 342 | 347 | 363 | 371 | 403 | 415 | 422 | |
| 3 | Brick Building Construction | 278 | 290 | 304 | 310 | 315 | 328 | 337 | 345 | 359 | 366 | 383 | 391 | 414 | 425 | 431 | |
| 4 | Structural Steel Erected | 260 | 278 | 305 | 317 | 325 | 334 | 336 | 344 | 360 | 366 | 375 | 385 | 433 | 443 | 452 | |
| 5 | Reinf. Concrete (Ready-Mix) | 268 | 279 | 291 | 296 | 304 | 312 | 320 | 327 | 336 | 343 | 364 | 372 | 389 | 402 | 409 | |
| 6 | Reinf. Concrete (Plant-Mix) | 247 | 265 | 281 | 279 | 286 | 298 | 296 | 299 | 304 | 307 | 324 | 328 | 351 | 364 | 373 | |
| 7 | | | | | | | | | | | | | | | | | |
| 8 | Building Material | | | | | | | | | | | | | | | | |
| 9 | Ready-Mix Concrete | 257 | 262 | 270 | 281 | 295 | 286 | 301 | 307 | 315 | 327 | 350 | 356 | 344 | 351 | 371 | |
| 10 | Lumber for Reinf. Concrete | 150 | 193 | 227 | 196 | 206 | 218 | 186 | 182 | 168 | 161 | 164 | 153 | 182 | 182 | 215 | |
| 11 | Steel Bars for Reinf. Concrete | 194 | 212 | 234 | 236 | 236 | 250 | 246 | 229 | 225 | 220 | 221 | 243 | 296 | 348 | 360 | |
| 12 | Common Brick | 315 | 310 | 313 | 315 | 311 | 335 | 369 | 384 | 412 | 422 | 426 | 427 | 429 | 429 | 439 | |
| 13 | Concrete Block | 288 | 263 | 262 | 258 | 258 | 285 | 306 | 332 | 354 | 363 | 381 | 384 | 394 | 406 | 406 | |
| 14 | | | | | | | | | | | | | | | | | |
| 15 | Labor | | | | | | | | | | | | | | | | |
| 16 | Building Trades Labor | 296 | 307 | 318 | 326 | 331 | 344 | 353 | 362 | 376 | 386 | 412 | 424 | 442 | 458 | 458 | |
| 17 | Heavy Constr. Trades Labor | 291 | 300 | 311 | 319 | 325 | 337 | 348 | 358 | 372 | 380 | 402 | 411 | 430 | 446 | 446 | |
| 18 | Labor for Reinf. Concrete | 289 | 297 | 308 | 314 | 320 | 333 | 343 | 354 | 366 | 376 | 400 | 407 | 426 | 439 | 439 | |
| 19 | Common Labor | 293 | 303 | 315 | 315 | 327 | 338 | 349 | 359 | 376 | 382 | 400 | 407 | 421 | 428 | 428 | |
| 20 | Electricians | 309 | 324 | 336 | 343 | 353 | 365 | 377 | 390 | 401 | 411 | 441 | 454 | 475 | 497 | 497 | |
| 21 | Pipefitters | 305 | 317 | 323 | 335 | 342 | 352 | 361 | 374 | 388 | 401 | 423 | 435 | 470 | 488 | 488 | |
| 22 | Plumbers | 305 | 320 | 330 | 339 | 348 | 355 | 363 | 368 | 385 | 397 | 425 | 438 | 455 | 469 | 469 | |
| 23 | | | | | | | | | | | | | | | | | |

B-1

COST TRENDS OF BUILDING CONSTRUCTION

NORTH ATLANTIC REGION (1973=100)

| L i n e | 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 | | | | | | | | | | | | | | | | | |

| L i n e | CONSTRUCTION, MATERIAL, AND LABOR | COST INDEX NUMBERS | | | | | | | | | | | | | | | |
|------------------|--------------------------------------|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | 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 | | | |
| 3 | Brick Building Construction | 550 | 552 | 585 | 580 | 586 | 589 | 604 | 608 | 633 | 647 | 647 | 643 | 664 | | | |
| 4 | Structural Steel Erected | 561 | 567 | 568 | 555 | 549 | 556 | 561 | 569 | 579 | 617 | 618 | 604 | 609 | | | |
| 5 | Reinf. Concrete (Ready-Mix) | 541 | 543 | 556 | 554 | 564 | 567 | 581 | 585 | 602 | 609 | 611 | 608 | 625 | | | |
| 6 | Reinf. Concrete (Plant-Mix) | 482 | 482 | 497 | 490 | 497 | 505 | 519 | 527 | 541 | 561 | 553 | 551 | 565 | | | |
| 7 | | | | | | | | | | | | | | | | | |
| 8 | Building Material | | | | | | | | | | | | | | | | |
| 9 | Ready-Mix Concrete | 441 | 452 | 455 | 461 | 471 | 471 | 481 | 485 | 488 | 488 | 489 | 488 | 492 | | | |
| 10 | Lumber for Reinf. Concrete | 174 | 170 | 188 | 182 | 178 | 204 | 222 | 240 | 244 | 309 | 255 | 249 | 243 | | | |
| 11 | Steel Bars for Reinf. Concrete | 363 | 373 | 368 | 326 | 288 | 307 | 316 | 349 | 342 | 393 | 413 | 381 | 333 | | | |
| 12 | Common Brick | 449 | 449 | 617 | 617 | 618 | 618 | 636 | 637 | 725 | 725 | 709 | 709 | 757 | | | |
| 13 | Concrete Block | 444 | 499 | 505 | 485 | 483 | 429 | 427 | 411 | 411 | 443 | 429 | 461 | 462 | | | |
| 14 | | | | | | | | | | | | | | | | | |
| 15 | Labor | | | | | | | | | | | | | | | | |
| 16 | Building Trades Labor | 636 | 636 | 646 | 646 | 660 | 660 | 678 | 678 | 696 | 696 | 707 | 707 | 732 | | | |
| 17 | Heavy Constr. Trades Labor | 620 | 620 | 640 | 640 | 659 | 659 | 673 | 673 | 696 | 696 | 705 | 705 | 732 | | | |
| 18 | Labor for Reinf. Concrete | 616 | 616 | 633 | 633 | 651 | 651 | 666 | 666 | 690 | 690 | 693 | 693 | 723 | | | |
| 19 | Common Labor | 620 | 620 | 644 | 644 | 661 | 661 | 674 | 674 | 705 | 705 | 712 | 712 | 750 | | | |
| 20 | Electricians | 691 | 691 | 702 | 702 | 724 | 724 | 731 | 731 | 753 | 753 | 775 | 775 | 787 | | | |
| 21 | Pipefitters | 694 | 694 | 704 | 704 | 717 | 717 | 738 | 738 | 755 | 755 | 768 | 768 | 780 | | | |
| 22 | Plumbers | 655 | 655 | 668 | 668 | 674 | 674 | 696 | 696 | 716 | 716 | 734 | 734 | 751 | | | |
| 23 | | | | | | | | | | | | | | | | | |

M

UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

| L i n e | CONSTRUCTION AND EQUIPMENT | COST INDEX NUMBERS | | | | | | | | | | | | | | |
|------------------|------------------------------------|--------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | |
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | |
| 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-Electric | 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 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 56 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

M

UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

| L i n e | CONSTRUCTION AND EQUIPMENT | COST INDEX NUMBERS | | | | | | | | | | | | | |
|------------------|------------------------------------|--------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 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-Electric | 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 | 23 | 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 | 26 | 25 | 25 | 25 | 25 | 25 | 26 | 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 | | | | | | | | | | | | | | | |
| 56 | | | | | | | | | | | | | | | |

M

UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

| L i n e | CONSTRUCTION AND EQUIPMENT | COST INDEX NUMBERS | | | | | | | | | | | | | | |
|------------------|------------------------------------|--------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|---|
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 |
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | |
| 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 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 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 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 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)

| L i n e | CONSTRUCTION AND EQUIPMENT | COST INDEX NUMBERS | | | | | | | | | | | | | |
|------------------|------------------------------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | |
| | | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 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 | | | | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | |
| 56 | | | | | | | | | | | | | | | |

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UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

| L i n e | CONSTRUCTION AND EQUIPMENT | COST INDEX NUMBERS | | | | | | | | | | | | | |
|------------------|------------------------------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| | | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 |
| 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-Electric | 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 | | | | | | | | | | | | | | | |
| 56 | | | | | | | | | | | | | | | |

M

UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

| L i n e | CONSTRUCTION AND EQUIPMENT | COST INDEX NUMBERS | | | | | | | | | | | | | | |
|------------------|------------------------------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 9 | 9 | 9 | 9 | 9 | 9 | |
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | |
| 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 | | | | | | | | | | | | | | | | |
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UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

| L i n e | CONSTRUCTION AND EQUIPMENT | COST INDEX NUMBERS | | | | | | | | | | | | | | | |
|------------------|------------------------------------|--------------------|-----|-----|-----|-----|-----|-----|------|------|------|------|-------|------|------|-------|------|
| | | | | | | | | | | | | 2005 | | 2006 | | 2007 | |
| | | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | Jan. | Jul. | Jan. | Jul. | Jan. | Jul. |
| | | 9 | 9 | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | |
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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 | 535 | 535 | 464 | 464 | 403 | 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 | | | | | | | | | | | | | | | |
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UTILITY PLANT MATERIALS

ALL REGIONS (1973=100)

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

Appraisal Work Papers

Cost Indices

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**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
ail: weinertj@auswest.net**



AUS Telephone Plant Index



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Cost Trend Tables from 1946 to January 1, 2020

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For information contact:

AUS Consultants
3601 N. Progress Ave., Suite 202
Harrisburg PA 17110
717.763.9890

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AUS Telephone Plant Index

155 Gaither Drive
Suite A
Mount Laurel, NJ 08054
856.234.9200

3601 N. Progress Ave.
Suite 202
Harrisburg, PA 17110
717.763.9890

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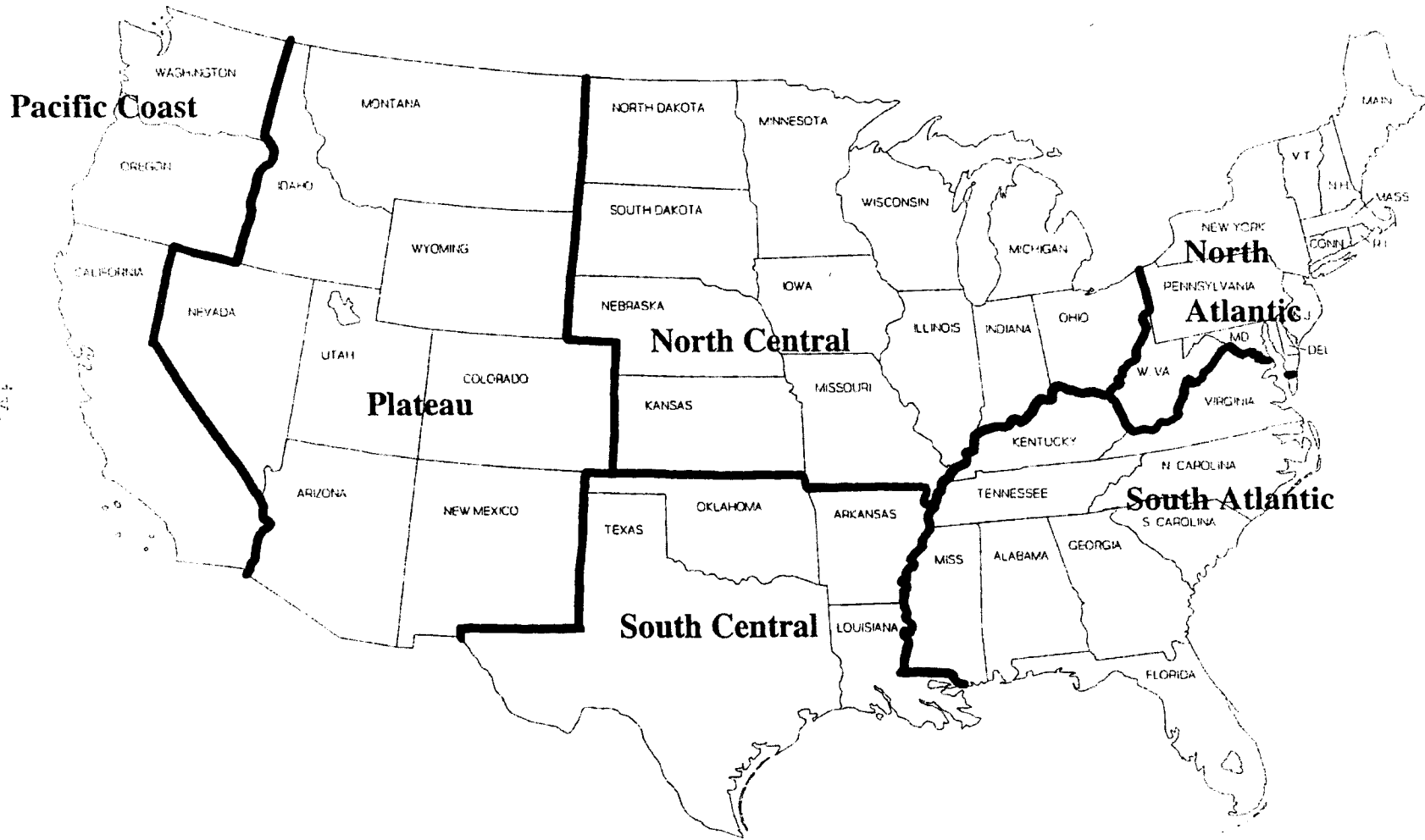
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| North Central Region | T-3 | 15-21 |
| South Central Region | T-4 | 22-28 |
| Plateau Region | T-5 | 29-35 |
| Pacific Region | T-6 | 36-42 |



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

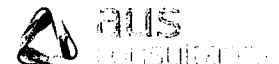
AUS TELEPHONE PLANT INDEX
NORTH ATLANTIC REGION 1973=100

| L I N E N O | PLANT IN SERVICE DESCRIPTION | F C A c c t | COST INDEX NUMBER | | | | | | | | | | | | | | | | L I N E N O |
|--------------------------------|--------------------------------------|--------------------------------|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------------|
| | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 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 | Garage 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 | 8 |
| 9 | | | | | | | | | | | | | | | | | | | 9 |
| 10 | | | | | | | | | | | | | | | | | | | 10 |
| 11 | Buildings..... | 2121 | 24 | 28 | 32 | 34 | 35 | 37 | 38 | 39 | 41 | 42 | 46 | 49 | 50 | 52 | 53 | 52 | 11 |
| 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 | Digital 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 | Radio System—Analog..... | | | | | | | | | | | | | | | | | | 26 |
| 27 | Radio Systems—Digital..... | 22311 | 51 | 57 | 62 | 63 | 63 | 66 | 64 | 60 | 58 | 58 | 49 | 49 | 46 | 47 | 36 | 36 | 27 |
| 28 | Circuit Equipment—Analog..... | 22312 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 |
| 29 | Circuit Equipment—Digital..... | 22321 | 347 | 392 | 417 | 411 | 410 | 423 | 410 | 401 | 348 | 311 | 319 | 317 | 303 | 299 | 312 | 297 | 29 |
| 30 | | 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 | Polcs..... | 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..... | 24242 | 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 | | | | |
|---------|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------|--------------------------|--------------------------|--------------------------|--------------------------|
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| | 9 6 2 | 9 6 3 | 9 6 4 | 9 6 5 | 9 6 6 | 9 6 7 | 9 6 8 | 9 6 9 | 9 7 0 | 9 7 1 | 9 7 2 | 9 7 3 | 1974 J a n 1 | 1974 J u n 1 | 1975 J a n 1 | 1975 J u n 1 | 1976 J a n 1 | 1976 J u n 1 | 1977 J a n 1 | 1977 J u n 1 | | 1978 J a n 1 | 1978 J u n 1 | 1979 J a n 1 | 1979 J u n 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 | 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 | Pcc | COST INDEX NUMBER | | | | | | | | | | | | LINE NO | | | | |
|---------|--------------------------------------|-------|-------------------|------|------|------|------|------|------|------|------|------|------|------|---------|------|------|------|------|
| | | | 1980 | | 1981 | | 1982 | | 1983 | | 1984 | | 1985 | | | 1986 | | 1987 | |
| | | | Jan | July | Jan | July | Jan | July | Jan | July | Jan | July | Jan | July | | Jan | July | Jan | July |
| 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 | Garage 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 | Digital 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 Systems—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..... | 24242 | 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 |

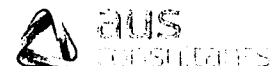
| LINE NO | COST INDEX NUMBER | | | | | | | | | | | | | | | | | | | | | | | | LINE NO |
|---------|-------------------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|---------|
| | 1988 | | 1989 | | 1990 | | 1991 | | 1992 | | 1993 | | 1994 | | 1995 | | 1996 | | 1997 | | 1998 | | 1999 | | |
| | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | |
| | a | a | a | a | a | a | a | a | a | a | a | a | a | a | a | a | a | a | a | a | a | a | a | u | u |
| | n | n | n | n | n | n | n | n | n | n | n | n | n | n | n | n | n | n | n | n | n | n | n | y | y |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 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 | 323 | 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 |

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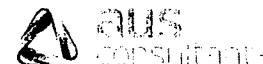
| L I N E N O | PLANT IN SERVICE DESCRIPTION | P C C A c c t | COST INDEX NUMBER | | | | | | | | | | | | | | | | L I N E N O |
|----------------|--------------------------------------|-------------------------------------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------|
| | | | 2000 | | 2001 | | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | | 2007 | | |
| | | | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 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 | Garage 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 | Digital Electronic Switching..... | 2212 | 25 | 24 | 22 | 23 | 23 | 23 | 21 | 22 | 22 | 22 | 22 | 22 | 22 | 23 | 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 Systems—Digital..... | 22312 | 125 | 125 | 126 | 127 | 128 | 127 | 125 | 125 | 125 | 126 | 127 | 127 | 128 | 129 | 130 | 130 | 28 |
| 29 | Circuit Equipment—Analog..... | 22321 | 143 | 144 | 144 | 142 | 143 | 143 | 143 | 144 | 143 | 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 | 300 | 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..... | 24242 | 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 | 101 | 103 | 103 | 53 |
| 54 | | | | | | | | | | | | | | | | | | | 54 |



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| L I N E N O | COST INDEX NUMBER | | | | | | | | | | | | | | | | | | | | | | | | L I N E N O |
|-------------|-------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------------|
| | 2008 | | 2009 | | 2010 | | 2011 | | 2012 | | 2013 | | 2014 | | 2015 | | 2016 | | 2017 | | 2018 | | 2019 | | |
| | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | J a n 1 | J u n 1 | |
| 1 | 251 | 256 | 245 | 248 | 258 | 260 | 279 | 282 | 282 | 282 | 285 | 283 | 284 | 285 | 289 | 287 | 283 | 282 | 288 | 290 | 298 | 304 | 304 | 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 | 309 | 305 | 4 |
| 5 | 461 | 471 | 495 | 480 | 485 | 490 | 497 | 502 | 514 | 520 | 523 | 528 | 532 | 537 | 541 | 543 | 543 | 547 | 548 | 553 | 557 | 562 | 567 | 574 | 5 |
| 6 | 476 | 485 | 499 | 504 | 503 | 503 | 507 | 518 | 529 | 541 | 548 | 555 | 557 | 564 | 566 | 570 | 572 | 576 | 577 | 581 | 583 | 578 | 602 | 612 | 6 |
| 7 | 435 | 445 | 457 | 457 | 456 | 458 | 462 | 474 | 479 | 485 | 489 | 494 | 497 | 503 | 505 | 509 | 510 | 513 | 514 | 519 | 522 | 533 | 541 | 550 | 7 |
| 8 | 281 | 286 | 290 | 286 | 286 | 288 | 288 | 290 | 291 | 294 | 295 | 296 | 304 | 307 | 309 | 315 | 318 | 322 | 322 | 324 | 327 | 330 | 333 | 335 | 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 | 647 | 643 | 11 |
| 12 | 389 | 402 | 417 | 415 | 418 | 420 | 415 | 429 | 433 | 437 | 433 | 437 | 439 | 450 | 449 | 454 | 454 | 455 | 457 | 461 | 464 | 482 | 491 | 497 | 12 |
| 13 | 162 | 171 | 184 | 171 | 169 | 169 | 170 | 171 | 173 | 173 | 164 | 165 | 166 | 166 | 171 | 172 | 172 | 172 | 173 | 171 | 171 | 169 | 170 | 172 | 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 | 0.60 | 0.60 | 14 |
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| 21 | 439 | 445 | 456 | 458 | 460 | 469 | 474 | 481 | 486 | 478 | 484 | 491 | 497 | 495 | 499 | 499 | 496 | 497 | 502 | 502 | 509 | 506 | 513 | 517 | 21 |
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| 23 | 288 | 292 | 297 | 299 | 300 | 305 | 307 | 311 | 313 | 309 | 312 | 317 | 320 | 319 | 322 | 322 | 320 | 321 | 324 | 325 | 328 | 327 | 331 | 333 | 23 |
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| 27 | 91 | 90 | 90 | 90 | 89 | 89 | 88 | 89 | 88 | 88 | 88 | 88 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 90 | 90 | 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 | 143 | 143 | 28 |
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| 30 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 41 | 41 | 42 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 45 | 45 | 45 | 46 | 46 | 47 | 47 | 30 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | | 31 |
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| 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 | 661 | 670 | 35 |
| 36 | 494 | 507 | 461 | 473 | 506 | 509 | 573 | 582 | 577 | 576 | 582 | 572 | 573 | 573 | 578 | 570 | 555 | 551 | 566 | 568 | 590 | 604 | 601 | 602 | 36 |
| 37 | 123 | 124 | 126 | 127 | 128 | 130 | 131 | 133 | 135 | 136 | 137 | 138 | 140 | 142 | 143 | 144 | 146 | 148 | 149 | 151 | 153 | 155 | 157 | 158 | 37 |
| 38 | 465 | 481 | 421 | 435 | 475 | 476 | 555 | 562 | 554 | 552 | 556 | 544 | 542 | 540 | 544 | 533 | 513 | 506 | 523 | 524 | 548 | 563 | 558 | 557 | 38 |
| 39 | 100 | 100 | 102 | 103 | 103 | 105 | 106 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 116 | 116 | 118 | 119 | 120 | 122 | 123 | 125 | 126 | 127 | 39 |
| 40 | 459 | 475 | 410 | 425 | 467 | 467 | 553 | 560 | 550 | 547 | 552 | 538 | 536 | 533 | 537 | 524 | 501 | 493 | 511 | 511 | 537 | 552 | 545 | 544 | 40 |
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| 43 | 155 | 157 | 159 | 161 | 163 | 164 | 166 | 168 | 170 | 172 | 173 | 174 | 177 | 179 | 181 | 183 | 185 | 187 | 189 | 191 | 194 | 196 | 199 | 200 | 43 |
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| 46 | 475 | 488 | 469 | 478 | 496 | 501 | 519 | 528 | 525 | 527 | 531 | 530 | 533 | 538 | 543 | 543 | 540 | 541 | 551 | 556 | 569 | 580 | 583 | 586 | 46 |
| 47 | 502 | 507 | 525 | 530 | 516 | 521 | 526 | 532 | 545 | 550 | 549 | 552 | 559 | 565 | 571 | 577 | 581 | 586 | 591 | 596 | 611 | 618 | 626 | 631 | 47 |
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| 49 | 82 | 77 | 75 | 73 | 65 | 58 | 55 | 53 | 52 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 50 | 49 | 49 | 50 | 50 | 50 | 51 | 51 | 49 |
| 50 | 94 | 92 | 89 | 87 | 83 | 80 | 75 | 70 | 66 | 62 | 58 | 54 | 54 | 54 | 53 | 53 | 54 | 54 | 54 | 55 | 55 | 55 | 56 | 56 | 50 |
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SCHEDULE No. T-1

AUS TELEPHONE PLANT INDEX
NORTH ATLANTIC REGION 1973=100

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Water and Wastewater Information General

Appraisal Work Papers

Cost Indices

United States Bureau of Labor Statistics – General Inf Cost Indexes

**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
ail: weinertj@auswest.net**

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| BLS | BLS | All | 1923 | 1/1/1923 | 12/31/1923 | 17 | 12 | 10 | 10 |
| BLS | BLS | All | 1924 | 1/1/1924 | 12/31/1924 | 17 | 12 | 10 | 10 |
| BLS | BLS | All | 1925 | 1/1/1925 | 12/31/1925 | 18 | 13 | 11 | 11 |
| BLS | BLS | All | 1926 | 1/1/1926 | 12/31/1926 | 18 | 13 | 11 | 11 |
| BLS | BLS | All | 1927 | 1/1/1927 | 12/31/1927 | 17 | 12 | 10 | 10 |
| BLS | BLS | All | 1928 | 1/1/1928 | 12/31/1928 | 17 | 12 | 10 | 10 |
| BLS | BLS | All | 1929 | 1/1/1929 | 12/31/1929 | 17 | 12 | 10 | 10 |
| BLS | BLS | All | 1930 | 1/1/1930 | 12/31/1930 | 17 | 12 | 10 | 10 |
| BLS | BLS | All | 1931 | 1/1/1931 | 12/31/1931 | 15 | 11 | 9 | 9 |
| BLS | BLS | All | 1932 | 1/1/1932 | 12/31/1932 | 14 | 10 | 8 | 8 |
| BLS | BLS | All | 1933 | 1/1/1933 | 12/31/1933 | 13 | 9 | 7 | 7 |
| BLS | BLS | All | 1934 | 1/1/1934 | 12/31/1934 | 13 | 9 | 7 | 7 |
| BLS | BLS | All | 1935 | 1/1/1935 | 12/31/1935 | 14 | 10 | 7 | 7 |
| BLS | BLS | All | 1936 | 1/1/1936 | 12/31/1936 | 14 | 10 | 7 | 7 |
| BLS | BLS | All | 1937 | 1/1/1937 | 12/31/1937 | 14 | 10 | 7 | 7 |
| BLS | BLS | All | 1938 | 1/1/1938 | 12/31/1938 | 14 | 10 | 7 | 7 |
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| BLS | BLS | All | 1940 | 1/1/1940 | 12/31/1940 | 14 | 10 | 7 | 7 |
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| BLS | BLS | All | 1954 | 1/1/1954 | 12/31/1954 | 27 | 27 | 23 | 16 |
| BLS | BLS | All | 1955 | 1/1/1955 | 12/31/1955 | 27 | 27 | 23 | 16 |
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| BLS | BLS | All | 1958 | 1/1/1958 | 12/31/1958 | 29 | 29 | 25 | 18 |
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| BLS | BLS | All | 1960 | 1/1/1960 | 12/31/1960 | 30 | 30 | 26 | 19 |
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| BLS | BLS | All | 1962 | 1/1/1962 | 12/31/1962 | 30 | 30 | 26 | 19 |
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| BLS | BLS | All | 1965 | 1/1/1965 | 12/31/1965 | 32 | 32 | 28 | 21 |
| BLS | BLS | All | 1966 | 1/1/1966 | 12/31/1966 | 32 | 32 | 28 | 21 |
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| BLS | BLS | All | 1968 | 1/1/1968 | 12/31/1968 | 35 | 35 | 31 | 23 |
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| BLS | BLS | All | 1981 | 1/1/1981 | 12/31/1981 | 91 | 91 | 83 | 55 |
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| 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 | |
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| BLS | BLS | All | 1995 | 1/1/1995 | 12/31/1995 | 152 | 114 | 97 | |
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| BLS | BLS | All | 1998 | 1/1/1998 | 12/31/1998 | 163 | 115 | 106 | |
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| 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 | |
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| BLS | BLS | All | 2017 | 1/1/2017 | 12/31/2017 | 245 | 94 | 179 | |
| BLS | BLS | All | 2018 | 1/1/2018 | 12/31/2018 | 251 | 93 | 183 | |
| BLS | BLS | All | 2019 | 1/1/2019 | 12/31/2019 | 256 | 93 | 187 | |
| BLS | BLS | All | 2020 | 1/1/2020 | 12/31/2020 | 258 | 94 | 188 | |

BLS Indexes

S:\Cost Indices\Communications Power\Central Office Power 1-1-2020

| Index | Table | Region | Year | Begin | End | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
|---------------|-------|--------|--------|-------|----------|---------------------|---------------------|---------------------|---------------|----------------------|---------------------|----------------------|-------|
| | | | | | | Switch Gear | Relays | Battery Systems | Power Systems | Alarm Systems | Motors & Generators | Emergency Generators | |
| | | | | Date | Date | PCU3353 13335313 | PCU3353 14335314 | PCU3359 12335912 | Calculation | PCU33429 03342901 | PCU33531 2335312 | 26 32 13.13 2600 | |
| | | | | | | 30% | 30% | 40% | Composite | | | | |
| | | | | | | 1987 | 1987 | 1987 | 1987 | 1987 | 1987 | 1987 | |
| Earliest Year | Index | Table | Region | Year | Begin | End | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1987 | POW | POW | All | 1987 | 1/1/1987 | 12/31/1987 | 103.6 | 103.9 | 125.0 | 112.3 | 100.1 | 110.8 | 83.4 |
| 1988 | POW | POW | All | 1988 | 1/1/1988 | 12/31/1988 | 106.7 | 106.6 | 126.7 | 114.7 | 101.6 | 116.4 | 83.7 |
| 1989 | POW | POW | All | 1989 | 1/1/1989 | 12/31/1989 | 113.5 | 110.9 | 133.5 | 120.7 | 104.3 | 123.3 | 83.9 |
| 1990 | POW | POW | All | 1990 | 1/1/1990 | 12/31/1990 | 118.5 | 115.4 | 137.6 | 125.2 | 103.4 | 127.5 | 84.1 |
| 1991 | POW | POW | All | 1991 | 1/1/1991 | 12/31/1991 | 121.8 | 120.5 | 142.7 | 129.8 | 101.9 | 129.7 | 84.3 |
| 1992 | POW | POW | All | 1992 | 1/1/1992 | 12/31/1992 | 123.6 | 123.3 | 146.1 | 132.5 | 102.2 | 131.5 | 84.8 |
| 1993 | POW | POW | All | 1993 | 1/1/1993 | 12/31/1993 | 125.9 | 126.9 | 149.3 | 135.6 | 103.2 | 133.5 | 85.0 |
| 1994 | POW | POW | All | 1994 | 1/1/1994 | 12/31/1994 | 128.7 | 128.3 | 151.2 | 137.6 | 104.2 | 134.2 | 90.6 |
| 1995 | POW | POW | All | 1995 | 1/1/1995 | 12/31/1995 | 132.4 | 130.7 | 154.5 | 140.7 | 106.5 | 137.5 | 95.1 |
| 1996 | POW | POW | All | 1996 | 1/1/1996 | 12/31/1996 | 133.6 | 133.6 | 157.5 | 143.2 | 108.3 | 139.1 | 95.3 |
| 1997 | POW | POW | All | 1997 | 1/1/1997 | 12/31/1997 | 135.0 | 137.8 | 158.3 | 145.2 | 109.4 | 138.6 | 99.1 |
| 1998 | POW | POW | All | 1998 | 1/1/1998 | 12/31/1998 | 138.2 | 140.4 | 164.2 | 149.3 | 111.3 | 139.8 | 99.6 |
| 1999 | POW | POW | All | 1999 | 1/1/1999 | 12/31/1999 | 141.0 | 142.8 | 165.5 | 151.3 | 109.4 | 139.9 | 99.8 |
| 2000 | POW | POW | All | 2000 | 1/1/2000 | 12/31/2000 | 143.3 | 144.4 | 169.9 | 154.3 | 108.4 | 140.4 | 100.0 |
| 2001 | POW | POW | All | 2001 | 1/1/2001 | 12/31/2001 | 147.6 | 148.2 | 178.2 | 160.0 | 109.0 | 141.6 | 102.9 |
| 2002 | POW | POW | All | 2002 | 1/1/2002 | 12/31/2002 | 149.8 | 150.0 | 179.4 | 161.7 | 110.4 | 142.0 | 103.4 |
| 2003 | POW | POW | All | 2003 | 1/1/2003 | 12/31/2003 | 151.1 | 152.3 | 165.1 | 157.1 | 110.8 | 142.4 | 103.8 |
| 2004 | POW | POW | All | 2004 | 1/1/2004 | 12/31/2004 | 153.7 | 155.2 | 165.1 | 158.7 | 109.8 | 145.8 | 104.3 |
| 2005 | POW | POW | All | 2005 | 1/1/2005 | 12/31/2005 | 160.4 | 160.0 | 166.9 | 162.9 | 110.6 | 154.4 | 104.7 |
| 2006 | POW | POW | All | 2006 | 1/1/2006 | 12/31/2006 | 167.5 | 167.6 | 175.6 | 170.8 | 113.1 | 161.8 | 104.9 |
| 2007 | POW | POW | All | 2007 | 1/1/2007 | 12/31/2007 | 179.4 | 173.0 | 182.5 | 178.7 | 113.8 | 169.6 | 111.0 |
| 2008 | POW | POW | All | 2008 | 1/1/2008 | 12/31/2008 | 187.5 | 179.3 | 189.4 | 185.8 | 116.0 | 177.7 | 123.0 |
| 2009 | POW | POW | All | 2009 | 1/1/2009 | 12/31/2009 | 193.1 | 184.7 | 193.4 | 190.7 | 116.8 | 181.8 | 126.4 |
| 2010 | POW | POW | All | 2010 | 1/1/2010 | 12/31/2010 | 195.1 | 190.3 | 191.8 | 192.3 | 117.8 | 185.4 | 130.9 |
| 2011 | POW | POW | All | 2011 | 1/1/2011 | 12/31/2011 | 195.1 | 190.3 | 192.8 | 192.7 | 118.4 | 196.5 | 130.9 |
| 2012 | POW | POW | All | 2012 | 1/1/2012 | 12/31/2012 | 198.2 | 194.5 | 197.1 | 196.7 | 119.9 | 201.1 | 139.8 |
| 2013 | POW | POW | All | 2013 | 1/1/2013 | 12/31/2013 | 199.0 | 196.4 | 198.4 | 198.0 | 121.5 | 203.2 | 121.9 |
| 2014 | POW | POW | All | 2014 | 1/1/2014 | 12/31/2014 | 201.5 | 200.1 | 198.9 | 200.0 | 122.2 | 206.1 | 106.5 |
| 2015 | POW | POW | All | 2015 | 1/1/2015 | 12/31/2015 | 200.3 | 202.7 | 198.4 | 200.3 | 123.2 | 206.4 | 111.9 |
| 2016 | POW | POW | All | 2016 | 1/1/2016 | 12/31/2016 | 199.3 | 205.7 | 196.6 | 200.1 | 123.9 | 204.6 | 111.9 |
| 2017 | POW | POW | All | 2017 | 1/1/2017 | 12/31/2017 | 199.6 | 206.9 | 203.9 | 203.5 | 124.6 | 206.5 | 111.9 |
| 2018 | POW | POW | All | 2018 | 1/1/2018 | 12/31/2018 | 200.4 | 209.8 | 215.5 | 209.3 | 123.9 | 211.9 | 119.7 |
| 2019 | POW | POW | All | 2019 | 1/1/2019 | 12/31/2019 | 204.7 | 211.8 | 218.3 | 212.3 | 124.3 | 215.6 | 119.7 |
| 2020 | POW | POW | All | 2020 | 1/1/2019 | 12/31/2019 | 211.5 | 215.1 | 220.3 | 216.1 | 125.0 | 217.6 | 119.7 |

Power Index Summary

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

Appraisal Work Papers
As of December 17, 2019

Depreciation & Obsolescence
Water and Wastewater Property

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

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 its normal service life using the following formula:

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

or

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

Where: Remaining Life = $f(\text{Age, Survival Characteristic, Normal Service Life})$

Service Life Functional Obsolescence - The service life-based 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 based on the difference between the property's normal service life and its service life adjusted for functional factors. The following formula was used to calculate the obsolescence:

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

Service Lives - (normal versus functional) - The service life of property is that period of time in which it provides the service for 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 occurs, functional and/or service requirements change resulting in decreased utility of the existing equipment, and therefore decrease in value to it's 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. These depreciation studies were prepared by Gannett Fleming Rate Consultants a recognized firm in the depreciation consulting area. AUS Consultants has reviewed the PAWC studies for its wastewater plant and equipment which are summarized in the following table:

| Summary of PAWC Depreciation Studies Prepared for Rate Case | | | | | | | | Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies | | | |
|---|---|-----------|-----------|--------------|-----------|----------------|-----------|--|---------------------------------------|-----------------------------|---------------------------|
| Account | Account Description | New Curve | | Service Life | | Remaining Life | | (1) | (2) | (4) | |
| | | 1/30/2015 | 1/30/2015 | 1/30/2015 | 1/30/2015 | 1/30/2015 | 1/30/2015 | | | (4a) | (4b) |
| | | | | years | years | years | years | Account Number | Description | Survivor / Retirement Curve | Normal Service Life years |
| 354.20 | STRUCTURES AND IMPROVEMENTS - COLLECTION | R3 | R3 | 45 | 45 | 39.1 | 33.3 | | | | |
| 354.30 | STRUCTURES AND IMPROVEMENTS - SPP | R2.5 | S0 | 50 | 55 | 45.2 | 32.6 | | | | |
| 354.40 | STRUCTURES AND IMPROVEMENTS - TDP | R2 | S0 | 65 | 55 | 56.6 | 31.7 | 354.00 | Structures & Improvements | R4.0 | 55.00 |
| 354.70 | STRUCTURES AND IMPROVEMENTS - GENERAL | S1 | S1 | 35 | 35 | 33.3 | 23.2 | | | | |
| 355.00 | POWER GENERATION EQUIPMENT | R2.5 | S0.5 | 35 | 35 | 29.7 | 19.3 | 355.00 | Power Generation Equipment | | |
| 360.10 | COLLECTION SEWERS - FORCE MAINS | S2 | R3 | 70 | 75 | 53.1 | 52.5 | 360.00 | Collection Mains - Force | R2.0 | 75.00 |
| 361.10 | COLLECTION SEWERS - GRAVITY MAINS | R2.5 | R2.5 | 70 | 80 | 56.9 | 54.8 | 361.00 | Collection Mains - Gravity | R2.5 | 80.00 |
| | | | | | | | | | Collection Mains - Gravity - Relining | R2.5 | 60.00 |
| 361.20 | MANHOLES | S1.5 | S2.5 | 50 | 50 | 41.3 | 32.2 | 361.10 | Manholes | S2.0 | 75.00 |
| 363.00 | SERVICES | R3 | R3 | 38 | 47 | 22.9 | 30.2 | 363.00 | Service Laterals | R3.0 | 45.00 |
| 364.00 | FLOW MEASURING DEVICES | L3 | L2.5 | 20 | 15 | 13.3 | 5.1 | 364.00 | Flow Measuring Devices | L2.5 | 25.00 |
| 365.00 | FLOW MEASURING INSTALLATIONS | S1.5 | S2 | 30 | 25 | 23.1 | 10.8 | 365.00 | Flow Measuring Installations | S2.0 | 30.00 |
| 370.00 | RECEIVING WELLS | R3 | R3 | 50 | 50 | 42.7 | 33.7 | | | | |
| 371.00 | PUMPING EQUIPMENT | S0 | S0.5 | 40 | 30 | 35.5 | 18.2 | 371.00 | Pumping Equipment | R3.0 | 35.00 |
| 380.00 | TREATMENT EQUIPMENT | S-R2 | S1.5 | 45 | 35 | 37.1 | 20.1 | 380.00 | Treatment and Disposal Equipment | R2.0 | 45.00 |
| 381.00 | PLANT SEWERS | R3 | R3 | 50 | 50 | 43.1 | 32.7 | 381.00 | Plant Sewers | R3.0 | 45.00 |
| 382.00 | OUTFALL SEWER LINES | R3 | R3 | 50 | 50 | 37.8 | 28.3 | | | | |
| 389.10 | OTHER PLANT AND MISCELLANEOUS EQUIPMENT - INTANGIBLES | S2.5 | S2.5 | 20 | 20 | 13.6 | 11.3 | 389.00 | Other Plant & Misc Equip | R3.0 | 45.00 |
| 389.60 | OTHER PLANT AND MISCELLANEOUS EQUIPMENT - CPS | SQ | SQ | 20 | 5 | 12.3 | 3.5 | | | | |
| 390.00 | OFFICE FURNITURE AND EQUIPMENT | L4 | SQ | 15 | 20 | 9.5 | 10.1 | 391.00 | Office Furniture and Equipment | R3.0 | 20.00 |
| 391.00 | TRANSPORTATION EQUIPMENT | SQ | L4 | 25 | 14 | 19.9 | 9.8 | 391.00 | Transportation Equipment | R3.0 | 15.00 |
| 392.00 | STORES EQUIPMENT | SQ | SQ | 20 | 25 | 16.4 | 17.2 | 392.00 | Stores Equipment | R3.0 | 35.00 |
| 393.00 | TOOLS, SHOP AND GARAGE EQUIPMENT | SQ | SQ | 15 | 20 | 11.3 | 15.4 | 393.00 | Tools, Shop, & Garage Equipment | R3.0 | 25.00 |
| 394.00 | LABORATORY EQUIPMENT | L2.5 | SQ | 16 | 15 | 8.7 | 10.4 | 394.00 | Laboratory Equipment | R3.0 | 20.00 |
| 395.00 | POWER OPERATED EQUIPMENT | SQ | R2 | 15 | 22 | 10.3 | 13.2 | 395.00 | Power Operated Equipment | R3.0 | 15.00 |
| 396.00 | COMMUNICATION EQUIPMENT | SQ | SQ | 15 | 15 | 9.6 | 6.9 | 396.00 | Communications Equipment | R3.0 | 15.00 |
| 397.00 | MISCELLANEOUS EQUIPMENT | SQ | SQ | 15 | 15 | 12.8 | | 397.00 | Miscellaneous Equipment | R3.0 | 20.00 |
| 398.00 | OTHER TANGIBLE PLANT | SQ | SQ | 25 | 25 | 21.5 | | | | | |
| | TOTAL DEPRECIABLE PLANT | | | | | | | | | | |
| | NONDEPRECIABLE PLANT | | | | | | | | | | |
| 352.10 | FRANCHISES | | | | | | | 352.00 | Franchises | Non-Depr | 0.00 |
| 353.20 | LAND AND LAND RIGHTS - COLLECTION | | | | | | | 353.00 | Land & Land Rights | Non-Depr | 0.00 |
| 353.30 | LAND AND LAND RIGHTS - SPP | | | | | | | | | | |

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 life 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 which are in need of repair instead of replacing those mains. 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 main by the length of time which the relining can be expected to last. Most relining vendors and contractors warranty their products and procedures for 50 to 60 years. Thus, in essence, the original mains' service life will be extended by 50 years at the date the relining occurred. In this appraisal 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 wastewater depreciation parameters (lowa-type survivor curve and service life) used in the cost approach in calculating the deprecation of the property:

**Pennsylvania American Water Company
 Royersford Borough
 Wastewater Collection and Treatment System
 Investor-Owned Utility
 December 10, 2019**

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

| (1) Account Number | (2) Description | (4) | | (5) | (6) | (6b) Life |
|-----------------------|--|--|-----------------------------|------------------------------|--------------------------|--------------|
| | | (4a) Iowa Survivor / Retirement Curve | (4b) Normal Service Life | (5) Economic Obsolescence | (6a) Tax Depreciation | |
| | | | years | % of CORLD | Table | |
| 353.20 | Land & Land Rights - Collection | 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 | Structures & Improvements - Pumping | R4.0 | 45.00 | 0.00% | MACRS | 25.00 |
| 354.40 | Structures & 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 |
| 355.40 | Generating Equipment - Treatment | R3.0 | 35.00 | 0.00% | MACRS | 25.00 |
| 360.20 | 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 | 45.00 | 0.00% | MACRS | 25.00 |
| 364.30 | Flow Measuring Devices - Pumping | S2.0 | 30.00 | 0.00% | MACRS | 25.00 |
| 364.40 | Flow Measuring Devices - WWTP | S2.0 | 30.00 | 0.00% | MACRS | 25.00 |
| 371.40 | Pumping Equipment - Treatment | R3.0 | 35.00 | 0.00% | MACRS | 25.00 |
| 380.40 | Treatment and Disposal Equipment | R2.0 | 45.00 | 0.00% | MACRS | 25.00 |
| 390.70 | Office Furniture and Equipment | R3.0 | 12.00 | 0.00% | MACRS | 12.00 |
| 391.00 | Transportation Equipment | R3.0 | 10.00 | 0.00% | MACRS | 10.00 |
| 392.00 | Stores Equipment | R3.0 | 35.00 | 0.00% | MACRS | 25.00 |
| 393.00 | Tools, Shop, & Garage Equipment | R3.0 | 35.00 | 0.00% | MACRS | 25.00 |
| 394.00 | Laboratory Equipment | R3.0 | 20.00 | 0.00% | MACRS | 20.00 |
| 395.00 | Power Operated Equipment | R3.0 | 15.00 | 0.00% | MACRS | 15.00 |
| 396.00 | Communications Equipment | R3.0 | 12.00 | 0.00% | MACRS | 12.00 |
| 396.70 | Communications Equipment | R3.0 | 12.00 | 0.00% | MACRS | 12.00 |
| 397.00 | Miscellaneous Equipment | R3.0 | 20.00 | 0.00% | MACRS | 20.00 |

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 extent of the depreciation was limited to 85% of the assets original cost and its replacement cost new in the depreciation calculations.

Water Depreciation Service Life Experience in Pennsylvania

The service lives used in the water industry depreciation and functional obsolescence calculations were also 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 PAWC studies which are summarized in the following tables:

Structures & Improvements

| PENNSYLVANIA-AMERICAN WATER COMPANY SUMMARY OF ESTIMATED SURVIVOR CURVES- 2017 and 2020 | | PAWC | PAWC | PAWC | PAWC | PAWC | AUS Consultants | AUS Consultants | |
|--|---|-------------------|---------------------|-------------------|-------------------|---------------------|-------------------|--------------------------------|------------------------------|
| NARUC Account | DEPRECIABLE GROUP | 2017 Depreciation | 2017 SURVIVOR CURVE | 2017 Service Life | 2020 Depreciation | 2020 SURVIVOR CURVE | 2020 Service Life | AUS Consultants Survivor Curve | AUS consultants Service Life |
| 303.14 | 303.14 WATER RIGHTS - HIBERNIA | Depreciable | SQ | 25 | Depreciable | SQ | 25 | SQ | 25 |
| 303.35 | 303.35 WASTE HANDLING AND TREATMENT LAND | Depreciable | R2 | 100 | Depreciable | R2 | 100 | R2 | 100 |
| 303.99 | 303.99 COMPREHENSIVE PLANNING STUDIES | Depreciable | SQ | 5 | Depreciable | SQ | 5 | SQ | 5 |
| 304.15 | 304.15 OTHER WATER SOURCE STRUCTURES | Depreciable | R3 | 60 | Depreciable | R1.5 | 60 | R1.5 | 60 |
| 304.20 | 304.20 POWER AND PUMING STRUCTURES | | | | | | | 0 | 0 |
| 320.21 | 320.21 LARGE STRUCTURES | Depreciable | R2.5 | 70 | Depreciable | R2.5 | 70 | R2.5 | 70 |
| 320.22 | 320.22 OTHER STRUCTURES | Depreciable | R3 | 55 | Depreciable | R3 | 55 | R3 | 55 |
| | TOTAL ACCOUNT 304.2 | | | | | | | | |
| | 304.3X PURIFICATION BUILDINGS | | | | | | | | |
| 304.31 | 304.31 LARGE STRUCTURES | Depreciable | R2.5 | 60 | Depreciable | R2.5 | 60 | R2.5 | 60 |
| 304.32 | 304.32 OTHER STRUCTURES | Depreciable | R3 | 55 | Depreciable | R3 | 60 | R3 | 60 |
| | TOTAL ACCOUNT 304.3 | | | | | | | | |
| 304.36 | 304.36 WASTE HANDLING AND TREATMENT STRUCTURES | Depreciable | R2.5 | 60 | Depreciable | S2.5 | 60 | S2.5 | 60 |
| 304.38 | 304.38 WASTE HANDLING AND TREATMENT STRUCTURES PAINTING | Depreciable | SQ | 10 | Depreciable | SQ | 10 | SQ | 10 |
| 304.39 | 304.39 PURIFICATION BUILDINGS - TANK PAINTING | Depreciable | SQ | 10 | Depreciable | SQ | 10 | SQ | 10 |
| | 304.61X OFFICE BUILDINGS | | | | | | | 0 | 0 |
| 304.611 | 304.611 LARGE STRUCTURES | Depreciable | R1.5 | 50 | Depreciable | R1.5 | 50 | R1.5 | 50 |
| 304.612 | 304.612 OTHER STRUCTURES | Depreciable | R3 | 45 | Depreciable | R3 | 50 | R3 | 50 |
| | TOTAL ACCOUNT 304.61 | | | | | | | | |
| | 304.61 STORES, SHOP AND GARAGE BUILDINGS | | | | | | | | |
| 304.621 | 304.621 LARGE STRUCTURES | Depreciable | R2 | 75 | Depreciable | S0.5 | 55 | S0.5 | 55 |
| 304.622 | 304.622 OTHER STRUCTURES | Depreciable | R3 | 45 | Depreciable | R3 | 45 | R3 | 45 |
| | TOTAL ACCOUNT 304.62 | | | | | | | | |
| 304.63 | 304.63 MISCELLANEOUS STRUCTURES AND IMPROVEMENTS | Depreciable | R2.5 | 50 | Depreciable | S0.5 | 35 | S0.5 | 35 |
| | TOTAL ACCOUNT 304 | | | | | | | | |

Collection & Impounding Reservoirs and Pumping Equipment

PENNSYLVANIA-AMERICAN WATER COMPANY
SUMMARY OF ESTIMATED SURVIVOR CURVES- 2017 and 2020

| NARUC Account | DEPRECIABLE GROUP | 2017 SURVIVOR | | 2020 SURVIVOR | | AUS Consultants | | AUS consultants | |
|---------------|---|-------------------|-------|---------------|-------------------|-----------------|-------------------|-----------------|--------------|
| | | 2017 Depreciation | CURVE | Service Life | 2020 Depreciation | CURVE | 2020 Service Life | Survivor Curve | Service Life |
| 305.00 | 305.00 COLLECTING AND IMPOUNDING RESERVOIRS | | | | | | | | |
| 305.10 | 305.1 LARGE RESERVOIRS | Depreciable | R2.5 | 125 | Depreciable | 5-R2 | 125 | 5-R2 | 125 |
| 305.20 | 305.2 OTHER RESERVOIRS | Depreciable | R3 | 75 | Depreciable | R3 | 75 | R3 | 75 |
| | TOTAL ACCOUNT 305 | | | | | | | | |
| | 306.00 LAKE, RIVER AND OTHER INTAKES | | | | | | | | |
| 306.10 | 306.1 LARGE INTAKES | Depreciable | S1.5 | 65 | Depreciable | 5-S1 | 55 | 5-S1 | 55 |
| 306.20 | 306.2 OTHER INTAKES | Depreciable | S1 | 60 | Depreciable | S0.5 | 50 | S0.5 | 50 |
| | TOTAL ACCOUNT 306 | | | | | | | | |
| 307.00 | 307.00 WELLS AND SPRINGS | Depreciable | R2 | 55 | Depreciable | S0 | 55 | S0 | 55 |
| 310.00 | 310.00 POWER GENERATION EQUIPMENT | Depreciable | R2.5 | 40 | Depreciable | S1 | 43 | S1 | 43 |
| | PUMPING EQUIPMENT | | | | | | | | |
| 311.20 | 311.20 ELECTRIC | Depreciable | R1 | 50 | Depreciable | S0 | 42 | S0 | 42 |
| 311.50 | 311.50 OTHER | Depreciable | R1 | 50 | Depreciable | S0 | 42 | S0 | 42 |
| 311.52 | 311.52 SOURCE OF SUPPLY | Depreciable | R1 | 50 | Depreciable | S0 | 42 | S0 | 42 |
| 311.53 | 311.53 WATER TREATMENT | Depreciable | R1 | 50 | Depreciable | S0 | 42 | S0 | 42 |
| 311.54 | 311.54 TRANSMISSION AND DISTRIBUTION | Depreciable | R1 | 50 | Depreciable | S0 | 42 | S0 | 42 |
| | TOTAL ACCOUNT 311 | | | | | | | | |
| | PURIFICATION SYSTEM | | | | | | | | |
| 320.10 | 320.10 LARGE STRUCTURES | | | | | | | 0 | 0 |
| 320.11 | 320.11 LARGE STRUCTURES | Depreciable | R2 | 70 | Depreciable | S0.5 | 60 | S0.5 | 60 |
| 320.12 | 320.12 OTHER STRUCTURES | Depreciable | R3 | 55 | Depreciable | R3 | 55 | R3 | 55 |
| | TOTAL ACCOUNT 320.1 | | | | | | | | |
| 320.18 | 320.18 LARGE STRUCTURES PAINT | Depreciable | S0 | 10 | Depreciable | SQ | 10 | SQ | 10 |
| 320.19 | 320.19 LARGE STRUCTURES PAINT | Depreciable | SQ | 10 | Depreciable | SQ | 10 | SQ | 10 |
| 320.20 | 320.20 CHEMICAL TREATMENT | Depreciable | R1 | 32 | Depreciable | R0.5 | 36 | R0.5 | 36 |
| 320.29 | 320.29 CHEMICAL TREATMENT PAINT | | | | | | | | |
| 320.30 | 320.30 GRANULAR ACTIVATED CARBON | Depreciable | L2.5 | 6 | Depreciable | L2 | 7 | L2 | 7 |
| 320.37 | 320.37 WASTE HANDLING AND TREATMENT - EQUIPMENT | Depreciable | R3 | 25 | Depreciable | R3 | 30 | R3 | 30 |
| | TOTAL ACCOUNT 320 | | | | | | | | |

Distribution Plant Accounts

PENNSYLVANIA-AMERICAN WATER COMPANY
SUMMARY OF ESTIMATED SURVIVOR CURVES- 2017 and 2020

| NARUC Account | DEPRECIABLE GROUP | 2017 SURVIVOR | | 2020 SURVIVOR | | AUS Consultants | | AUS consultants | |
|---------------|--|-------------------|-------|---------------|-------------------|-----------------|-------------------|-----------------|--------------|
| | | 2017 Depreciation | CURVE | Service Life | 2020 Depreciation | CURVE | 2020 Service Life | Survivor Curve | Service Life |
| 330.00 | 330.00 DISTRIBUTION RESERVOIRS AND STANDPIPES | Depreciable | R2 | 65 | Depreciable | S0.5 | 65 | S0.5 | 65 |
| 330.10 | 330.10 ELEVATED TANKS AND STANDPIPES | Depreciable | R2 | 65 | Depreciable | S0.5 | 65 | S0.5 | 65 |
| 330.20 | 330.20 GROUND LEVEL FACILITIES | Depreciable | R2 | 65 | Depreciable | S0.5 | 65 | S0.5 | 65 |
| 330.30 | 330.30 BELOW GRADE FACILITIES | Depreciable | R2 | 65 | Depreciable | S0.5 | 65 | S0.5 | 65 |
| 330.40 | 330.40 CLEARWELL | Depreciable | R2 | 65 | Depreciable | S0.5 | 65 | S0.5 | 65 |
| 330.58 | 330.58 DISTRIBUTION RESERVOIRS AND STANDPIPES - PAINTING | Depreciable | SQ | 10 | Depreciable | SQ | 10 | SQ | 10 |
| 330.59 | 330.59 DISTRIBUTION RESERVOIRS AND STANDPIPES - PAINTING | Depreciable | SQ | 10 | Depreciable | SQ | 10 | SQ | 10 |
| | TOTAL ACCOUNT 330 | | | | | | | | |
| 331.00 | 331.00 MAINS AND ACCESSORIES | Depreciable | R2 | 110 | Depreciable | R2 | 110 | R2 | 110 |
| 333.00 | 333.00 SERVICES | Depreciable | R2 | 70 | Depreciable | R2.5 | 70 | R2.5 | 70 |
| 334.00 | 334.00 METERS AND METER INSTALLATIONS | Depreciable | L1.5 | 19 | Depreciable | L1.1 | 21 | L1.1 | 21 |
| 335.00 | 335.00 FIRE HYDRANTS | Depreciable | R2 | 72 | Depreciable | R2.5 | 75 | R2.5 | 75 |

General Plant Accounts

PENNSYLVANIA-AMERICAN WATER COMPANY
SUMMARY OF ESTIMATED SURVIVOR CURVES- 2017 and 2020

| NARUC Account | DEPRECIABLE GROUP | 2017 Depreciation | 2017 SURVIVOR CURVE | 2017 Service Life | 2020 Depreciation | 2020 SURVIVOR CURVE | 2020 Service Life | AUS Consultants Survivor Curve | AUS consultants Service Life |
|---------------|---|-------------------|---------------------|-------------------|-------------------|---------------------|-------------------|--------------------------------|------------------------------|
| 340.00 | OFFICE FURNITURE AND EQUIPMENT | | | | | | | | |
| 340.10 | 340.1 FURNITURE | Depreciable | SQ | 20 | Depreciable | SQ | 20 | SQ | 20 |
| 340.20 | 340.2 COMPUTERS AND PERIPHERAL EQUIPMENT | Depreciable | SQ | 5 | Depreciable | SQ | 5 | SQ | 5 |
| 340.30 | 340.3 COMPUTER SOFTWARE | Depreciable | SQ | 5 | Depreciable | SQ | 5 | SQ | 5 |
| 340.40 | 340.4 COMPUTER SOFTWARE - BUSINESS TRANSFORMATION | Depreciable | SQ | 10 | Depreciable | SQ | 10 | SQ | 10 |
| 340.50 | 340.5 OTHER OFFICE EQUIPMENT | Depreciable | SQ | 10 | Depreciable | SQ | 10 | SQ | 10 |
| | TOTAL ACCOUNT 340 | | | | | | | | |
| 341.00 | TRANSPORTATION EQUIPMENT | | | | | | | | |
| 341.10 | 341.1 NOT CLASSIFIED | Depreciable | L3 | 6 | Depreciable | L3 | 7 | L3 | 7 |
| 341.20 | 341.2 LIGHT DUTY TRUCKS | Depreciable | L3 | 6 | Depreciable | L3 | 7 | L3 | 7 |
| 341.30 | 341.3 EQUIPMENT | Depreciable | L3 | 6 | Depreciable | L3 | 7 | L3 | 7 |
| 341.40 | 341.4 AUTOS | Depreciable | L3 | 6 | Depreciable | L3 | 7 | L3 | 7 |
| 341.50 | 341.5 OTHER | Depreciable | L3 | 6 | Depreciable | L3 | 7 | L3 | 7 |
| | TOTAL ACCOUNT 341 | | | | | | | | |
| 342.00 | 342.0 STORES EQUIPMENT | Depreciable | SQ | 20 | Depreciable | SQ | 20 | SQ | 20 |
| 343.00 | 343.0 TOOLS AND WORK EQUIPMENT | Depreciable | SQ | 20 | Depreciable | SQ | 20 | SQ | 20 |
| 344.00 | 344.0 LABORATORY EQUIPMENT | Depreciable | NO.5 | 20 | Depreciable | LO.5 | 20 | LO.5 | 20 |
| 345.00 | 345.0 POWER OPERATED EQUIPMENT | Depreciable | S2 | 10 | Depreciable | S0.5 | 19 | S0.5 | 19 |
| 346.00 | COMMUNICATION EQUIPMENT | | | | | | | | |
| 346.10 | 346.1 EQUIPMENT | Depreciable | S0 | 15 | Depreciable | SQ | 15 | SQ | 15 |
| 346.20 | 346.2 NON-TELEPHONE | Depreciable | SQ | 15 | Depreciable | SQ | 15 | SQ | 15 |
| 346.30 | 346.3 REMOTE CONTROL AND INSTRUMENTATION | Depreciable | SQ | 10 | Depreciable | SQ | 10 | SQ | 10 |
| 346.40 | 346.4 TELEPHONE | Depreciable | SQ | 10 | Depreciable | SQ | 10 | SQ | 10 |
| | TOTAL ACCOUNT 346 | | | | | | | | |
| 347.00 | 347.0 MISCELLANEOUS EQUIPMENT | Depreciable | SQ | 25 | Depreciable | SQ | 25 | SQ | 25 |
| 348.00 | 348.0 OTHER TANGIBLE EQUIPMENT | Depreciable | SQ | 25 | Depreciable | SQ | 25 | SQ | 25 |

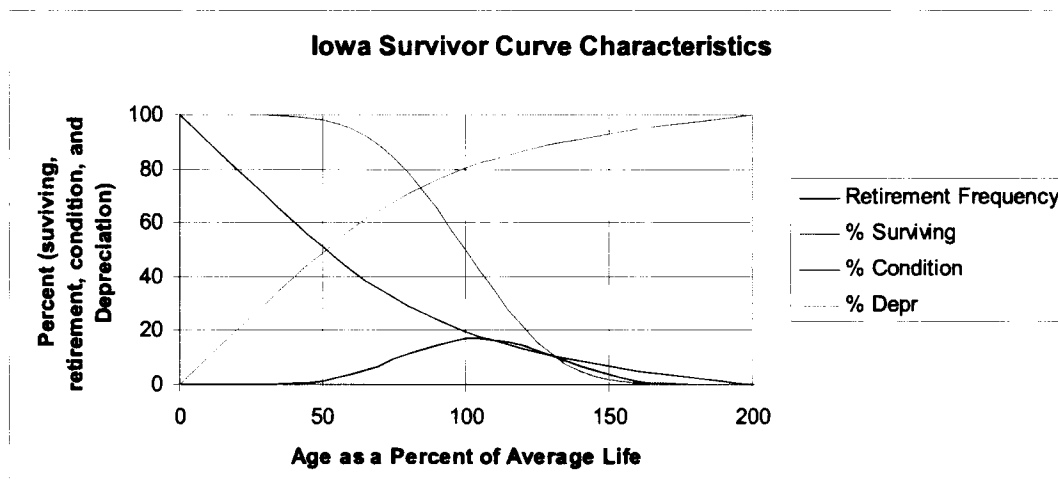
Non-depreciable Accounts

PENNSYLVANIA-AMERICAN WATER COMPANY
SUMMARY OF ESTIMATED SURVIVOR CURVES- 2017 and 2020

| NARUC Account | DEPRECIABLE GROUP | 2017 Depreciation | 2017 SURVIVOR CURVE | 2017 Service Life | 2020 Depreciation | 2020 SURVIVOR CURVE | 2020 Service Life | AUS Consultants Survivor Curve | AUS consultants Service Life |
|---------------|---|-------------------|---------------------|-------------------|-------------------|---------------------|-------------------|--------------------------------|------------------------------|
| | INTANGIBLE PLANT | | | | | | | | |
| 301.00 | 301.00 ORGANIZATION | NONDEPR. | | | NONDEPR. | | | | |
| 302.00 | 302.00 FRANCHISES AND CONSENTS | NONDEPR. | | | NONDEPR. | | | | |
| 303.00 | 303.00 MISCELLANEOUS INTANGIBLE PLANT | NONDEPR. | | | NONDEPR. | | | | |
| | TOTAL INTANGIBLE PLANT | | | | | | | | |
| | NONDEPRECIABLE PLANT | | | | | | | | |
| 303.20 | 303.20 POWER AND PUMPING LAND | NONDEPR. | | | NONDEPR. | | | | |
| 303.30 | 303.30 PURIFICATION LAND | NONDEPR. | | | NONDEPR. | | | | |
| 303.40 | 303.40 TRANSMISSION AND DISTRIBUTION LAND AND RIGHTS OF WAY | NONDEPR. | | | NONDEPR. | | | | |
| 303.50 | 303.50 DISTRIBUTION RESERVOIRS AND STANDPIPES LAND | NONDEPR. | | | NONDEPR. | | | | |
| 303.51 | 303.51 TRANSMISSION AND DISTRIBUTION - LAND | NONDEPR. | | | NONDEPR. | | | | |
| 303.52 | 303.52 TRANSMISSION AND DISTRIBUTION - RIGHTS OF WAY | NONDEPR. | | | NONDEPR. | | | | |
| 303.61 | 303.61 OFFICE LAND | NONDEPR. | | | NONDEPR. | | | | |
| | TOTAL NONDEPRECIABLE PLANT | | | | | | | | |
| | DEPRECIABLE PLANT | | | | | | | | |

Iowa Survivor Curves

The Iowa Survivor Curves recommended in this 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, say 1985) 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.

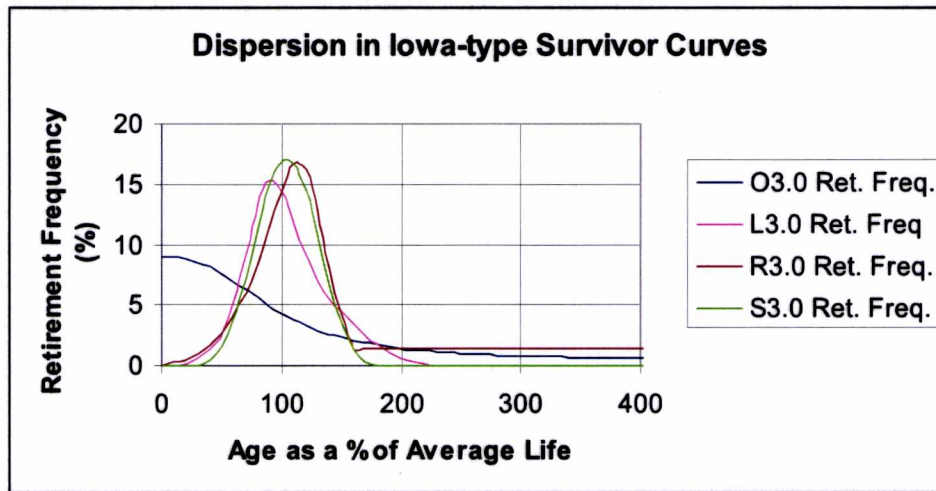


The above figure depicts a typical Iowa-type survivor curve, an S3.0 Iowa-type survivor curve. In this case the survivor curve has been generalized to a service life of 100% of the property's average life, in this generalized form the survivor curve statistics can be utilized with any individual service 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 distributed 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 depicts

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:



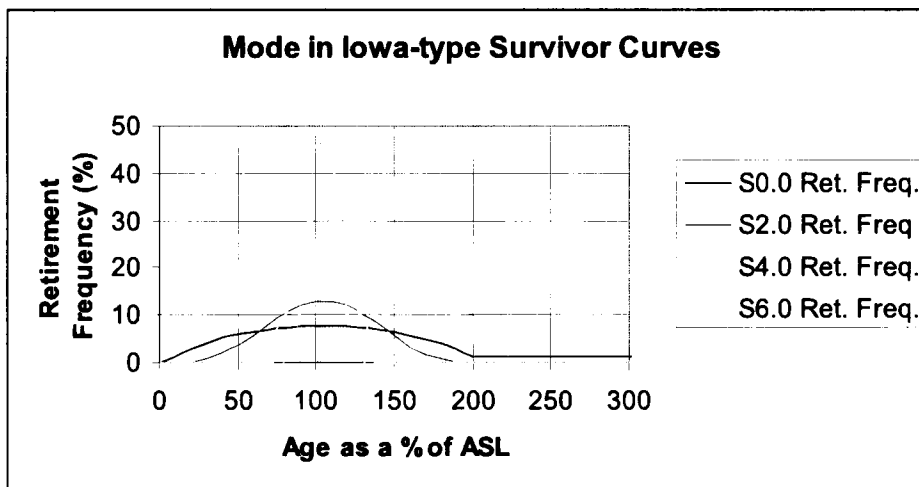
Symmetrically moded (S-type Iowa Survivor Curves) (green) – The S-type Iowa Survivor Curve is one wherein the property's retirements are symmetrically distributed about the mode. Mode in statistics is defined as the highest frequency, in this case retirement frequency. Thus, an S-type Iowa curve is like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

Right moded (R-type Iowa Survivor Curves) (brown) – the R-type Iowa curve has its mode skewed to the right of the property's average life; therefore the more 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 Survivor Curve) (red) – The L-type Iowa curve has its mode skewed to the left of the property's average life; therefore more of 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 that property is designed to provide service over extended periods, requiring little maintenance, and its 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 determines 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's entire life, while high peakedness numbers, 5 and 6 represent retirement patterns where the majority or all the retirements 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 reconfirmed the characteristics of the original Iowa survivor curves determined by Winfrey and 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 overlooked 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 some intangible assets, i.e. customers, subscribers, sometimes workforce participation.

In the late 1970s Russo reconfirmed the characteristics of the Iowa Survivor curve with his doctoral thesis at Iowa State University.

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 presented in Bulletin 125; however, in most cases users reference

standardized Iowa Survivor Curve tables. The lowa-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 lowa-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 lowa-type Survivor Curves

As was discussed earlier, most users of the lowa-type survivor curves use standardized tables of lowa 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. Below are various portions of the lowa R3.0 Generalized survivor table:

| Lookup | Iowa Curve | Age as % of Service Life | Percent Retired | Percent Surviving of Original Placement | Percent of Survivors | Theoretical Depreciation Reserve Percent |
|---------|------------|--------------------------|-----------------|---|----------------------|--|
| R3.0000 | R3.0 | 0 | 0.015479 | 100 | 100 | 0 |
| R3.0001 | R3.0 | 1 | 0.01684 | 99.98452 | 99.015404 | 0.984596193 |
| R3.0002 | R3.0 | 2 | 0.018295 | 99.967682 | 98.031998 | 1.968000412 |
| R3.0003 | R3.0 | 3 | 0.019851 | 99.949387 | 97.04985 | 2.950147629 |
| R3.0037 | R3.0 | 37 | 0.170721 | 97.433426 | 64.974808 | 35.02519226 |
| R3.0038 | R3.0 | 38 | 0.179194 | 97.262711 | 64.087982 | 35.91202164 |
| R3.0039 | R3.0 | 39 | 0.187962 | 97.083511 | 63.205349 | 36.79465103 |
| R3.0081 | R3.0 | 81 | 0.915805 | 77.140305 | 30.772522 | 69.22747803 |
| R3.0082 | R3.0 | 82 | 0.944262 | 76.224495 | 30.136234 | 69.8637619 |
| R3.0083 | R3.0 | 83 | 0.973166 | 75.280235 | 29.507971 | 70.49202728 |
| R3.0084 | R3.0 | 84 | 1.00246 | 74.307068 | 28.887875 | 71.11212158 |
| R3.0100 | R3.0 | 100 | 1.449223 | 54.742081 | 20.174763 | 79.82523346 |
| R3.0101 | R3.0 | 101 | 1.46906 | 53.292858 | 19.709789 | 80.29020691 |
| R3.0102 | R3.0 | 102 | 1.486988 | 51.823799 | 19.254333 | 80.7456665 |
| R3.0103 | R3.0 | 103 | 1.502857 | 50.336811 | 18.808352 | 81.19165039 |
| R3.0130 | R3.0 | 130 | 0.953699 | 12.923971 | 9.744257 | 90.25574493 |
| R3.0131 | R3.0 | 131 | 0.909233 | 11.970272 | 9.4807682 | 90.5192337 |
| R3.0132 | R3.0 | 132 | 0.86492 | 11.061039 | 9.2189999 | 90.78099823 |
| R3.0133 | R3.0 | 133 | 0.820961 | 10.196119 | 8.9586191 | 91.04138184 |
| R3.0134 | R3.0 | 134 | 0.777531 | 9.3751583 | 8.6993198 | 91.30068207 |
| R3.0135 | R3.0 | 135 | 0.734788 | 8.5976267 | 8.4408312 | 91.55916595 |
| R3.0136 | R3.0 | 136 | 0.69287 | 7.8628387 | 8.1829081 | 91.8170929 |
| R3.0165 | R3.0 | 165 | 0.005943 | 0.0099847 | 1.039243 | 98.96075439 |
| R3.0166 | R3.0 | 166 | 0.002865 | 0.0040413 | 0.83229 | 99.16770935 |
| R3.0167 | R3.0 | 167 | 0.00101 | 0.0011767 | 0.641307 | 99.35869598 |
| R3.0168 | R3.0 | 168 | 0.000166 | 0.0001662 | 0.499982 | 99.50001526 |
| R3.0169 | R3.0 | 169 | 0 | 0 | 0 | 100 |

Based on these generalized tables the user can determine the property's remaining life by knowing the lowa-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 | lowa Curve | Service Life | Age % of ASL | lowa Lookup | lowa Condition | Remaining Life | Total Life | Condition |
|-------|------------|-------|------------|--------------|--------------|-------------|----------------|----------------|------------|-----------|
| | | years | | ASL 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 lowa Survivor curves contained and represent a R3.0 25-year lowa curve and life table. The standardized lowa Curves are located in the spreadsheet tab: lowa Curves. In order to reference the proper line of the lowa 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 lowa Survivor curve (lowa Curve column), combining these two criteria the lowa Lookup column will get the user to the proper lowa Curve data.

In the above calculation the lowa-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.

Determination of the Service Life and Survival/Retirement Pattern

As the lowa survivor curve and associated average service life are critical to the previously described appraisal depreciation and condition calculations, the question is, "How does one determine which survivor curve and service life which is for use in the depreciation or condition determination of the property being appraised?" The service life and survival/retirement pattern are determined by an analysis of historical survival and retirement experience of the property in question or similar property. The utility industry utilizes the service life analysis technique of retirement rate analysis which is similar to the life analysis techniques used by actuaries in analyzing human life expectancies. In retirement rate analysis industrial property is grouped in to like kinds (mains, service, hydrant, pumping equipment etc.) and that grouped property is tracked by year of its placement into service and ultimately by its year of retirement from service. The property's original cost(s) is usually the attribute tracked by placement

year; however, the property's inventory could as well be enumerated as units (footage of mains, number of services, hydrants, etc.). This information is collected and tracked separately for each placement year over the life of the property. By tracking all the property placed and retired in a group of similar property many different placement years of property and their subsequent retirements providing indications of the property's survival and retirement from service the analysis of which will lead to indications of the property's survival / retirement pattern and ultimately the property's service life (i.e., the property's average service life). In retirement rate analysis the property's placement are termed exposures, i.e. once placed into service the property's is exposed to the action (forces of retirement or hazard function) which potentially lead to its retirement. The following table is an example of placements and retirements for a sample industrial property:

Example Industrial Property Placement Years: 2000 Retirement Years: 2000-2017

| Vintage Year | Calendar Year | Exposures | Retirements | Survivors |
|--------------|---------------|-----------|-------------|-----------|
| 2000 | 2000 | 100,000 | | 100,000 |
| 2000 | 2001 | 100,000 | | 100,000 |
| 2000 | 2002 | 100,000 | | 100,000 |
| 2000 | 2003 | 100,000 | 7,189 | 92,811 |
| 2000 | 2004 | 92,811 | | 92,811 |
| 2000 | 2005 | 92,811 | | 92,811 |
| 2000 | 2006 | 92,811 | | 92,811 |
| 2000 | 2007 | 92,811 | 12,321 | 80,490 |
| 2000 | 2008 | 80,490 | | 80,490 |
| 2000 | 2009 | 80,490 | | 80,490 |
| 2000 | 2010 | 80,490 | | 80,490 |
| 2000 | 2011 | 80,490 | | 80,490 |
| 2000 | 2012 | 80,490 | 50,085 | 30,405 |
| 2000 | 2013 | 30,405 | | 30,405 |
| 2000 | 2014 | 30,405 | | 30,405 |
| 2000 | 2015 | 30,405 | | 30,405 |
| 2000 | 2016 | 30,405 | | 30,405 |
| 2000 | 2017 | 30,405 | | 30,405 |
| 2000 | 2018 | 30,405 | | 30,405 |

As the title of the table indicates this data was developed from industrial property placed into service during 2000 and the retirements of the industrial property over the calendar years 2000-2018. As the table shows the early years placement contribute exposures each year after its placement to the current date or until its retirement. Each year that passes the placement provides a partial look into the property's survival pattern and ultimate service life.

In the retirement rate analysis life analysis technique, the exposure and retirements are summarized by their age as is shown in the following table:

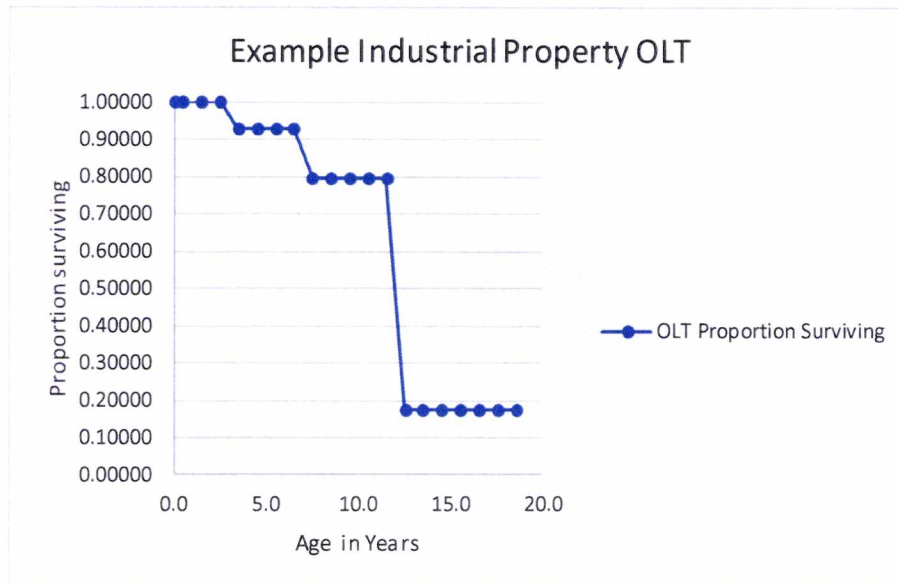
Example Industrial Property Observed Life Table

| Age | Exposures | Retirements | Retirement Rate | OLT Proportion Surviving |
|------|-----------|-------------|-----------------|--------------------------|
| 0 | | | | 1.00000 |
| 0.5 | 100,000 | 0 | 0.00000 | 1.00000 |
| 1.5 | 100,000 | 0 | 0.00000 | 1.00000 |
| 2.5 | 100,000 | 0 | 0.00000 | 1.00000 |
| 3.5 | 100,000 | 7189 | 0.07189 | 0.92811 |
| 4.5 | 92,811 | 0 | 0.00000 | 0.92811 |
| 5.5 | 92,811 | 0 | 0.00000 | 0.92811 |
| 6.5 | 92,811 | 0 | 0.00000 | 0.92811 |
| 7.5 | 92,811 | 12321 | 0.13275 | 0.79536 |
| 8.5 | 80,490 | 0 | 0.00000 | 0.79536 |
| 9.5 | 80,490 | 0 | 0.00000 | 0.79536 |
| 10.5 | 80,490 | 0 | 0.00000 | 0.79536 |
| 11.5 | 80,490 | 0 | 0.00000 | 0.79536 |
| 12.5 | 80,490 | 50085 | 0.62225 | 0.17311 |
| 13.5 | 30,405 | 0 | 0.00000 | 0.17311 |
| 14.5 | 30,405 | 0 | 0.00000 | 0.17311 |
| 15.5 | 30,405 | 0 | 0.00000 | 0.17311 |
| 16.5 | 30,405 | 0 | 0.00000 | 0.17311 |
| 17.5 | 30,405 | 0 | 0.00000 | 0.17311 |
| 18.5 | 30,405 | 0 | 0.00000 | 0.17311 |

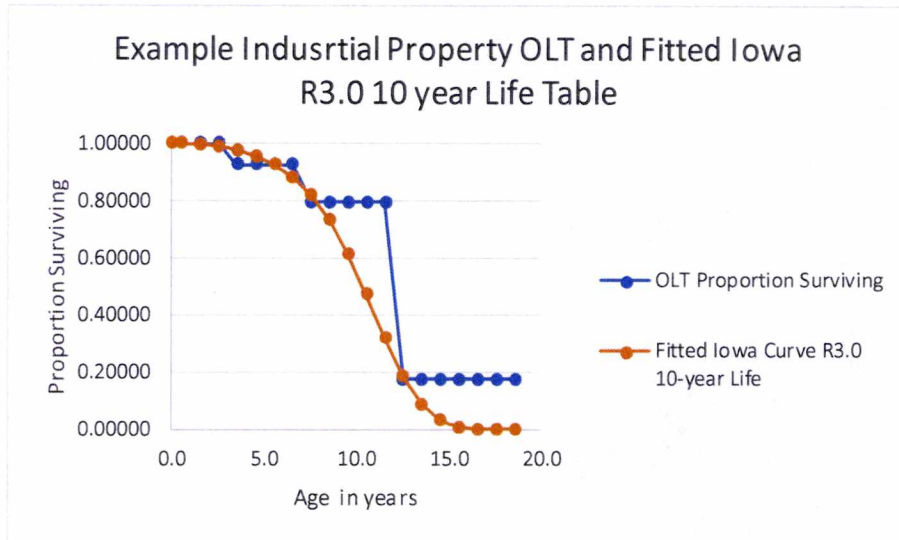
The above table is called the property's observed life table (OLT). As the OLT demonstrates the property's survivor curve (OLT) is calculated as a function of age in a stepwise fashion with the retirement rate by age being calculated as follows:

$$\text{Retirement Rate}_{(\text{age})} = \text{Retirements}_{(\text{age})} / \text{Exposures}_{(\text{age})}$$

The property's observed life table (raw survivor curve) is determined by successive applying each ages retirement rate to the previous age's OLT value starting at age = 0 years and an OLT value of 1.00000 or 100% surviving at age =0 years or when the property is newly placed. Next the raw OLT is plotted as a function of age as follow:



As the above graph demonstrates the raw OLT is often irregular and in this case only reaches 17% surviving, i.e., is a stub curve. In order to smooth and complete the raw OLT a standard survivor curves are fitted to the raw OLT. lowa-type survivor curves are the most recognized standard survivor curves which are utilized to smooth and extend raw OLTs. Typically, each of the lowa curve families are tested in the curve fitting process in order to arrive at the best fitting curve and associated life. The fitting process is one of fitting each lowa curve and associate service life are tested through an iterative process until the best fitting curve and life is determined. The best curve fitting criteria is the least summation of the squared differences between the fitted curve and the raw OLT curve values. Next each best fitting lowa curves and associated life is compared amongst individual lowa curves to find the single best fitting lowa curve and associated life in order to find the overall single best fitting lowa curve and life. The curve fitting done in this fashion closely conforms to visual curve fitting. The previous described raw OLT for an example industrial property and the best fitting lowa curve and associated life an R3.0 lowa-type survivor curve with an life of 10 years is presented as follows:



The above described retirement rate analysis and the Iowa curve fitting process are helpful in establishing the depreciation parameters of survival / retirement patterns (Iowa-type Survivor curve and service life) for establishing the depreciation inputs to the appraisal depreciation and condition calculations for similar property.

Functional Obsolescence

This historical experience must be adjusted for factors which are known to be impacting the property's service life but may not exhibit 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.

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 |
|-------|------------|-------|------------|--------------|--------------|-------------|----------------|----------------|------------|-----------|
| | | 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
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IOWA STATE UNIVERSITY • AMES, IOWA**

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 lowa-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 statistically 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 lowa-type Survivor Curves, have been used extensively since their introduction and, at the present time, the set is accepted as the standard of industrial property retirement dispersion. Because of the very simple mnemonic coding system which suggests the varying statistical characteristics involved, the lowa 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 Whitrey

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

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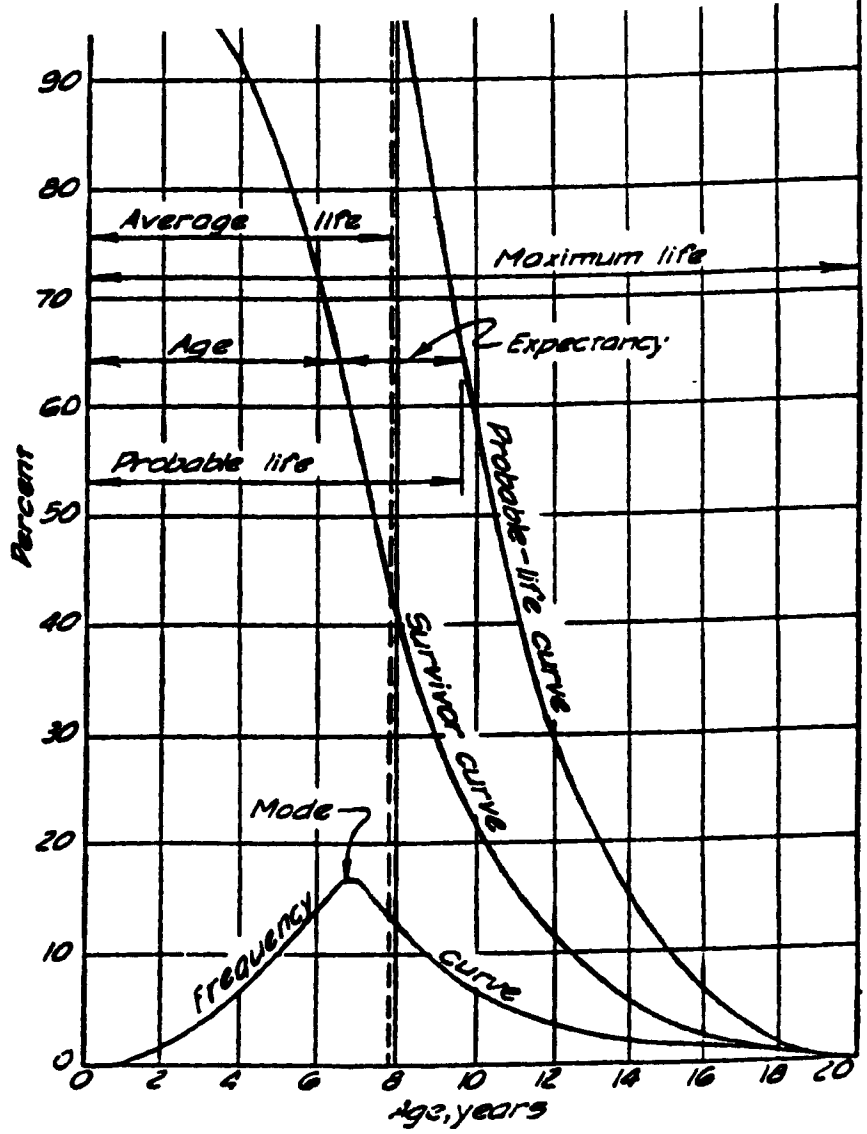


FIG. 1.—A typical survivor curve and its derived curves.

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, ten-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

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.

These 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

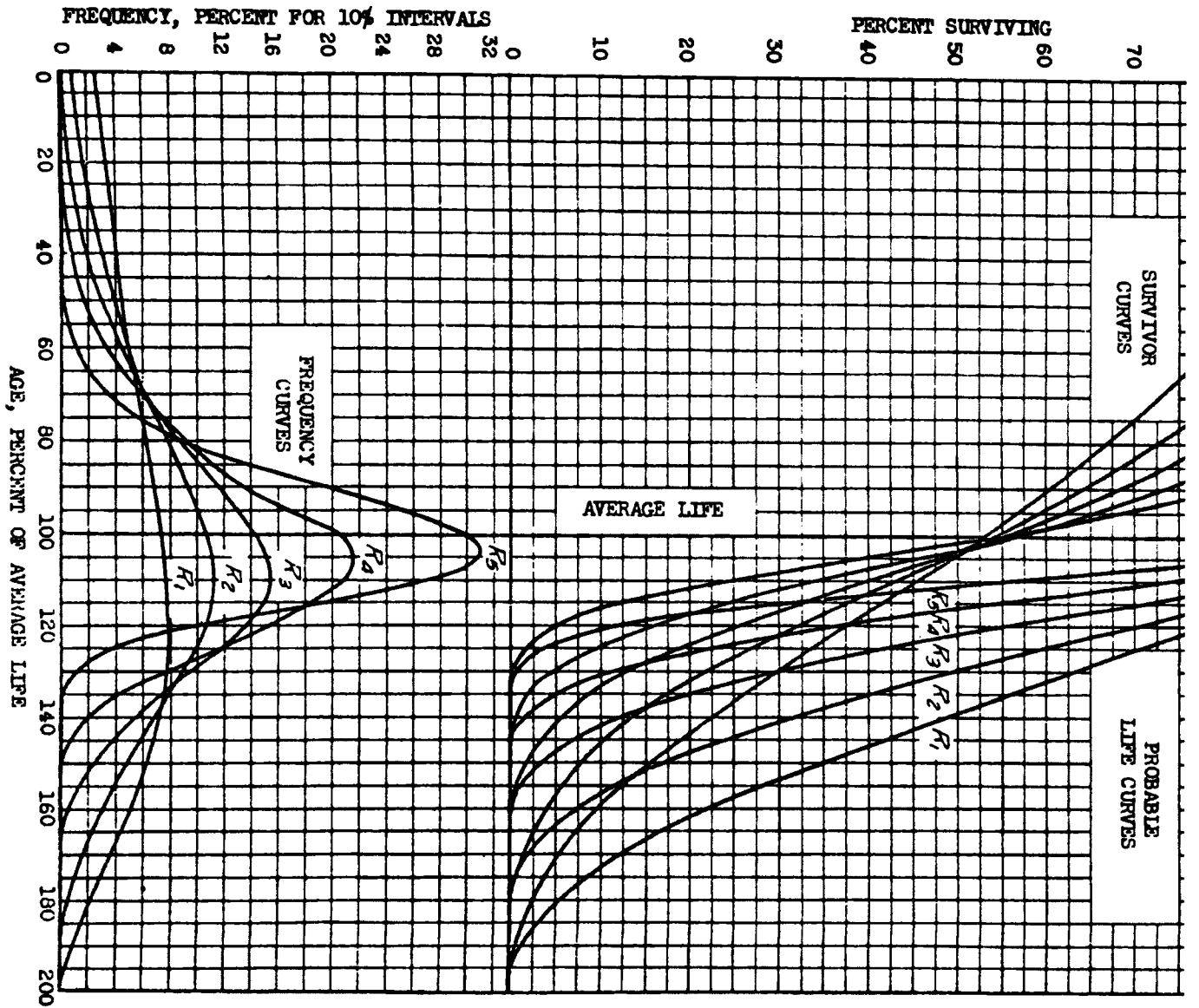
By a study of population and deaths, life insurance companies have arrived at life tables for human beings of different nationalities. From these life tables the normal death rate and life expectancy for people at different ages can be determined as a basis for life insurance premiums and reserves. Life 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.

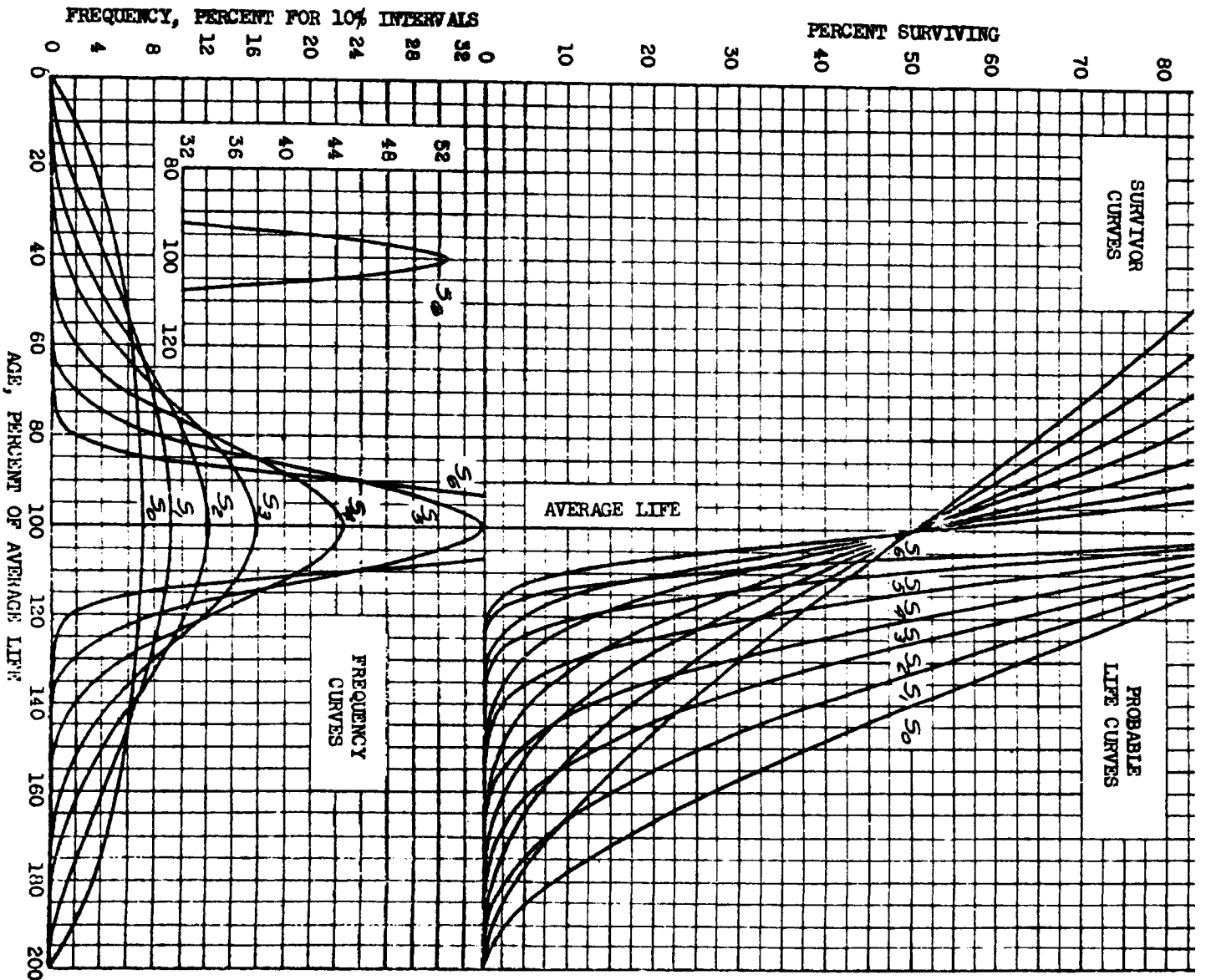
This reference to the United States life tables is made to show the similarity between the life characteristics of human beings and industrial properties. The essential differences are three. First, human beings experience a heavy infant mortality which results in a bi-modal frequency curve, one mode 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

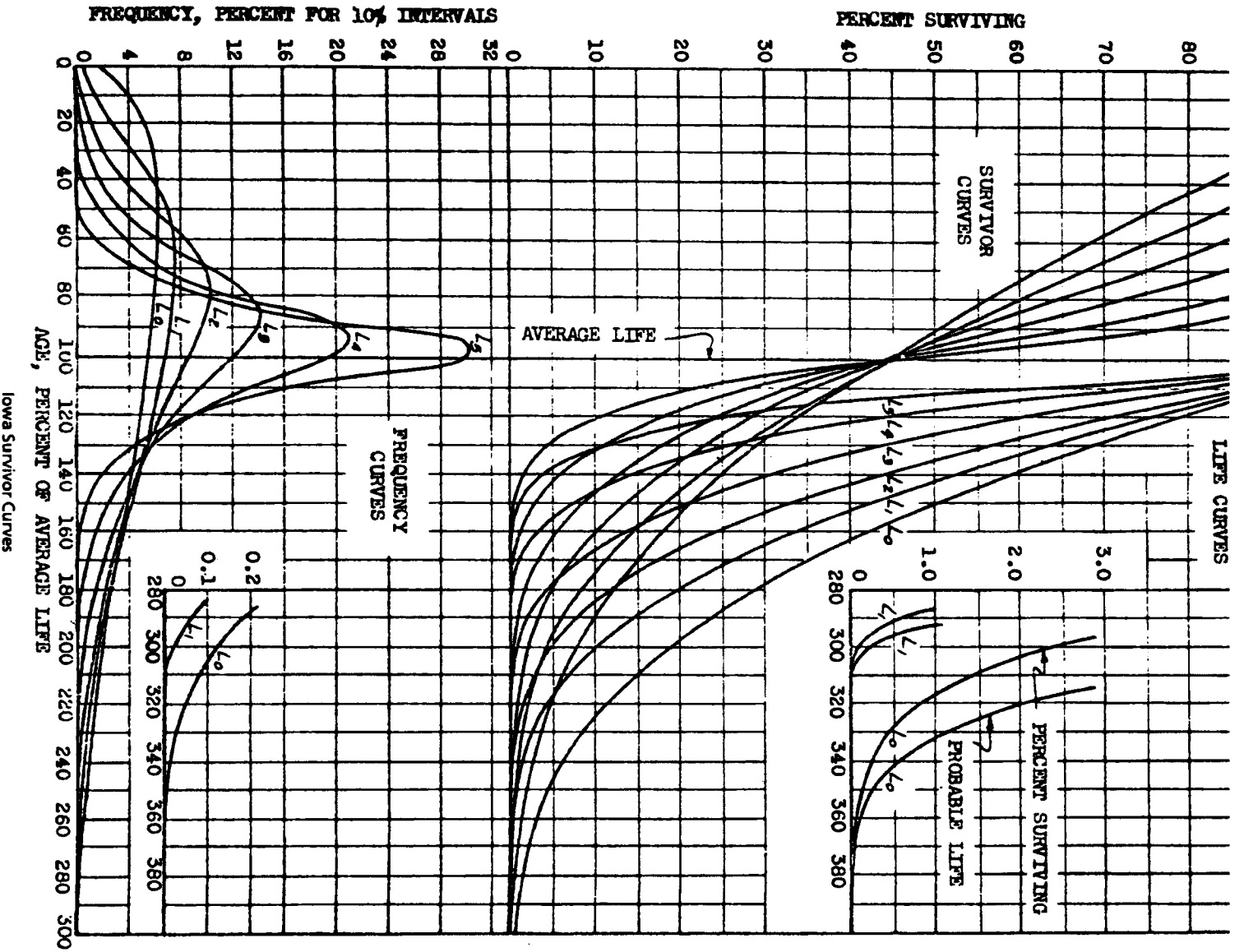
The foregoing section discussed the life tables for humans and the accompanying curves. Similar analyses can be made of the behavior of the physical equipment employed in industry when sufficient information is available. The processes employed for analyzing the retirements of industrial property are 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



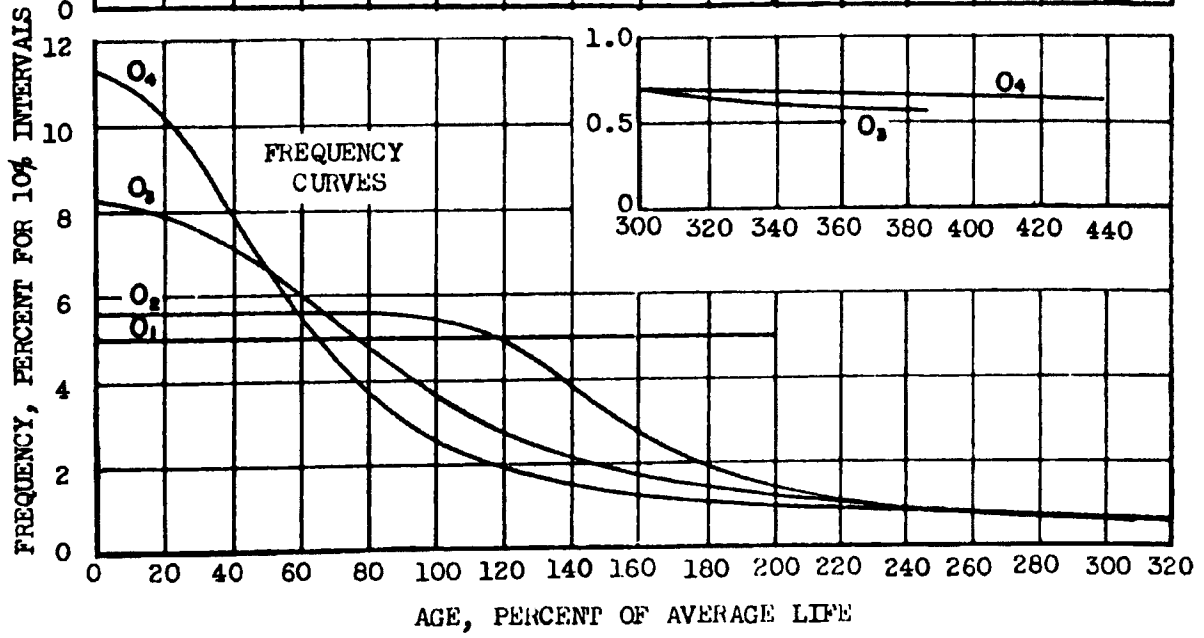
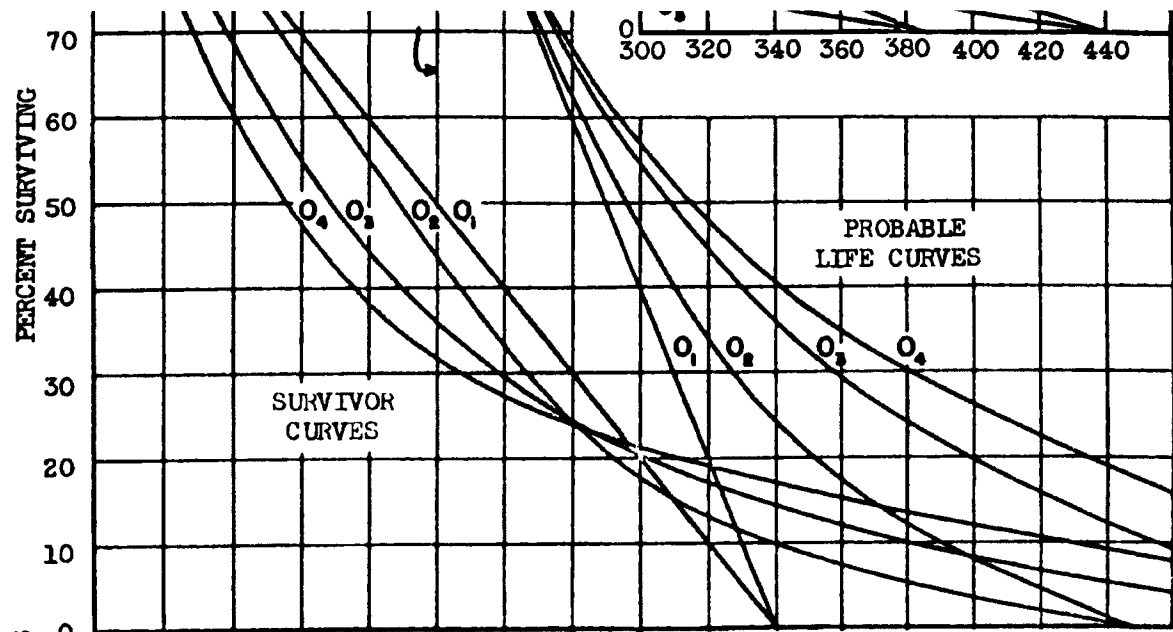
Iowa Survivor Curves



Iowa Survivor Curves



Iowa Survivor Curves



| 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 | 99.8070689 | 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 | 91.9418528 | 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 | 0.1685058 | 97.7158117 | 84.1072016 | 15.8927984 |
| R2.0019 | R2.0 | 19 | 0.1736164 | 97.5473061 | 83.2516279 | 16.7483721 |
| R2.0020 | R2.0 | 20 | 0.1788428 | 97.3736897 | 82.3991718 | 17.6008282 |
| R2.0021 | R2.0 | 21 | 0.1841928 | 97.1948471 | 81.5498714 | 18.4501286 |
| R2.0022 | R2.0 | 22 | 0.1896649 | 97.0108545 | 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 | 75.6960373 | 24.3039627 |
| R2.0029 | R2.0 | 29 | 0.2315760 | 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 |

| 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 | | 0.4314261 | 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 | 52.1478610 |
| 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 | 57.9862962 |
| 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 | 36.6063528 | 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 | 65.4829628 | 33.7995038 | 66.2004962 |
| R2.0089 | R2.0 | 89 | | 0.8982801 | 64.5982771 | 33.2555461 | 66.7444539 |

| Survivor | Survivor | Age | Survivor | Survivor | Survivor | Survivor |
|----------|----------|-----|-----------|------------|------------|------------|
| 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 | 28.1415110 | 71.8584890 |
| R2.0100 | R2.0 | 100 | 1.0288558 | 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 | 48.7939611 | 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 | 128 | 0.9755079 | 24.2544870 | 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 | 18.6522970 | 14.6059730 | 85.3940270 |

| Lookup | Curve | Age % | % Ket | % Surv | % Cond | % Depr Resv |
|---------|-------|-------|-----------|------------|------------|-------------|
| R2.0135 | R2.0 | 135 | 0.8499541 | 17.7823801 | 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 | 0.7207081 | 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 | 10.4235480 | 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 | 2.5127380 | 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 | 94.4778060 |
| 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 | 95.8698780 |
| R2.0171 | R2.0 | 171 | 0.1221950 | 0.6851860 | 3.8568020 | 96.1431980 |
| R2.0172 | R2.0 | 172 | 0.1077830 | 0.5629910 | 3.5853840 | 96.4146160 |
| 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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|---------|------|----|-----------|------------|------------|------------|
| 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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|---------|------|----|-----------|------------|------------|------------|
| 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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|---------|------|-----|-----------|------------|------------|------------|
| 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 |

| | | | | | | |
|---------|------|-----|-----------|------------|------------|------------|
| 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 Survivor 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 |
| R2.5180 | 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 |

| 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 | 6.8647537 | |
| R3.0008 | R3.0 | 8 | 0.0292997 | 99.8324070 | 92.1604576 | 7.8395424 | |
| R3.0009 | R3.0 | 9 | 0.0315600 | 99.8031073 | 91.1873674 | 8.8126326 | |
| R3.0010 | R3.0 | 10 | 0.0339584 | 99.7715473 | 90.2160540 | 9.7839480 | |
| 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 | 0.0481758 | 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 | 83.4735680 | 16.5264320 | |
| R3.0018 | R3.0 | 18 | 0.0586996 | 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 | 79.6728268 | 20.3271732 | |
| R3.0022 | R3.0 | 22 | 0.0753794 | 99.1613598 | 78.7294426 | 21.2705574 | |
| R3.0023 | R3.0 | 23 | 0.0800638 | 99.0859804 | 77.7889566 | 22.2110434 | |
| R3.0024 | R3.0 | 24 | 0.0849600 | 99.0059166 | 76.8514566 | 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 | 73.1330843 | 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 | 98.2955656 | 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 | 68.5626938 | 31.4373064 | |
| 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 | 60.5833340 | 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 | |

| | | | | % Curr | % Curr | % 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 | 52.9647021 | 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 | 91.2324896 | 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 | 88.3806143 | 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 | 38.2606740 | 61.7393260 |
| R3.0071 | R3.0 | 71 | 0.6618805 | 84.8530436 | 37.5453868 | 62.4546132 |
| R3.0072 | R3.0 | 72 | 0.6845751 | 84.1911631 | 36.8366242 | 63.1633758 |
| R3.0073 | R3.0 | 73 | 0.7078676 | 83.5065880 | 36.1345072 | 63.8654928 |
| R3.0074 | R3.0 | 74 | 0.7317868 | 82.7987204 | 35.4391561 | 64.5608439 |
| R3.0075 | R3.0 | 75 | 0.7563066 | 82.0669336 | 34.7507062 | 65.2492938 |
| R3.0076 | R3.0 | 76 | 0.7814388 | 81.3106270 | 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 | 78.8885260 | 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 | 0.9442616 | 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 |

| | | 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 | 24.7872109 | 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 | 78.8666561 |
| 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 | 81.6282120 |
| R3.0105 | R3.0 | 105 | 1.5277629 | 47.3174601 | 17.9445670 | 82.0554330 |
| R3.0106 | R3.0 | 106 | 1.5365224 | 45.7896972 | 17.5266011 | 82.4733989 |
| R3.0107 | R3.0 | 107 | 1.5426388 | 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 | 16.3270869 | 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 | 85.8417660 |
| R3.0116 | R3.0 | 116 | 1.4663680 | 30.4949780 | 13.8241530 | 86.1758470 |
| R3.0117 | R3.0 | 117 | 1.4430571 | 29.0286100 | 13.4972171 | 86.5027829 |
| R3.0118 | 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 | 24.7802689 | 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 | 11.9588110 | 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 | 1.0858769 | 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 | 0.9536992 | 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 |

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 | 91.5591691 |
| R3.0136 | R3.0 | 136 | 0.6928700 | 7.8628390 | 8.1829081 | 91.8170919 |
| R3.0137 | R3.0 | 137 | 0.6518970 | 7.1699690 | 7.9253460 | 92.0746540 |
| R3.0138 | R3.0 | 138 | 0.6119650 | 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 | 0.4449480 | 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 | 2.6261500 | 97.3738500 |
| R3.0159 | R3.0 | 159 | 0.0553160 | 0.1916960 | 2.3902580 | 97.6097420 |
| R3.0160 | 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 | 0.0001682 | 0.4999820 | 99.5000180 |
| R3.0169 | R3.0 | 169 | 0.0000000 | 0.0000000 | 0.0000000 | 100.0000000 |

| | | | | | | |
|---------|------|----|-----------|-------------|-------------|------------|
| 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 | 99.9908445 | 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 | 87.0287496 | 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 | 99.9548289 | 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 | 99.9093628 | 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 | 0.0238181 | 99.8088245 | 73.1542208 | 26.8457794 |
| R4.0028 | R4.0 | 28 | 0.0263576 | 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 | 0.0870266 | 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 | 98.8584652 | 56.7557492 | 43.2442508 |

| Lookup | Curve | Age | % Ret | % Surv | % Cond | % Depr Resv |
|---------|-------|-----|-----------|------------|------------|-------------|
| R4.0045 | R4.0 | 45 | 0.1203727 | 98.7472677 | 55.8190970 | 44.1809030 |
| R4.0046 | R4.0 | 46 | 0.1301480 | 98.6268950 | 54.8866129 | 45.1133871 |
| R4.0047 | R4.0 | 47 | 0.1405506 | 98.4967470 | 53.9584770 | 46.0415230 |
| R4.0048 | R4.0 | 48 | 0.1516085 | 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 | 97.4736528 | 48.4911060 | 51.5088940 |
| R4.0054 | R4.0 | 54 | 0.2326536 | 97.2560940 | 47.5984602 | 52.4015398 |
| R4.0055 | R4.0 | 55 | 0.2497578 | 97.0234404 | 46.7115922 | 53.2884078 |
| R4.0056 | R4.0 | 56 | 0.2685119 | 96.7736826 | 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 | 0.3438416 | 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 | 0.5142880 | 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 | 32.6566491 | 67.3433509 |
| R4.0073 | R4.0 | 73 | 0.6949434 | 89.1807327 | 31.8956490 | 68.1043510 |
| R4.0074 | R4.0 | 74 | 0.7277765 | 88.4857893 | 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 | 0.9007626 | 84.5060816 | 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 | 80.6866722 | 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 |

| Curve | Rate | Age | Survival | Survival | Survival | Survival |
|----------------|-------------|------------|------------------|-------------------|-------------------|-------------------|
| 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 | 57.3769812 | 15.1076440 | 84.8923560 |
| R4.0100 | R4.0 | 100 | 2.0473556 | 55.3800368 | 14.6343750 | 85.3656250 |
| R4.0101 | R4.0 | 101 | 2.0907240 | 53.3326812 | 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 | 86.6820350 |
| 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 | 88.6252800 |
| 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 | 91.4837180 |
| R4.0118 | R4.0 | 118 | 1.5954540 | 18.7711220 | 8.2302750 | 91.7697250 |
| R4.0119 | R4.0 | 119 | 1.5171400 | 17.1758680 | 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 | 92.6051610 |
| R4.0122 | R4.0 | 122 | 1.2773730 | 12.8633860 | 7.1224760 | 92.8775240 |
| R4.0123 | R4.0 | 123 | 1.1976880 | 11.5860130 | 6.8526120 | 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 | 0.0852467 | 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 | 0.0072948 | 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 |

| | | | | | | |
|---------|------|----|-----------|-------------|------------|------------|
| 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 |

database

Iowa Survivor Curves

| | | | | | | |
|---------|------|----|-----------|------------|------------|------------|
| 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 |

| | | | | | | |
|---------|------|-----|-----------|------------|------------|------------|
| 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

| | | | | | | |
|---------|------|-----|-----------|-----------|-----------|------------|
| 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 Survivor 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 |
| 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 |

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 2020

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

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

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:



Gannett Fleming

*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



*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

A handwritten signature in black ink that reads "John J. Spanos".

JOHN J. SPANOS
President

JJS:mle

066548.100

Gannett Fleming Valuation and Rate Consultants, LLC

207 Senate Avenue • Camp Hill, PA 17011-2316

t 717.763.7211 • f 717.763.4590

www.gfvrc.com

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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

| DEPRECIABLE GROUP | ORIGINAL COST AS OF DECEMBER 31, 2021 | CUSTOMER ADVANCES | CONTRIBUTIONS IN AID OF CONSTRUCTION | EXCLUDED PROPERTY | NET ORIGINAL COST AS OF DECEMBER 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

| DEPRECIABLE GROUP | | ORIGINAL COST AS OF DECEMBER 31, 2021 | CUSTOMER ADVANCES | CONTRIBUTIONS IN AID OF CONSTRUCTION | EXCLUDED PROPERTY | NET ORIGINAL COST AS OF DECEMBER 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 | 69,389,012.37 | 225,763,719.75 | 1,558,014.00 | 5,478,296,131.14 |
| TOTAL UTILITY PLANT IN SERVICE | | 5,801,979,896.00 | 69,389,012.37 | 225,979,846.95 | 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**

| <u>DEPRECIABLE GROUP</u> (1) | <u>SURVIVOR CURVE</u> (2) | <u>NET ORIGINAL COST AS OF DECEMBER 31, 2021</u> (3) | <u>BOOK RESERVE</u> (4) | <u>FUTURE ACCRUALS</u> (5) | <u>ANNUAL ACCRUAL AMOUNT</u> (6) | <u>ANNUAL ACCRUAL RATE, PERCENT</u> (7) | <u>COMPOSITE REMAINING LIFE</u> (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 |
| 303.99 | COMPREHENSIVE PLANNING STUDIES | 5-SQ | 9,710,061.35 | 7,494,569 | 2,215,492 | 751,049 | 7.73 |
| 304.15 | OTHER WATER SOURCE STRUCTURES | 60-R1.5 | 44,248,707.65 | 8,283,077 | 35,965,631 | 970,351 | 2.19 |
| 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 |
| | OTHER STRUCTURES | 55-R3 | 50,920,110.78 | 9,270,044 | 41,650,067 | 1,298,796 | 2.55 |
| TOTAL ACCOUNT 304.2 | | | 120,487,362.70 | 18,550,733 | 101,936,630 | 3,085,859 | 2.56 |
| 304.30 | PURIFICATION BUILDINGS | | | | | | |
| | LARGE STRUCTURES | 60-R2.5 | 248,267,049.87 | 78,898,085 | 169,368,965 | 5,619,625 | 2.26 |
| | OTHER STRUCTURES | 60-R3 | 41,316,811.61 | 12,978,751 | 28,338,061 | 730,378 | 1.77 |
| TOTAL ACCOUNT 304.3 | | | 289,583,861.48 | 91,876,836 | 197,707,026 | 6,350,003 | 2.19 |
| 304.36 | WASTE HANDLING AND TREATMENT STRUCTURES | 60-S2.5 | 11,668,886.83 | 6,315,009 | 5,353,878 | 309,282 | 2.65 |
| 304.38 | WASTE HANDLING AND TREATMENT STRUCTURES PAINTING | 10-SQ | 65,958.42 | 57,775 | 8,183 | 2,338 | 3.54 |
| 304.39 | PURIFICATION BUILDINGS - TANK PAINTING | 10-SQ | 119,362.95 | 107,705 | 11,658 | 3,331 | 2.79 |
| 304.61 | OFFICE BUILDINGS | | | | | | |
| | LARGE STRUCTURES | 50-R1.5 | 31,024,747.89 | 5,523,525 | 25,501,224 | 970,539 | 3.13 |
| | OTHER STRUCTURES | 50-R3 | 12,907,724.55 | 3,482,369 | 9,425,356 | 295,081 | 2.29 |
| TOTAL ACCOUNT 304.61 | | | 43,932,472.44 | 9,005,894 | 34,926,580 | 1,265,620 | 2.88 |



**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 (1) | SURVIVOR CURVE (2) | NET ORIGINAL COST AS OF DECEMBER 31, 2021 (3) | BOOK RESERVE (4) | FUTURE ACCRUALS (5) | ANNUAL ACCRUAL AMOUNT (6) | ANNUAL ACCRUAL RATE, PERCENT (7) | COMPOSITE REMAINING LIFE (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 | | | | | | | |
| ELECTRIC | 42-S0 | 23,758,420.92 | 4,483,984 | 19,274,437 | 769,961 | 3.24 | 25.0 |
| OTHER | 42-S0 | 2,389,457.83 | 559,308 | 1,830,150 | 74,670 | 3.12 | 24.5 |
| SOURCE OF SUPPLY | 42-S0 | 14,212,241.21 | 2,191,102 | 12,021,139 | 477,564 | 3.36 | 25.2 |
| WATER TREATMENT | 42-S0 | 46,865,937.19 | 18,885,547 | 27,980,390 | 1,331,345 | 2.84 | 21.0 |
| 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 | | | | | | | |
| LARGE STRUCTURES | 60-S0.5 | 255,675,564.06 | 73,452,571 | 182,222,993 | 7,332,914 | 2.87 | 24.9 |
| LARGE 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 (1) | SURVIVOR CURVE (2) | NET ORIGINAL COST AS OF DECEMBER 31, 2021 (3) | BOOK RESERVE (4) | FUTURE ACCRUALS (5) | ANNUAL ACCRUAL AMOUNT (6) | ANNUAL ACCRUAL RATE, PERCENT (7) | COMPOSITE REMAINING LIFE (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) |
| 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

| <u>ACCOUNT</u> (1) | <u>NET ORIGINAL COST AS OF 12/31/2020</u> (2) | <u>NET ORIGINAL COST AS OF 12/31/2021</u> (3) | <u>ACCRUAL RATE</u> (4) | <u>AVERAGE ACCRUALS</u> (5)* | <u>AMORTIZATION OF NET SALVAGE</u> (6) | <u>PROJECTED DEPRECIATION ACCRUALS</u> (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 |



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Water Operations Excluding Steelton - Rate Yr1
December 31, 2021

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 ORIGINAL COST AS OF 12/31/2020 (2) | NET ORIGINAL COST AS OF 12/31/2021 (3) | ACCRUAL RATE (4) | AVERAGE ACCRUALS (5)* | AMORTIZATION OF NET SALVAGE (6) | PROJECTED DEPRECIATION ACCRUALS (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

| ACCOUNT (1) | 2017 | | 2018 | | 2019 | | PROJECTED 2020 | | PROJECTED 2021 | | NET SALVAGE (12)* | SALVAGE ACCRUAL (13)=(12)/5 |
|----------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|--------------------------|----------------------------|-------------------------|-----------------------------------|
| | GROSS SALVAGE (2) | COST OF REMOVAL (3) | GROSS SALVAGE (4) | COST OF REMOVAL (5) | GROSS SALVAGE (6) | COST OF REMOVAL (7) | GROSS SALVAGE (8) | COST OF REMOVAL (9) | GROSS SALVAGE (10) | COST OF REMOVAL (11) | | |
| 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 | 1,284 |
| 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 | 309,652.81 | 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) |

Immation of Columns (2) through (11).

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:



*Excellence Delivered **As Promised***

Exhibit No. 11-L
Witness: J. J. Spanos

PENNSYLVANIA-AMERICAN WATER COMPANY

Mechanicsburg, Pennsylvania

WASTEWATER SSS OPERATIONS EXCLUDING SADBURY 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



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

A handwritten signature in black ink that reads "John J. Spanos".

JOHN J. SPANOS
President

JJS:mle

066548.100

Gannett Fleming Valuation and Rate Consultants, LLC

207 Senate Avenue • Camp Hill, PA 17011-2316

t: 717.763.7211 • f: 717.763.4590

www.gfvrc.com

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PART I. RESULTS OF STUDY

PENNSYLVANIA-AMERICAN WATER COMPANY
WASTEWATER SSS OPERATIONS EXCLUDING SADBURY 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 SADBURY AND EXETER

TABLE 1. DEVELOPMENT OF NET ORIGINAL COST AS OF DECEMBER 31, 2022

| DEPRECIABLE GROUP (1) | ORIGINAL COST AS OF DECEMBER 31, 2022 (2) | CUSTOMER ADVANCES (3) | CONTRIBUTIONS IN AID OF CONSTRUCTION (4) | EXCLUDED PROPERTY (5) | NET ORIGINAL COST AS OF DECEMBER 31, 2022 (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 SADSBUARY 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 (1) | SURVIVOR CURVE (2) | ORIGINAL COST AS OF DECEMBER 31, 2022 (3) | BOOK RESERVE (4) | FUTURE ACCRUALS (5) | CALCULATED ANNUAL | | COMPOSITE REMAINING LIFE (8) | |
|------------------------------------|---|--|------------------------|---------------------------|--------------------------|--------------------------------|---------------------------------------|-------------|
| | | | | | ACCRUAL AMOUNT (6) | ACCRUAL RATE (7)=(6)/(3) | | |
| 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 SADBURY 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 | | 88,828 | | | | | | | | | | 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 | | | | 2,036,881 |
| 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 SADBURY AND EXETER**

TABLE 4. CALCULATION OF DEPRECIATION ACCRUALS FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2022

| ACCOUNT (1) | NET ORIGINAL COST AS OF 12/31/2021 (2) | NET ORIGINAL COST AS OF 12/31/2022 (3) | ACCRUAL RATE (4) | DEPRECIATION ACCRUALS (5)* | AMORTIZATION OF NET SALVAGE (6) | PROJECTED DEPRECIATION ACCRUALS (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 SADBURY AND EXETER

TABLE 5. AMORTIZATION OF EXPERIENCED AND ESTIMATED NET SALVAGE

| ACCOUNT (1) | 2018 | | 2019 | | PROJECTED 2020 | | PROJECTED 2021 | | PROJECTED 2022 | | NET SALVAGE (12)* | SALVAGE ACCRUAL (13)=(12)/5 |
|----------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|--------------------------|----------------------------|-------------------------|-----------------------------------|
| | GROSS SALVAGE (2) | COST OF REMOVAL (3) | GROSS SALVAGE (4) | COST OF REMOVAL (5) | GROSS SALVAGE (6) | COST OF REMOVAL (7) | GROSS SALVAGE (8) | COST OF REMOVAL (9) | GROSS SALVAGE (10) | COST OF REMOVAL (11) | | |
| 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
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

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

PENNSYLVANIA-AMERICAN WATER COMPANY

HERSHEY, PENNSYLVANIA

2018 DEPRECIATION STUDY

**CALCULATED ANNUAL DEPRECIATION ACCRUALS
RELATED TO WATER PLANT
AS OF DECEMBER 31, 2018**

Prepared by:



Gannett Fleming

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



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

A handwritten signature in black ink that reads "John J. Spanos".

JOHN J. SPANOS
Sr. Vice President

JJS:mlw

062027.100

Gannett Fleming Valuation and Rate Consultants, LLC

P.O. Box 67100 • Harrisburg, PA 17106-7100 | 207 Senate Avenue • Camp Hill, PA 17011-2316

t: 717.763.7211 • f: 717.763.4590

www.gfvrc.com

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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

| DEPRECIABLE GROUP (1) | ORIGINAL COST AS OF DECEMBER 31, 2018 (2) | CUSTOMER ADVANCES (3) | CONTRIBUTIONS IN AID OF CONSTRUCTION (4) | EXCLUDED PROPERTY (5) | = | NET ORIGINAL COST AS OF DECEMBER 31, 2018 (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

| DEPRECIABLE GROUP | ORIGINAL COST AS OF DECEMBER 31, 2018 | CUSTOMER ADVANCES | CONTRIBUTIONS IN AID OF CONSTRUCTION | EXCLUDED PROPERTY | NET ORIGINAL COST AS OF DECEMBER 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 (1) | SURVIVOR CURVE (2) | NET ORIGINAL COST AS OF DECEMBER 31, 2018 (3) | BOOK RESERVE (4) | FUTURE ACCRUALS (5) | ANNUAL ACCRUAL AMOUNT (6) | ANNUAL ACCRUAL RATE, PERCENT (7) | COMPOSITE REMAINING LIFE (8) |
|---|--------------------------|--|------------------------|---------------------------|------------------------------------|---|---------------------------------------|
| INTANGIBLE PLANT | | | | | | | |
| 301 00 ORGANIZATION | NONDEPR | 774,398.08 | | | | | |
| 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 - MIDERNIA | 25-SQ | 1,942,822.51 | 1,763,172 | 179,651 | 119,767 | 6.18 | 1.5 |
| 303 35 WASTE HANDLING AND TREATMENT LAND | 100-R2 | 155,025.17 | 155,025 | 0 | 0 | | |
| 303 99 COMPREHENSIVE PLANNING STUDIES | 5-SO | 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 | 824,862 | 1.81 | 43.0 |
| 304 20 POWER AND PUMPING 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 | 88,680,733 | 2,529,088 | 2.39 | 35.1 |
| 304 30 PURIFICATION BUILDINGS | | | | | | | |
| LARGE STRUCTURES | 60-R2 5 | 221,661,139.93 | 71,978,298 | 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 | 5,780,761 | 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 (1) | SURVIVOR CURVE (2) | NET ORIGINAL COST AS OF DECEMBER 31, 2018 (3) | BOOK RESERVE (4) | FUTURE ACCRUALS (5) | ANNUAL ACCRUAL AMOUNT (6) | ANNUAL ACCRUAL RATE, PERCENT (7) | COMPOSITE REMAINING LIFE (8) |
|--|-----------------------|--|---------------------|------------------------|------------------------------|-------------------------------------|---------------------------------|
| 304 63 MISCELLANEOUS STRUCTURES AND IMPROVEMENTS | 50-R2 5 | 4,933,374.39 | 958,106 | 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 | 127,795,828.42 | 12,895,838 | 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 | 2,856,110 | 16,344,892 | 607,142 | 3.16 | 28.9 |
| 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-S0 | 103,245.73 | 103,246 | 0 | 0 | - | - |
| 320 19 LARGE STRUCTURES PAINT | 10-S0 | 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 | 3,007,086 | 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 | | 314,425,948.99 | 129,248,061 | 185,176,966 | 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-S0 | 2,375,281.44 | 2,271,962 | 103,319 | 15,895 | 0.67 | 6.5 |
| 330 59 DISTRIBUTION RESERVOIRS AND STANDPIPES - PAINTING | 10-S0 | 38,418,707.41 | 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 (1) | SURVIVOR CURVE (2) | NET ORIGINAL COST AS OF DECEMBER 31, 2018 (3) | BOOK RESERVE (4) | FUTURE ACCRUALS (5) | ANNUAL ACCRUAL AMOUNT (6) | ANNUAL ACCRUAL RATE, PERCENT (7) | COMPOSITE REMAINING LIFE (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 TRANSPORTATION 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 | 18,658,539 | 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 | 2,571,357.81 | 2,356,861 | 214,697 | 54,619 | 2.12 | 3.9 |
| 346 00 COMMUNICATION 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 | 839,314 | 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 | | 4,844,318,826.66 | 1,095,625,841 | 3,748,691,181 | 111,562,709 | 2.30 | |
| AMORTIZATION OF NET SALVAGE | | | | | 10,118,387 | | |
| TOTAL WATER PLANT IN SERVICE | | 4,868,826,062.82 | 1,095,625,841 | 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 | | 106,467,007 | 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 (1) | EXPERIENCED AND ESTIMATED NET SALVAGE | | | | | 5 - YEAR AMORT. (7) |
|----------------|---------------------------------------|---------------------|---------------------|--------------------|--------------------|---------------------------|
| | 2014 (2) | 2015 (3) | 2016 (4) | 2017 (5) | 2018 (5) | |
| | 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

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

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:



Excellence Delivered As Promised

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



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

A handwritten signature in black ink that reads "John J. Spanos".

JOHN J. SPANOS
Sr. Vice President

JJS:mlw

062027.100

Gannett Fleming Valuation and Rate Consultants, LLC
P.O. Box 67100 • Harrisburg, PA 17106-7100 | 207 Senate Avenue • Camp Hill, PA 17011-2316
t: 717.763.7211 • f: 717.763.4590
www.gfvrc.com

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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

| DEPRECIABLE GROUP (1) | ORIGINAL COST AS OF DECEMBER 31, 2016 (2) | CUSTOMER ADVANCES (3) | CONTRIBUTIONS IN AID OF CONSTRUCTION (4) | EXCLUDED PROPERTY (5) | NET ORIGINAL COST AS OF DECEMBER 31, 2016 (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 | BOOK | FUTURE | CALCULATED ANNUAL | | COMPOSITE | |
|--|--|----------------------------|-----------------------|-------------------|--------------------|------------------|-------------------|------|
| | | AS OF DECEMBER 31, 2016 | RESERVE | ACCRUALS | ACCRUAL AMOUNT | ACCRUAL RATE | REMAINING LIFE | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7)=(5)/(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 | 854,080 | 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 | | | | | 5 - YEAR AMORT. (7) |
|----------------|-------------------------|-------------|-------------|-------------|-------------|---------------------------|
| | 2012 (2) | 2013 (3) | 2014 (4) | 2015 (5) | 2016 (5) | |
| 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

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

Appraisal Work Papers
As of December 17, 2019

Cost of Capital / Required Return 1-1-2020
Water and Wastewater

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

Cost of Capital / Required Return

The net cashflows described in the income approach section of this report were discounted to present value using a cost of capital reflective of the investor owned water industry with particular emphasis on investor owned water and wastewater in the Commonwealth of Pennsylvania capital costs for both debt and equity summarized as follows:

Water and Wastewater Cost of Capital First Quarter 2020 (1-1-2020)

As an Investor-Owned Utility

| Weighted Cost of Capital (Discount Rate) | (1) | (2) | (2a) | (3) | (3a) | (4) | (4a) | (5) |
|--|-----|--------------------|--------------|--------------|--------------|----------|-------------------------------|-------------------------------|
| | | Portion of Capital | Type of Data | Capital Cost | Type of Data | Tax Rate | Tax affect on cost of capital | After tax Market Capital Cost |
| | | WACC Input | | WACC Input | | | | WACC Input |
| Debt | | 26% | Market | 3.23% | Market | 28.89% | 2.11% | 2.11% |
| Equity | | 74% | Market | 9.90% | Market | 0.0% | 9.90% | 9.90% |
| Total Capital r | | 100.0% | | | | | | 7.93% |
| Growth (g) | | | | | | | | 1.82% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | | 6.00% |

Water and Wastewater Cost of Capital First Quarter 2020 (1-1-2020)

As an Investor-Owned Utility

| Weighted Cost of Capital (Capitalization Rate) | (1) | (2) | (2a) | (3) | (3a) | (4) | (4a) | (5) |
|--|-----|--------------------|--------------|--------------|--------------|----------------|-------------------------------|---------------------|
| | | Portion of Capital | Type of Data | Capital Cost | Type of Data | Tax Rate | Tax affect on cost of capital | Market Capital Cost |
| | | WACC Input | | WACC Input | | | | WACC Input |
| Debt | | 26% | Market | 3.23% | Market | Not Applicable | Not Applicable | 3.23% |
| Equity | | 74% | Market | 9.90% | Market | Not Applicable | Not Applicable | 9.90% |
| Total Capital r | | 100.0% | | | | | | 3.17% |
| Growth (g) | | | | | | | | 1.82% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | | 6.23% |

Water and Wastewater Cost of Capital First Quarter 2020 (1-1-2020)

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 | Type of Data | Capital Cost | Type of Data | Tax Rate | Tax affect on cost of capital | Required Return on Rate Base |
| | | WACC Input | | WACC Input | | | | WACC Input |
| Debt | | 45% | Embedded | 3.23% | Embedded | Not Applicable | Not Applicable | 3.23% |
| Equity | | 55% | Embedded | 9.90% | Market | Not Applicable | Not Applicable | 9.90% |
| Total Capital r | | 100.0% | | | | | | 6.90% |
| Growth (g) | | | | | | | Not Applicable | 0.00% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | | 6.90% |

The cost of capital and required return was based on the weighted cost of capital (WACC) method; wherein the market capital cost of debt and equity at the January 1, 2020 appraisal date are weighted based on the market capital structure typical of the industry. The inputs to the WACC

$$K_d = K_u / (100\% - f)$$

where:

K_d = Cost of Debt recognizing issuance costs

K_u is the market cost of debt without consideration of issuance costs

f is the cost of issuance as a percentage of the debt's par value

$$K_d = 3.20\% / (100\% - 0.90\%)$$

$$K_d = 3.23\%$$

Equity Cost – The cost of equity was evaluated using the Capital Asset Pricing Model (CAPM) and the dividend growth model (DGM) which looks to market returns to quantify the cost equity capital.

Value Line Investment Surveys
Water Industry
As of First Quarter 2020 (1-1-2020)

| Company | Exchange | Ticker | Market Cap | Volume | Beta | Dividend | Revenues | | Cash Flows | | Earnings | | Dividend | | Book Value | | |
|----------------------------|----------|--------|------------|-----------|------|----------|----------|------|------------|-------|----------|-------|----------|-------|------------|------|------|
| | | | | | | | 2019 | 2018 | 2019 | 2018 | 2019 | 2018 | 2019 | 2018 | 2019 | 2018 | |
| American States Water | NYS | AWW | 1287 | 1110/2020 | 0.65 | 1.5% | 1.5% | 1.5% | 0.0% | 0.0% | 1.5% | 0.0% | 1.5% | 0.0% | 1.5% | 0.0% | |
| American Water | NYS | AWK | 1768 | 1110/2020 | 0.55 | 1.7% | 1.0% | 1.5% | 0.0% | 18.1% | 0.0% | 0.0% | 0.0% | 10.1% | 0.0% | 1.0% | |
| Aqua America | NYS | WTR | 1089 | 1110/2020 | 0.65 | 0.1% | 1.0% | 1.1% | 1.1% | 6.1% | 0.0% | 6.1% | 0.0% | 7.1% | 0.0% | 0.0% | |
| California Water | NYS | CAW | 1290 | 1110/2020 | 0.7 | 1.7% | 1.5% | 2.0% | 1.5% | 0.0% | 1.5% | 0.0% | 1.5% | 0.0% | 1.5% | 0.0% | |
| Consolidated Water Company | NDQ | SWO | 1291 | 1110/2020 | 0.85 | 2.1% | 1.0% | 0.5% | 10.5% | 2.0% | 15.1% | 11.0% | 1.0% | 15.1% | 20.1% | 2.0% | 1.1% |
| Midwest Water | NDQ | MSW | 1292 | 1110/2020 | 1.75 | 1.6% | 1.5% | 1.5% | 2.0% | 3.3% | 0.0% | 6.1% | 0.0% | 11.0% | 7.1% | 7.0% | 1.0% |
| NW Corporation | NYS | NW | 1293 | 1110/2020 | 0.6 | 1.7% | 1.0% | 1.5% | 1.0% | 7.0% | 11.0% | 0.0% | 0.0% | 18.1% | 7.0% | 1.5% | 0.0% |
| York Water | NDQ | YRW | 1294 | 1110/2020 | 0.7 | 1.6% | 1.0% | 1.0% | 5.5% | 0.0% | 0.0% | 0.0% | 5.5% | 6.1% | 0.0% | 1.5% | |
| Minimum | | | | | 0.55 | 1.6% | 1.0% | 0.5% | 1.0% | 0.0% | 1.0% | 1.0% | 0.0% | 10.1% | 0.0% | 1.0% | |
| Maximum | | | | | 1.75 | 1.7% | 1.5% | 2.0% | 10.5% | 2.0% | 15.1% | 11.0% | 1.0% | 15.1% | 20.1% | 2.0% | |

Capital Assets Pricing Model (CAPM) - The CAPM method estimates the cost of equity capital by quantifying the premium, or additional return required to entice investors to purchase equities, over an investment in which the investors would receive riskless return like that from a long-term U.S. government security.

The mathematical form of this model is:

Capital Asset Pricing Model:

$$r_e = r_f + \beta_c(r_p) + r_s + r_i$$

where:

B_c is an estimation of the subject Company's risk premium relative to the risk premium of the entire market. In these equity cost estimating methods the risk premium of the entire market is defined as unity or $B_m = 1.0$.

The inputs to this model are developed from an analysis of the financial markets. The risk-free government securities rate (r_f) is readily available from financial sources; we have used the risk-free rate at the study date of 4.94% as determined from the average long-term income returns of government bonds over the period 1926 through 2019 as detailed on table A-7 in Ibbotson Associates' 2020 Yearbooks of Stocks, Bonds, Bills, and Inflation (SBBI).

The risk premiums (r_p) and size premiums (r_s) were established based on analysis of the data presented by Ibbotson Associates and published in Ibbotson Associates' 2010 through 2019 Yearbooks of Stocks, Bonds, Bills, and Inflation (SBBI), detailing the financial market returns of stocks, bonds, U.S. Treasury Bills, and Inflation for the period 1926 through 2019.

The total market risk premium (r_p) required to entice an investor to invest in equity securities over risk-free government securities was established at 6.95% based on the Ibbotson Associates research, while the size premiums (r_s) were established at:

1.7% for mid-capitalization companies with market equity capitalization between \$3,636.881 and \$631.058 million.

3.1% for low-capitalization companies with market equity capitalization between \$289.658 and \$631.058 million.

5.8 for micro-capitalization companies with market equity capitalization under \$289.658 million.

There is no size premium (0.0%) for companies with market equity capitalization above \$3,636.881 million.

Dividend Yield and Growth Model (DGM)

The dividend yield and growth model was also review in estimating the cost of equity. Two models were considered, those of:

$$r_e = \text{Dividend Yield} + \text{Dividend Growth}$$

$$r_e = \text{Dividend Yield} + \text{Earnings Growth}$$

Cost of Equity Conclusion - Based on these procedures the cost of equity using previous described cost of equity estimating techniques the cost of equity was determined as follows:

Value Line Investment Surveys
Water Industry
As of First Quarter 2020 (1-1-2020)

Cost of Equity Dividend Growth Model

Cost of Equity Capital Asset Pricing Model (CAPM)

Dividend 1.74% mean Col 7

| Growth | Past 10 yrs | | Est'd 16 18 to 22 | Beta |
|------------|-------------|------------|-------------------|----------------|
| | 10 yrs | Past 5 yrs | 24 | |
| Revenues | 3.69% | 2.79% | 1.14% | |
| Cash Flow | 6.00% | 5.69% | 5.56% | |
| Earnings | 5.50% | 6.69% | 9.75% | |
| Dividends | 4.50% | 6.07% | 8.18% | |
| Book Value | 4.75% | 4.69% | 4.04% | |
| Mean | 4.89% | 5.18% | 6.41% | 0.68 0.55-0.85 |

Growth 6.41% AUS Input

Cost of Equity Dividend Growth Model

Cost of Equity Capital Asset Pricing Model (CAPM)

Dividend 1.74%
Growth 6.91%
Cost of Equity 8.65%

Risk Free Rate 4.94% Input
Risk Premium
Beta 0.68
Risk Premia 6.95% Input SBI
Size Premia
Micro 5.80% Input SBI
Small 3.10% Input SBI
Mid 1.70% Input SBI
Large 0.00% Input SBI
Size Premia
Cost of Equity 4.67%

Long term Government Bonds Income Return SBI (Mean)

Input
Input
\$ Millions \$ Millions
289.7 1,341.7
1,441.7 3,636.9
3,636.9

Cost of Equity Dividend Growth Model 4.65%
Capital Asset Pricing Model (CAPM) 4.67%
Mean 4.66%
Issuance Cost PUF 2008-2019 4.65%
Final Cost of Equity 4.65%

Pennsylvania PUC 9.90%
Bureau of Technical Utility Services Report on the Quarterly Earnings of Jurisdictional Utilities

Cost of Equity 9.90% AUS Input Jurisdictional Exception
Growth 6.87% Input
Inflation 1.82% SBI Last 5 years

Equity issuance cost (f) of 3.60% was determined based on analysis annual Public Utility Financing Tracker reports over the period 2008 through 2019 published by PUFT, Inc. The final market cost of equity of 9.95% was determined for the water industry using the following formula which incorporates the above described issuance costs:

$$K_e = K_e / (100\% - f)$$

where:

K_e = Cost of equity recognizing issuance costs

K_e is the market cost of equity without consideration of issuance costs (9.50%)

f is the cost of issuance as a percentage of the equity par value (3.60%)

$$K_e = 9.16\% / (100\% - 3.60\%)$$

$$K_e = 9.50\%$$

An equity cost of 9.90% was used in the determination of the cost of capital based on the determination of Pennsylvania PUC's Bureau of Technical Utility Services (TUS) Report on Quarterly Earnings of Jurisdictional Utilities for year-ending December 31, 2019.

Tax Rate

The tax rate was determined based on the Value Line Investment Survey as follows:

1
Value Line Investment Surveys
Water Industry
As of First Quarter 2020 (1-1-2020)

| 2 | 3 | 4 | 5 | Tax Rate | | | | |
|--------------------------------------|--|------------------|--|------------------|------------------|------------------|------------------|------------------|
| Company | Exchange | Ticker | Valueline No. | Valueline Issue | 2018 | 2019 | 2020 | 22-24 |
| Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line |
| American States Water | NYSE | AWR | 1787 | 1/10/2020 | 22.0% | 23.0% | 23.0% | 23.0% |
| American Water | NYSE | AWK | 1788 | 1/10/2020 | 28.2% | 21.0% | 21.0% | 21.0% |
| Aqua American | NYSE | WTR | 1789 | 1/10/2020 | 6.6% | | 5.0% | 7.0% |
| California Water | NYSE | CWT | 1790 | 1/10/2020 | 24.5% | 21.0% | 21.0% | 21.0% |
| Consolidated Water Company | NDQ | CWCO | 1791 | 1/10/2020 | | | | |
| Middlesex Water | NDQ | MSEX | 1792 | 1/10/2020 | 2.8% | 21.0% | 21.0% | 21.0% |
| SJW Corporation | NYSE | SJW | 1793 | 1/10/2020 | 20.6% | 21.0% | 21.0% | 21.0% |
| York Water | NDQ | YORW | 1794 | 1/10/2020 | 15.7% | 21.0% | 21.0% | 21.0% |
| Minimum | | | | | 2.80% | 21.00% | 5.00% | 7.00% |
| wtd Mean | | | | | | | | |
| Mean | | | | | 17.20% | 21.33% | 19.00% | 19.29% |
| Median | | | | | 20.60% | 21.00% | 21.00% | 21.00% |
| Maximum | | | | | 28.20% | 23.00% | 23.00% | 23.00% |
| Embedded Tax Rate | Historical | | Current | | | | | |
| | 17.20% | Mean 2017 | 21.33% | Mean 2018 | | | | |
| Federal Tax Rate (Marginal) | 35.00% AUS Input | | 21.00% AUS Input | | | | | |
| US 50-state average | 4.91% AUS Input | | 4.91% AUS Input | | | | | |
| Pennsylvania | 9.99% AUS Input | | 9.99% AUS Input | | | | | |
| Composite Federal and State Tax Rate | 41.49% Calculated | | 28.89% Calculated | | | | | |
| | =Federal Tax * (1 - State Tax)+State Tax | | =Federal Tax * (1 - State Tax)+State Tax | | | | | |

Capital Structure

The capital structure was determined based on the water industry market indicators published by Value Line Investment Survey published January 10, 2020 as detailed as follows:

| Value Line Investment Survey Water Industry As of First Quarter 2020 (1-1-2020) | | | | | | | | | | | | | | | | | | | | | | |
|---|----------|--------|------------------|---------------------|-----------------|-----------------|-------------------|-----------------------|--|-------------------|-----------------|-----------------|--------------------|-----------------------|-----------------------|--------------------|---------------|---------------|----------------|-------------------------|-----------------|--|
| Company | Exchange | Ticker | Value Line SN | Value Line Issue | Total Debt | Market Cap | Long Term Debt | Long Term Interest | Long Term Interest Rate Embedded | Preferred Debt | Stock Market | Stock Equity | Preferred Stock | Preferred Dividend | Shares Outstanding | Price per Share | Market Cap | Market Cap | Capitalization | Total Market Capital | | |
| | | | | | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | |
| American States Water | NYS | AWA | 1787 | 01/01/2020 | 475.1 | 11,815.4 | 422.0 | 38.0 | 3.55% | 45.0% | 44.0% | 56.0% | | 2.54% | 56,899,000 | 87.33 | 4,957.7 | 47,315.0 | Market Cap | 15,697.0 | | |
| American Water | NYS | AWA | 1788 | 01/01/2020 | 1,143.0 | 38,115.4 | 4,540.0 | 170.0 | 4.26% | 58.0% | 48.0% | 42.0% | 77 | 3.97% | 180,770,000 | 123.07 | 12,244.5 | 79,451.0 | Large Cap | 15,438.0 | | |
| Aqua America | NYS | ATA | 1789 | 01/01/2020 | 1,366.8 | 37,476.7 | 1,498.0 | 122.0 | 4.27% | 41.0% | 42.5% | 43.5% | 166% | 3.54% | 21,440,000 | 87.68 | 19,313.8 | 57,801.0 | Large Cap | 4,338.0 | | |
| California Water | NYS | CAT | 1790 | 01/01/2020 | 307.9 | 19,016.6 | 407.0 | 18.0 | 3.75% | 11.0% | 11.0% | 49.0% | | 1.0% | 46,140,000 | 21.22 | 2,486.4 | 1,916.0 | Mid-Cap | 1,448.0 | | |
| Consolidated Water Services | NYS | CWD | 1791 | 01/01/2020 | | 1,000.0 | | | | 70.0% | 0.0% | 100.0% | | 1.00% | 11,027,000 | 18.46 | 24.4 | 100.0% | Small Cap | 247.4 | | |
| Veolia Water | NYS | MSV | 1792 | 01/01/2020 | 294.0 | 10,426.6 | 228.0 | 15.4 | 3.78% | 45.0% | 45.0% | 54.5% | 7.4 | 3.18% | 16,697,000 | 33.31 | 1,058.5 | 4,324.0 | Large Cap | 1,357.0 | | |
| USF Corporation | NYS | USF | 1793 | 01/01/2020 | 511.1 | 17,016.6 | 511.0 | 26.0 | 3.91% | 45.0% | 36.0% | 43.5% | 1.00% | 3.84% | 28,424,000 | 71.79 | 2,041.9 | 79,966.0 | Large Cap | 1,544.0 | | |
| West Water | NYS | WWR | 1794 | 01/01/2020 | 100.7 | 44,416.6 | 88.0 | 8.0 | 4.44% | 44.0% | 40.0% | 40.0% | | 3.78% | 10,360,000 | 48.18 | 492.7 | 45,976.0 | Large Cap | 1,724.0 | | |
| Total | | | | | 14,128.4 | 25,745.4 | 13,544.4 | 19.0 | 4.47% | | | | 8.4 | | | | | | | | 16,941.0 | |
| Minimum | | | | | | 15.0% | | | 2.5% | 10.0% | 10.0% | 42.0% | | | | | | | | | 10.0% | |
| and Maximum | | | | | | 21.4% | | | 4.47% | 44.0% | 40.0% | 40.0% | | | | | | | | | 14.0% | |
| Mean | | | | | | 18.3% | | | 4.1% | 10.5% | 10.5% | 38.5% | | | | | | | | | 11.0% | |
| Median | | | | | | 15.5% | | | 4.2% | 14.0% | 11.0% | 35.5% | | | | | | | | | 9.5% | |
| Maximum | | | | | | 35.1% | | | 5.5% | 30.0% | 28.0% | 40.0% | | | | | | | | | 14.0% | |

In arriving at the capital structure, the market capital structure was used in developing the market cost of capital while an embedded capital structure was used in developing the required return on rate base as follows:

| Capital Structure | Water Industry Capital Structure | | | |
|-------------------|----------------------------------|---------------|---------------|--------------------------|
| | Market | | Embedded | |
| | Proportion | Reference | Proportion | Reference |
| Debt | wtd mean | | | |
| | 25.74% | col 7 | 40.63% | mean col 11 |
| Preferred | wtd mean | | | |
| | 0.02% | col 15 | 0.03% | mean col 15 |
| Equity | wtd mean | | | |
| | 74.25% | col 19 | 58.56% | mean col 13 |
| Total | 100.01% | | 99.21% | |
| Use | | | | |
| Debt | | 26% AUS Input | 45% AUS Input | Jurisdictional Exception |
| Equity | | 74% AUS Input | 55% AUS Input | Jurisdictional Exception |
| Total | 100% | | 100% | |

Market Cost of Capital and Required Return on Rate Base

Using the above described cost of debt and equity, the rate of returned required for an investment in property similar to the Company's was determined to be 7.93% as follows:

Water and Wastewater Cost of Capital First Quarter 2020 (1-1-2020)

As an Investor-Owned Utility

Weighted Cost of Capital (Discount Rate)

| (1) | (2) | (2a) | (3) | (3a) | (4) | (4a) | (5) |
|--|--------------------|--------------|--------------|--------------|----------|-------------------------------|-------------------------------|
| | Portion of Capital | Type of Data | Capital Cost | Type of Data | Tax Rate | Tax affect on cost of capital | After-tax Market Capital Cost |
| | AUS Input | | AUS Input | | | | (2)*(3)*(4a) |
| Debt | 26% | Market | 3.23% | Market | 28.89% | | 3.163% |
| Equity | 74% | Market | 9.90% | Market | 0.0% | | 7.332% |
| Total Capital r | 100.0% | | | | | | 7.93% |
| Growth (g) | | | | | | | 1.82% |
| Rate without Growth: $\{(1+r)/(1+g)\}-1$ | | | | | | | 6.00% |

While the require return on rate base was determined to be 6.90 follows:

Water and Wastewater Cost of Capital First Quarter 2020 (1-1-2020)

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 | Type of Data | Capital Cost | Type of Data | Tax Rate | Tax affect on cost of capital | Required Return on Rate Base |
| | AUS Input | | AUS Input | | | | (2)*(3) |
| Debt | 45% | Embedded | 3.23% | Embedded | Not Applicable | Not Applicable | 1.454% |
| Equity | 55% | Embedded | 9.90% | Market | Not Applicable | Not Applicable | 5.445% |
| Total Capital r | 100.0% | | | | | | 6.90% |
| Growth (g) | | | | | | Not Applicable | 0.00% |
| Rate without Growth: $\{(1+r)/(1+g)\}-1$ | | | | | | | 6.90% |

The statistics supporting these findings can be found in the Cost of Capital section of this report.

**Water and Wastewater Cost of Capital
First Quarter 2020 (1-1-2020)**

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 | 26% | Market | 3.23% | Market | 28.89% | 20.00% | 0.60% |
| Equity | 74% | Market | 9.90% | Market | 0.0% | 9.90% | 7.33% |
| Total Capital r | 100.0% | | | | | | 7.93% |
| Growth (g) | | | | | | | 1.82% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | 6.00% |

**Water and Wastewater Cost of Capital
First Quarter 2020 (1-1-2020)**

As an Investor-Owned Utility

Weighted Cost of Capital (Capitization 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 | 26% | Market | 3.23% | Market | Not Applicable | Not Applicable | 0.84% |
| Equity | 74% | Market | 9.90% | Market | Not Applicable | Not Applicable | 7.33% |
| Total Capital r | 100.0% | | | | | | 8.17% |
| Growth (g) | | | | | | | 1.82% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | 6.23% |

**Water and Wastewater Cost of Capital
First Quarter 2020 (1-1-2020)**

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 | 45% | Embedded | 3.23% | Embedded | Not Applicable | Not Applicable | 1.45% |
| Equity | 55% | Embedded | 9.90% | Market | Not Applicable | Not Applicable | 5.45% |
| Total Capital r | 100.0% | | | | | | 6.90% |
| Growth (g) | | | | | | Not Applicable | 0.00% |
| Rate without Growth: $[(1+r)/(1+g)]-1$ | | | | | | | 6.90% |

| | 1 | 2 | 3 | 4 | 5 |
|--|-----------------------|-------------------|--------------------------|---|---|
| Value Line Investment Surveys | | | | | |
| Water Industry | | | | | |
| As of First Quarter 2020 (1-1-2020) | | | | | |
| | S&P Debt Rating | Long Term Debt | Long Term Interest | Long Term Interest Rate (embedde d) | |
| | | Input Value Line | Input Value Line | (4) / (3) | |
| American States Water | | 475.0 | 24.0 | 5.05% | |
| American Water | Baa1 | 8,640.0 | 370.0 | 4.28% | |
| Aqua American | Baa2 | 2,898.3 | 122.0 | 4.21% | |
| California Water | | 807.5 | 53.0 | 6.56% | |
| Consolidated Water Company | | - | - | | |
| Middlesex Water | | 228.3 | 6.8 | 2.98% | |
| SJW Corporation | | 511.1 | 20.0 | 3.91% | |
| York Water | | 94.2 | 5.5 | 5.84% | |
| | | 13,654.4 | 601.3 | 4.40% | |
| Minimum | | | | 2.98% | |
| wtd Mean | | | | 4.40% | |
| Mean | | | | 4.69% | |
| Median | | | | 4.28% | |
| Maximum | | | | 6.56% | |

Debt Rating and Cost of Debt

| | | |
|-----------------------------------|-------|----------------|
| Embedded | 4.40% | wtd mean col 5 |
| Rating (S&P) | A | Input |
| Market Cost of Debt @Bond Rating | 3.20% | Input |
| Mergent Bond Record | | |
| Use | 3.20% | AUS Input |
| Issuance Cost PUFT Data 2018-2019 | 0.90% | Input |
| Final Cost of Debt | 3.23% | |

| Value Line Investment Surveys Water Industry As of First Quarter 2020 (1-1-2020) | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|-------------------|-------------|-------------|------------|-------------------|--|
| Company | Exchange | Ticker | ValueLine No. | ValueLine Issue | Beta | Divided | Revenues | | | | Cash Flows | | | | Earnings | | | | Dividends | | | | Book Value | | | |
| | | | | | | | Past 30 yrs | Past 5 yrs | Est'd 16 18 to 22 | Past 10 yrs | Past 30 yrs | Past 5 yrs | Est'd 16 18 to 22 | Past 10 yrs | Past 30 yrs | Past 5 yrs | Est'd 16 18 to 22 | Past 10 yrs | Past 30 yrs | Past 5 yrs | Est'd 16 18 to 22 | Past 10 yrs | Past 30 yrs | Past 5 yrs | Est'd 16 18 to 22 | |
| Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | | | | | | |
| American States Water | NYSE | AWR | 1787 | 1/10/2020 | 0.65 | 1.4% | 3.5% | 4.5% | 6.0% | 3.0% | 6.0% | 9.0% | 4.5% | 8.0% | 7.5% | 9.0% | 9.5% | 5.0% | 4.0% | 5.0% | | | | | | |
| American Water | NYSE | AWK | 1788 | 1/10/2020 | 0.55 | 1.7% | 3.0% | 4.0% | 18.5% | 6.0% | 7.0% | 6.5% | 9.5% | 10.5% | 9.0% | 1.5% | 4.0% | 5.0% | | | | | | | | |
| Aqua American | NYSE | WTR | 1789 | 1/10/2020 | 0.65 | 2.1% | 3.0% | 1.5% | 3.5% | 6.5% | 5.0% | 6.5% | 8.0% | 5.5% | 8.0% | 7.5% | 8.0% | 8.0% | 6.5% | 6.5% | 9.0% | | | | | |
| California Water | NYSE | CWT | 1790 | 1/10/2020 | 0.7 | 1.7% | 4.5% | 2.0% | 1.5% | 6.0% | 5.0% | 3.5% | 5.0% | 5.5% | 8.0% | 2.0% | 3.0% | 6.5% | 4.5% | 4.5% | 2.0% | | | | | |
| Consolidated Water Company | NDQ | CWCO | 1791 | 1/10/2020 | 0.85 | 2.7% | 5.0% | 0.5% | 14.5% | 2.0% | 11.0% | 3.0% | 4.5% | 20.5% | 5.0% | 15.5% | 5.0% | 2.0% | 3.5% | | | | | | | |
| Middlesex Water | NDQ | MSEX | 1792 | 1/10/2020 | 0.75 | 1.0% | 2.5% | 3.5% | 2.0% | 5.5% | 9.0% | 6.5% | 6.0% | 11.0% | 7.5% | 2.0% | 3.0% | 5.0% | 3.5% | 4.5% | 3.0% | | | | | |
| SIW Corporation | NYSE | SIW | 1793 | 1/10/2020 | 0.6 | 1.7% | 5.0% | 5.5% | 4.0% | 7.0% | 11.0% | 3.0% | 8.0% | 18.5% | 7.0% | 4.5% | 5.0% | 7.0% | 5.5% | 8.0% | 7.5% | | | | | |
| York Water | NDQ | YORW | 1794 | 1/10/2020 | 0.7 | 1.6% | 3.0% | 3.0% | 5.5% | 6.0% | 6.0% | 9.0% | 5.5% | 6.5% | 9.5% | 3.5% | 4.0% | 6.5% | 4.5% | 4.0% | 4.5% | | | | | |
| Minimum | | | | | 0.55 | 1.40% | 2.50% | 0.50% | 1.50% | 2.00% | 0.50% | 3.00% | -3.00% | -4.50% | 7.00% | 2.00% | 3.00% | 5.00% | 1.50% | 2.00% | 2.00% | | | | | |
| 1st Mean | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mean | | | | | 0.68 | 1.74% | 3.89% | 2.79% | 4.94% | 7.19% | 5.69% | 6.56% | 5.50% | 6.69% | 9.75% | 4.57% | 6.07% | 8.38% | 4.50% | 4.69% | 4.94% | | | | | |
| Median | | | | | 0.68 | 1.69% | 3.25% | 3.00% | 4.00% | 6.00% | 5.50% | 6.00% | 6.00% | 8.00% | 4.50% | 5.00% | 7.50% | 4.75% | 4.25% | 4.75% | | | | | | |
| Maximum | | | | | 0.85 | 2.10% | 5.00% | 5.50% | 14.50% | 18.50% | 11.00% | 11.00% | 9.00% | 18.50% | 20.50% | 7.50% | 10.50% | 15.50% | 6.50% | 8.00% | 9.00% | | | | | |

Value Line Investment Surveys
Water Industry
As of First Quarter 2020 (1-1-2020)

Cost of Equity Dividend Growth Model

Cost of Equity Capital Asset Pricing Model (CAPM)

Dividend 1.74% mean Col 7

| Growth | 1st'd 16 18 to 22 | | | Beta |
|------------|-------------------|------------|-------|----------------|
| | Past 30 yrs | Past 5 yrs | 24 | |
| Revenues | 3.69% | 2.73% | 4.94% | |
| Cash Flow | 6.00% | 5.69% | 6.56% | |
| Earnings | 5.30% | 6.69% | 5.75% | |
| Dividends | 4.50% | 6.07% | 8.38% | |
| Book Value | 4.75% | 4.69% | 4.94% | Input |
| Mean | 4.89% | 5.18% | 6.91% | 0.68 0.55-0.85 |

Growth 6.91% AIJS Input

Cost of Equity Dividend Growth Model

Cost of Equity Capital Asset Pricing Model (CAPM)

Long term

Government Bonds

Income Return S&P

(Mean)

| | | | | |
|----------------|-------|----------------|-------|-------|
| Dividend | 1.74% | Risk Free Rate | 4.94% | Input |
| Growth | 6.91% | Risk Premium | 0.68 | |
| Cost of Equity | 8.65% | Beta | 0.68 | |
| | | Risk Premia | 6.95% | Input |
| | | Size Premia | 0.00% | Input |
| | | Micro | 5.80% | Input |
| | | Small | 3.10% | Input |
| | | Mid | 1.70% | Input |
| | | Large | 0.00% | Input |
| | | Size Premia | 0.00% | Input |
| | | Cost of Equity | 9.67% | |

Cost of Equity
Dividend Growth Model 8.65%
Capital Asset Pricing Model (CAPM) 9.67%
S&P 9.18%
Insurance Cost PLTT 2008 2019 3.60%
Fuel Cost of Equity 9.50%

Pennsylvania PUC 9.90%
Bureau of Technical Utility Services
Report on the Quarterly Earnings
of Jurisdictional Utilities

Cost of Equity 9.90% AIJS Input Jurisdictional Exception
Growth 6.87% Input
Inflation 1.82% S&P Last 5 years

1
Value Line Investment Surveys
Water Industry
As of First Quarter 2020 (1-1-2020)

| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
|----------------------------|------------------|------------------|------------------|-------------------------|--------------------------|--|--------------------------|--|--------|
| Company | Exchange | Ticker | Valueline No. | Valueline Issue | Total Return | | | | |
| Input Value Line | Input Value Line | Input Value Line | Input Value Line | 1 year Input Value Line | 3 Years Input Value Line | 3 years annualized Calculation | 5 Years Input Value Line | 5 years annualized Calculation | |
| | | | | | | $=((1+3 \text{ year Total Return})^{(1/3)})-1$ | | $=((1+5 \text{ year Total Return})^{(1/5)})-1$ | |
| American States Water | NYSE | AWR | 1787 | 1/10/2020 | 29.1% | 112.3% | 28.5% | 169.7% | 21.9% |
| American Water | NYSE | AWK | 1788 | 1/10/2020 | 29.1% | 77.2% | 21.0% | 153.0% | 20.4% |
| Aqua American | NYSE | WTR | 1789 | 1/10/2020 | 32.0% | 59.9% | 16.9% | 87.8% | 13.4% |
| California Water | NYSE | CWT | 1790 | 1/10/2020 | 14.1% | 56.9% | 16.2% | 128.0% | 17.9% |
| Consolidated Water Company | NDQ | CWCO | 1791 | 1/10/2020 | 38.0% | 64.3% | 18.0% | 54.4% | 9.1% |
| Middlesex Water | NDQ | MSEX | 1792 | 1/10/2020 | 23.2% | 63.8% | 17.9% | 220.5% | 26.2% |
| SJW Corporation | NYSE | SJW | 1793 | 1/10/2020 | 28.8% | 39.3% | 11.7% | 161.6% | 21.2% |
| York Water | NDQ | YORW | 1794 | 1/10/2020 | 36.4% | 29.1% | 8.9% | 143.9% | 19.5% |
| Total | | | | | 28.8% | | 17.4% | | 18.7% |
| Minimum | | | | | 14.10% | | 8.89% | | 9.08% |
| wtd Mean | | | | | | | | | |
| Mean | | | | | 28.84% | | 17.39% | | 18.72% |
| Median | | | | | 29.10% | | 17.41% | | 19.96% |
| Maximum | | | | | 38.00% | | 28.52% | | 26.23% |

| Value Line Investment Surveys Water Industry As of First Quarter 2020 (1-1-2020) | | | | | | | | |
|--|---|------------------|--|------------------|--------------------------|--------------------------|--------------------------|---------------------------|
| 1 | 2 | 3 | 4 | 5 | | | | |
| Company | Exchange | Ticker | Valueline No. | Valueline Issue | Tax Rate | | | |
| Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | 2018 Input Value Line | 2019 Input Value Line | 2020 Input Value Line | 22-24 Input Value Line |
| American States Water | NYSE | AWR | 1787 | 1/10/2020 | 22.0% | 23.0% | 23.0% | 23.0% |
| American Water | NYSE | AWK | 1788 | 1/10/2020 | 28.2% | 21.0% | 21.0% | 21.0% |
| Aqua American | NYSE | WTR | 1789 | 1/10/2020 | 6.6% | | 5.0% | 7.0% |
| California Water | NYSE | CWT | 1790 | 1/10/2020 | 24.5% | 21.0% | 21.0% | 21.0% |
| Consolidated Water Company | NDQ | CWCO | 1791 | 1/10/2020 | | | | |
| Middlesex Water | NDQ | MSEX | 1792 | 1/10/2020 | 2.8% | 21.0% | 21.0% | 21.0% |
| SIW Corporation | NYSE | SIW | 1793 | 1/10/2020 | 20.6% | 21.0% | 21.0% | 21.0% |
| York Water | NDQ | YORW | 1794 | 1/10/2020 | 15.7% | 21.0% | 21.0% | 21.0% |
| Minimum | | | | | 2.80% | 21.00% | 5.00% | 7.00% |
| wtd Mean | | | | | | | | |
| Mean | | | | | 17.20% | 21.33% | 19.00% | 19.29% |
| Median | | | | | 20.60% | 21.00% | 21.00% | 21.00% |
| Maximum | | | | | 28.20% | 23.00% | 23.00% | 23.00% |
| Embedded Tax Rate | Historical | | Current | | | | | |
| | 17.20% Mean 2017 | | 21.33% Mean 2018 | | | | | |
| Federal Tax Rate (Marginal) | 35.00% AUS Input | | 21.00% AUS Input | | | | | |
| US 50-state average | 4.91% AUS Input | | 4.91% AUS Input | | | | | |
| Pennsylvania | 9.99% AUS Input | | 9.99% AUS Input | | | | | |
| Composite Federal and State Tax Rate | 41.49% Calculated =Federal Tax * (1- State Tax)+State Tax | | 28.89% Calculated =Federal Tax * (1- State Tax)+State Tax | | | | | |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | |
|--|------------------|------------------|------------------|------------------|--------------------------|---------------|------------------|--------------------|------------------------------------|--------------------|------------------|------------------|------------------|-------------|--------------------|------------------|------------------|-----------------------|------------------|----------------------|--|
| Value Line Investment Surveys Water Industry As of First Quarter 2020 (1-1-2020) | | | | | | | | | | | | | | | | | | | | | |
| Company | Exchange | Ticker | Valueline No. | Valueline Issue | Total Debt | Market Debt | Long Term Debt | Long Term Interest | Long Term Interest Rate (embedded) | Proportion of Debt | Book Debt | Book Equity | Preferred Stock | % Preferred | Shares Outstanding | Price per Share | Market Equity | Portion Market Equity | Capitalization | Total Market Capital | |
| Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | Input Value Line | (6) / (7) | Input Value Line | Input Value Line | (9) / (8) | Input Value Line | Input Value Line | Input Value Line | Input Value Line | (14) / (13) | Input Value Line | Input Value Line | Input Value Line | (18) / (17) | Input Value Line | (6)-(14)+(18) | |
| | | | | | \$ Million | % | \$ Million | \$ Million | % | % | % | % | \$ Million | % | Shares Million | \$ per Share | \$ Million | % | | \$ Million | |
| American States Water | NYSE | AWR | 1787 | 1/10/2020 | 475.3 | 12.87% | 475.0 | 24.0 | 5.05% | 45.0% | 44.0% | 56.0% | - | 0.00% | 36.83930100 | 87.33 | 3,217.2 | 87.13% | Mid Cap | 3,692.5 | |
| American Water | NYSE | AWK | 1788 | 1/10/2020 | 9,143.0 | 29.12% | 8,640.0 | 370.0 | 4.28% | 59.0% | 58.0% | 42.0% | 7.0 | 0.02% | 180.77616900 | 123.05 | 22,244.5 | 70.85% | Large Cap | 31,394.5 | |
| Aqua American | NYSE | WTR | 1789 | 1/10/2020 | 3,086.4 | 23.30% | 2,898.3 | 122.0 | 4.21% | 43.0% | 42.5% | 43.5% | - | 0.00% | 215.84077400 | 47.08 | 10,161.8 | 76.70% | Large Cap | 13,248.2 | |
| California Water | NYSE | CWT | 1790 | 1/10/2020 | 967.9 | 28.07% | 807.5 | 53.0 | 6.56% | 53.0% | 51.0% | 49.0% | - | 0.00% | 48.14500000 | 51.52 | 2,480.4 | 71.93% | Mid Cap | 3,448.3 | |
| Consolidated Water Company | NDQ | CWCO | 1791 | 1/10/2020 | - | 0.00% | - | - | - | 0.0% | 0.0% | 100.0% | - | 0.00% | 15.02757400 | 16.46 | 247.4 | 100.00% | Small Cap | 247.4 | |
| Middlesex Water | NDQ | MSEX | 1792 | 1/10/2020 | 294.0 | 21.68% | 228.3 | 6.8 | 2.98% | 45.0% | 45.0% | 54.5% | 2.4 | 0.18% | 16.66954000 | 63.56 | 1,059.5 | 78.14% | Small Cap | 1,355.9 | |
| SIW Corporation | NYSE | SIW | 1793 | 1/10/2020 | 511.1 | 20.01% | 511.1 | 20.0 | 3.91% | 37.0% | 36.5% | 63.5% | - | 0.00% | 28.45649000 | 71.79 | 2,042.9 | 79.99% | Mid Cap | 2,554.0 | |
| York Water | NDQ | YORW | 1794 | 1/10/2020 | 100.7 | 14.33% | 94.2 | 5.5 | 5.84% | 43.0% | 40.0% | 60.0% | - | 0.00% | 12.98482600 | 46.38 | 602.2 | 85.67% | Small Cap | 702.9 | |
| Total | | | | | 14,578.4 | 25.74% | 13,654.4 | 601.3 | 4.40% | | | | | 9.4 | 0.02% | | 42,055.9 | 74.25% | | 56,643.7 | |
| Minimum | | | | | | 0.00% | | | 2.98% | 0.00% | 0.00% | 42.00% | | 0.00% | | | | 70.85% | | | |
| wtd Mean | | | | | | 25.74% | | | 4.40% | | | | | 0.02% | | | | 74.25% | | | |
| Mean | | | | | | 18.67% | | | 4.69% | 40.63% | 39.63% | 58.56% | | 0.03% | | | | 81.30% | | | |
| Median | | | | | | 20.85% | | | 4.28% | 44.00% | 43.25% | 55.25% | | 0.00% | | | | 79.07% | | | |
| Maximum | | | | | | 29.12% | | | 6.56% | 59.00% | 58.00% | 100.00% | | 0.18% | | | | 100.00% | | | |
| Water Industry Capital Structure | | | | | | | | | | | | | | | | | | | | | |
| Capital Structure | Market | | | | Embedded | | | | | | | | | | | | | | | | |
| | Proportion | Reference | Proportion | Reference | | | | | | | | | | | | | | | | | |
| Debt | 25.74% | wtd mean col 7 | 40.63% | mean col 11 | | | | | | | | | | | | | | | | | |
| Preferred | 0.02% | col 15 | 0.03% | mean col 15 | | | | | | | | | | | | | | | | | |
| Equity | 74.25% | wtd mean col 19 | 58.56% | mean col 13 | | | | | | | | | | | | | | | | | |
| Total | 100.01% | | 99.21% | | | | | | | | | | | | | | | | | | |
| Use | | | | | | | | | | | | | | | | | | | | | |
| Debt | 26% | AUS Input | 45% | AUS Input | Jurisdictional Exception | | | | | | | | | | | | | | | | |
| Equity | 74% | AUS Input | 55% | AUS Input | Jurisdictional Exception | | | | | | | | | | | | | | | | |
| Total | 100% | | 100% | | | | | | | | | | | | | | | | | | |

PENNSYLVANIA PUBLIC UTILITY COMMISSION

Public Meeting held June 18, 2020

Docket Number: M-2020-3019868

BUREAU OF TECHNICAL UTILITY SERVICES
REPORT ON THE QUARTERLY EARNINGS
OF JURISDICTIONAL UTILITIES
FOR THE YEAR ENDED
December 31, 2019

Gladys Brown Dutrieuille, Chairman
David W. Sweet, Vice Chairman
John F. Coleman, Jr., Commissioner
Ralph V. Yanora, Commissioner

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| | |
|--|-----------|
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| Attachment H – Development of a Representative Dividend Growth Rate..... | 30 |
| Multiple sources of the water barometer companies projected 5-year Earnings Per Share are used to calculate the Group Average Dividend Growth Estimate. | |

Introduction:

On September 20, 1991, the Commission initiated a rulemaking at L-00910061 pertaining to earnings disclosures by the public utilities subject to its jurisdiction. At that docket, the Commission stated that the submission of accurate, reliable and complete earnings disclosure reports, at regular intervals, is essential to the fulfillment of the broad regulatory oversight responsibilities entrusted to the Commission by the Legislature in the Public Utility Code. The earnings disclosure regulations promulgated by the Commission were adopted October 1, 1992, and published January 23, 1993, at 23 Pa.B. 463. Based upon those regulations, codified at 52 Pa. Code, Chapter 71, a reporting format was developed and distributed to the jurisdictional fixed utilities of Pennsylvania.

All fixed utilities having jurisdictional revenues of \$1,000,000 or more, for a calendar year, are required to file the report by March 31 of each year. Such reports are to be based upon the results of operations for the 12-month period ending December 31 of the prior year. Utilities having more than \$10,000,000 in jurisdictional revenues are also required to file reports for the 12 months ending on March 31, June 30, and September 30 of each year. On November 30, 2004, however, the Pennsylvania General Assembly signed into law Act 183 concerning alternative telecommunications regulation and broadband deployment. As a result of Act 183, the reporting requirements for the PUC jurisdictional telecommunications companies of Pennsylvania have been streamlined at section 3015(e) of the Public Utility Code. A quarterly earnings report is not listed among those reports now required of PUC jurisdictional telecommunications utilities in Pennsylvania and, therefore, this report does not address telephone company earnings.

The reports have been filed for the period ended December 31, 2019.¹ The Finance Staff of the Bureau of Technical Utility Services has reviewed the reports and has prepared this summary report for public release. This report sets forth the achieved return on equity for each company, the last allowed return for that utility, a market return as determined through the analysis of the barometer group data and the most recent returns allowed, per industry, by the Pennsylvania Public Utility Commission and by other regulatory bodies. Where a utility has not filed a report, the reasons for not filing are indicated.

Questions pertaining to the preparation and contents of this Report should be directed to Ms. Erin Laudenslager, Manager - Finance, Bureau of Technical Utility Services, at (717) 705-4364.

¹ UGI Utilities, Inc. – South, UGI Utilities, Inc. – North, and UGI Utilities, Inc. – Central, have rate filings at Docket Nos. R-2018-3006814, R-2018-3006814, and R-2018-3006814 respectively, and filed a letter with the Secretary in place of a report in accordance with 52 Pa. Code § 71.4.

The equity return summaries that follow in Attachment A are, for each quarter;

ACTUAL

1. Based on actual results of operations

and

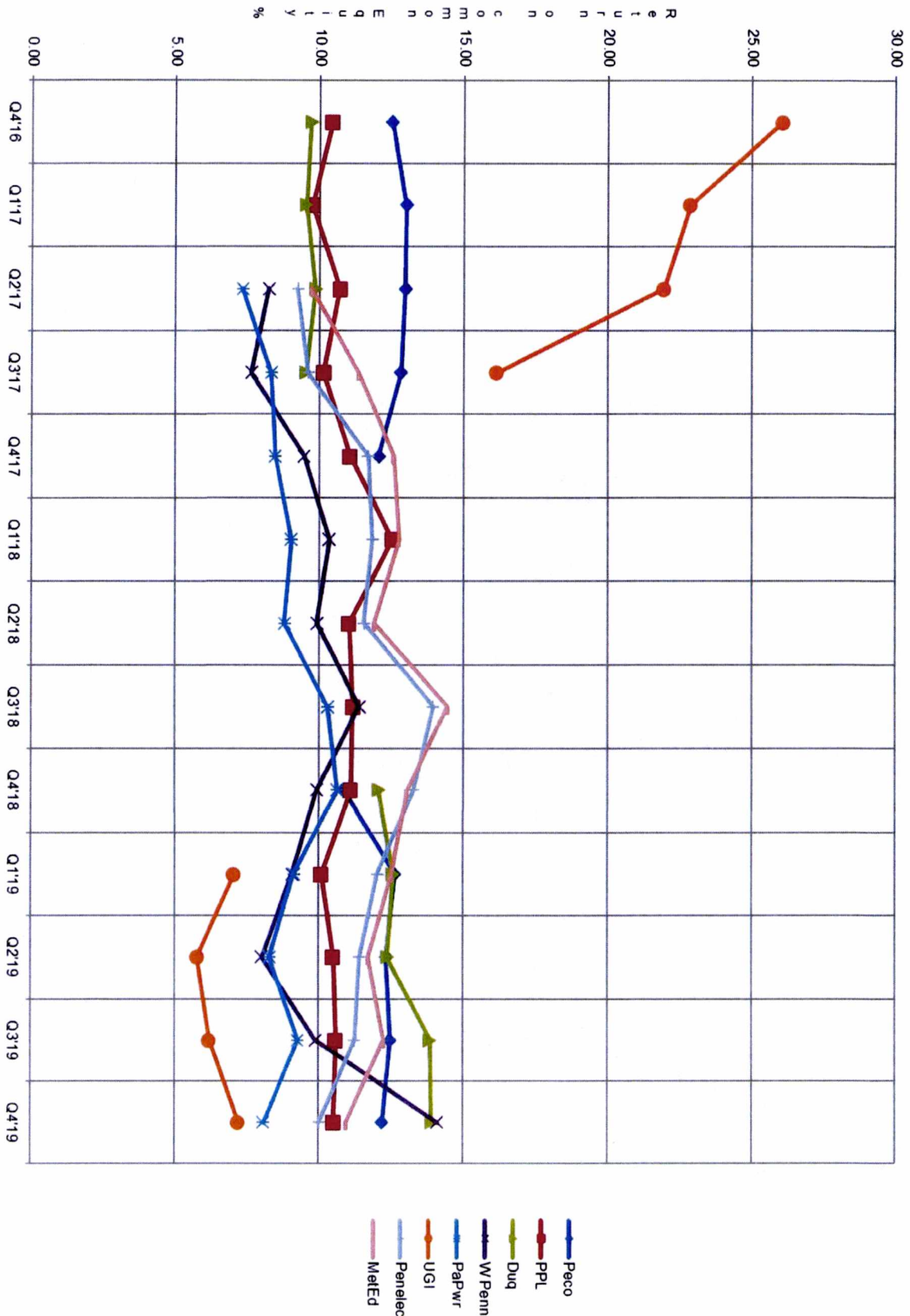
ADJUSTED

2. Based on company proposed pro forma and ratemaking adjustments

**ELECTRIC UTILITIES
EQUITY RETURNS BY QUARTER**

| QTR END | PECO | | PPL | | Duq | | W Penn | | PaPwr | | UGI | | Penelec | | MetEd | | |
|------------|------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-------|
| | ACT | ADJ | ACT | ADJ | ACT | ADJ | ACT | ADJ | ACT | ADJ | ACT | ADJ | ACT | ADJ | ACT | ADJ | |
| 2014 | 1 | 9.97 | 10.34 | 10.02 | 10.04 | | | 11.58 | 9.45 | 15.28 | 15.04 | 13.36 | 10.25 | 5.17 | 3.34 | -6.40 | -8.13 |
| | 2 | 10.05 | 10.08 | 9.50 | 10.09 | 9.77 | 9.29 | | | | | 12.64 | 9.21 | | | | |
| | 3 | 8.93 | 9.25 | 10.07 | 9.99 | 9.97 | 9.48 | | | | | 8.76 | 9.22 | | | | |
| | 4 | 8.23 | 9.58 | | | 9.77 | 9.40 | | | | | 9.01 | 10.00 | | | | |
| 2015 | 1 | | | | 10.08 | 9.65 | | | | | | 10.88 | 10.39 | | | | |
| | 2 | | | | 9.80 | 9.42 | | | | | | 13.57 | 9.49 | | | | |
| | 3 | | | | 10.11 | 9.73 | 6.45 | 6.45 | 5.77 | 5.77 | 15.93 | 7.57 | 2.94 | 2.94 | 3.69 | 3.69 | |
| | 4 | 10.74 | 8.84 | 8.89 | 8.48 | 9.73 | 9.36 | 8.09 | 8.09 | 5.13 | 5.13 | 9.74 | 9.21 | 5.45 | 5.45 | 7.04 | 7.04 |
| 2016 | 1 | 10.86 | 9.74 | 7.75 | 6.94 | 9.87 | 9.89 | | | | | 10.41 | 8.69 | | | | |
| | 2 | 11.46 | 10.15 | 9.15 | 8.51 | 9.57 | 9.47 | | | | | 8.29 | 8.10 | | | | |
| | 3 | 13.42 | 11.44 | 10.15 | 9.59 | 10.12 | 9.46 | | | | | 19.18 | 6.99 | | | | |
| | 4 | 12.52 | 10.65 | 10.45 | 10.29 | 9.71 | 9.01 | | | | | 26.07 | 7.30 | | | | |
| 2017 | 1 | 13.01 | 11.40 | 9.76 | 8.49 | 9.53 | 8.99 | | | | | 22.86 | 6.81 | | | | |
| | 2 | 12.98 | 11.40 | 10.71 | 9.70 | 9.86 | 9.24 | 8.23 | 7.38 | 7.32 | 7.97 | 21.96 | 6.74 | 9.23 | 9.20 | 9.74 | 9.35 |
| | 3 | 12.84 | 10.52 | 10.15 | 9.30 | 9.53 | 9.23 | 7.63 | 7.24 | 8.32 | 9.08 | 16.13 | 5.22 | 9.61 | 9.50 | 11.37 | 10.97 |
| | 4 | 12.07 | 9.11 | 11.07 | 10.63 | | | 9.47 | 9.12 | 8.46 | 8.19 | | | 11.70 | 10.93 | 12.58 | 11.67 |
| 2018 | 1 | | | 12.53 | 11.36 | | | 10.35 | 9.08 | 9.03 | 8.08 | | | 11.84 | 9.93 | 12.77 | 11.38 |
| | 2 | | | 11.05 | 9.49 | | | 9.92 | 8.52 | 8.79 | 7.57 | | | 11.56 | 9.39 | 11.90 | 10.26 |
| | 3 | | | 11.19 | 9.83 | | | 11.41 | 6.74 | 10.30 | 5.80 | | | 13.97 | 8.44 | 14.46 | 9.62 |
| | 4 | 10.88 | 7.61 | 11.10 | 10.15 | 12.06 | 9.39 | 9.92 | 6.78 | 10.64 | 7.43 | | | 13.27 | 9.31 | 13.05 | 7.40 |
| 2019 | 1 | 12.65 | 7.93 | 10.10 | 8.96 | 12.58 | 9.73 | 9.08 | 6.62 | 9.14 | 7.61 | 7.05 | 5.22 | 12.03 | 8.07 | 12.54 | 7.66 |
| | 2 | 12.34 | 7.94 | 10.51 | 8.95 | 12.38 | 9.34 | 8.02 | 5.99 | 8.29 | 7.10 | 5.77 | 3.22 | 11.42 | 8.16 | 11.72 | 7.21 |
| | 3 | 12.49 | 7.96 | 10.61 | 8.99 | 13.88 | 9.33 | 9.90 | 7.87 | 9.28 | 7.76 | 6.20 | 2.04 | 11.26 | 8.78 | 12.25 | 7.77 |
| | 4 | 12.21 | 8.50 | 10.53 | 10.40 | 13.92 | 9.08 | 14.13 | 7.07 | 8.08 | 6.90 | 7.20 | 2.38 | 10.02 | 8.54 | 10.96 | 9.27 |

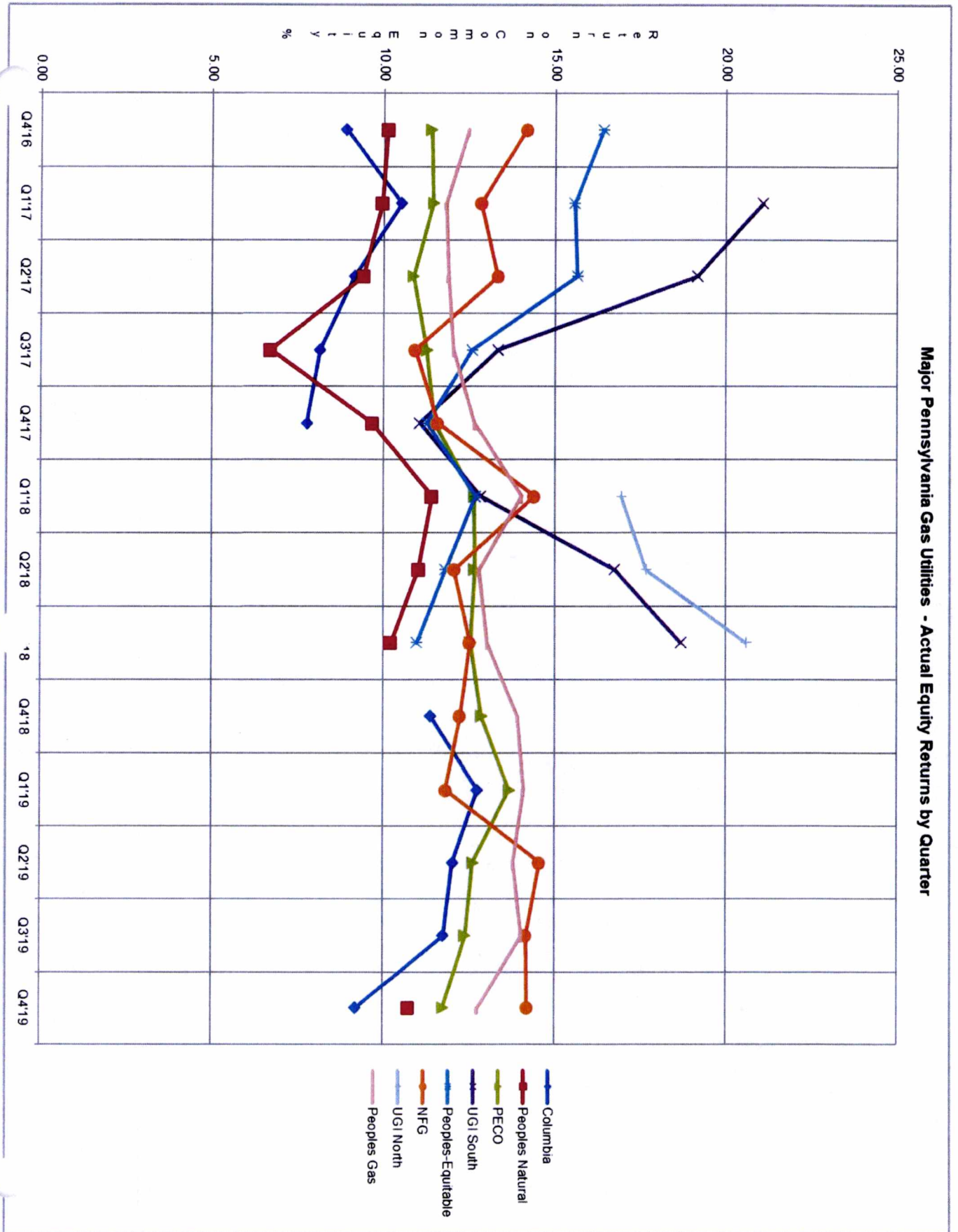
Major Pennsylvania Electric Utilities - Actual Equity Returns by Quarter



**GAS UTILITIES
EQUITY RETURNS BY QUARTER**

| YTR | Columbia | | Peoples Natural | | PECO | | UGI South | | Peoples- Equitable | | NFG | | UGI North | | Peoples Gas | |
|------|----------|-------|--------------------|-------|-------|-------|--------------|-------|-----------------------|-------|-------|-------|--------------|-------|----------------|-------|
| | ACT | ADJ | ACT | ADJ | ACT | ADJ | ACT | ADJ | ACT | ADJ | ACT | ADJ | ACT | ADJ | ACT | ADJ |
| 2014 | | | 14.68 | 9.94 | 15.23 | 13.52 | 16.81 | 8.35 | 12.00 | 8.73 | 23.11 | 9.78 | 16.67 | 10.06 | 12.19 | 11.87 |
| | | | 13.05 | 9.78 | 15.32 | 13.24 | 16.71 | 8.39 | 13.54 | 8.49 | 22.97 | 12.00 | 15.30 | 10.90 | 14.06 | 12.32 |
| | | | 13.43 | 9.16 | 15.45 | 13.21 | 16.63 | 8.64 | 14.41 | 9.15 | 21.36 | 11.03 | 13.77 | 10.15 | 15.07 | 12.62 |
| | 9.71 | 9.97 | 11.85 | 7.89 | 13.86 | 12.59 | 15.00 | 7.93 | 14.52 | 12.46 | 20.40 | 10.79 | 15.64 | 9.82 | 16.91 | 11.83 |
| 2015 | | | 14.22 | 7.90 | 14.60 | 13.01 | 15.76 | 7.87 | 15.36 | 12.14 | 20.17 | 10.31 | 15.57 | 9.52 | 16.36 | 11.23 |
| | | | 14.37 | 8.88 | 13.89 | 12.32 | 14.07 | 7.62 | 14.08 | 11.26 | 18.82 | 10.39 | 13.76 | 8.90 | 16.15 | 12.90 |
| | | | 13.55 | 8.14 | 13.29 | 11.77 | 15.67 | 6.51 | 11.30 | 10.87 | 16.41 | 10.27 | 13.16 | 8.32 | 15.69 | 12.58 |
| | 9.75 | 9.73 | 8.80 | 9.83 | 12.50 | 12.70 | | | 10.60 | 10.00 | 15.01 | 10.59 | 9.17 | 7.25 | 12.71 | 12.14 |
| 2016 | | | 7.01 | 10.02 | 10.73 | 13.58 | | | 8.98 | 10.20 | 12.60 | 10.97 | 7.85 | 8.85 | 8.54 | 10.48 |
| | | | 6.24 | 9.99 | 11.55 | 13.85 | | | 8.29 | 10.40 | 12.31 | 11.08 | 9.41 | 8.37 | 9.20 | 10.43 |
| | | | 6.93 | 9.34 | 12.09 | 14.40 | | | 13.05 | 10.82 | 13.00 | 10.34 | 6.47 | 8.81 | 9.07 | 12.02 |
| | 8.90 | 9.26 | 10.11 | 11.03 | 11.39 | 12.37 | | | 16.42 | 11.07 | 14.18 | 9.58 | | | 12.47 | 11.87 |
| 2017 | 10.52 | 10.17 | 9.96 | 9.27 | 11.45 | 12.55 | 21.08 | 10.09 | 15.85 | 10.58 | 12.84 | 9.26 | | | 11.82 | 12.34 |
| | 9.15 | 9.81 | 9.41 | 9.71 | 10.87 | 12.17 | 19.16 | 9.44 | 15.66 | 10.30 | 13.33 | 10.53 | | | 11.89 | 13.47 |
| | 8.15 | 8.77 | 6.69 | 6.40 | 11.26 | 10.92 | 13.34 | 9.03 | 12.59 | 9.85 | 10.92 | 10.00 | | | 12.04 | 13.36 |
| | 7.76 | 8.48 | 9.66 | 7.27 | 11.48 | 9.83 | 11.06 | 8.62 | 11.28 | 9.23 | 11.58 | 10.56 | | | 12.65 | 11.79 |
| 2018 | | | 11.42 | 7.00 | 12.65 | 9.77 | 12.82 | 7.90 | 12.68 | 8.22 | 14.40 | 10.20 | 16.95 | 7.83 | 14.02 | 10.17 |
| | | | 11.03 | 6.80 | 12.66 | 9.05 | 16.75 | 6.80 | 11.81 | 9.57 | 12.06 | 9.89 | 17.68 | 8.02 | 12.78 | 10.15 |
| | | | 10.21 | 7.43 | 12.54 | 8.36 | 18.69 | 8.04 | 10.99 | 9.44 | 12.52 | 10.12 | 20.60 | 9.16 | 13.03 | 10.20 |
| | 11.39 | 9.81 | | | 12.86 | 8.68 | | | | | 12.24 | 10.21 | | | 13.92 | 11.13 |
| 2019 | 12.76 | 10.22 | | | 13.68 | 9.06 | | | | | 11.83 | 10.93 | | | 14.10 | 10.71 |
| | 12.04 | 9.92 | | | 12.62 | 8.41 | | | | | 14.56 | 9.99 | | | 13.80 | 11.66 |
| | 11.77 | 9.85 | | | 12.40 | 8.31 | | | | | 14.17 | 9.75 | | | 14.02 | 11.63 |
| | 9.21 | 9.09 | 10.74 | 12.26 | 11.75 | 6.99 | | | | | 14.20 | 9.77 | | | 12.76 | 11.20 |

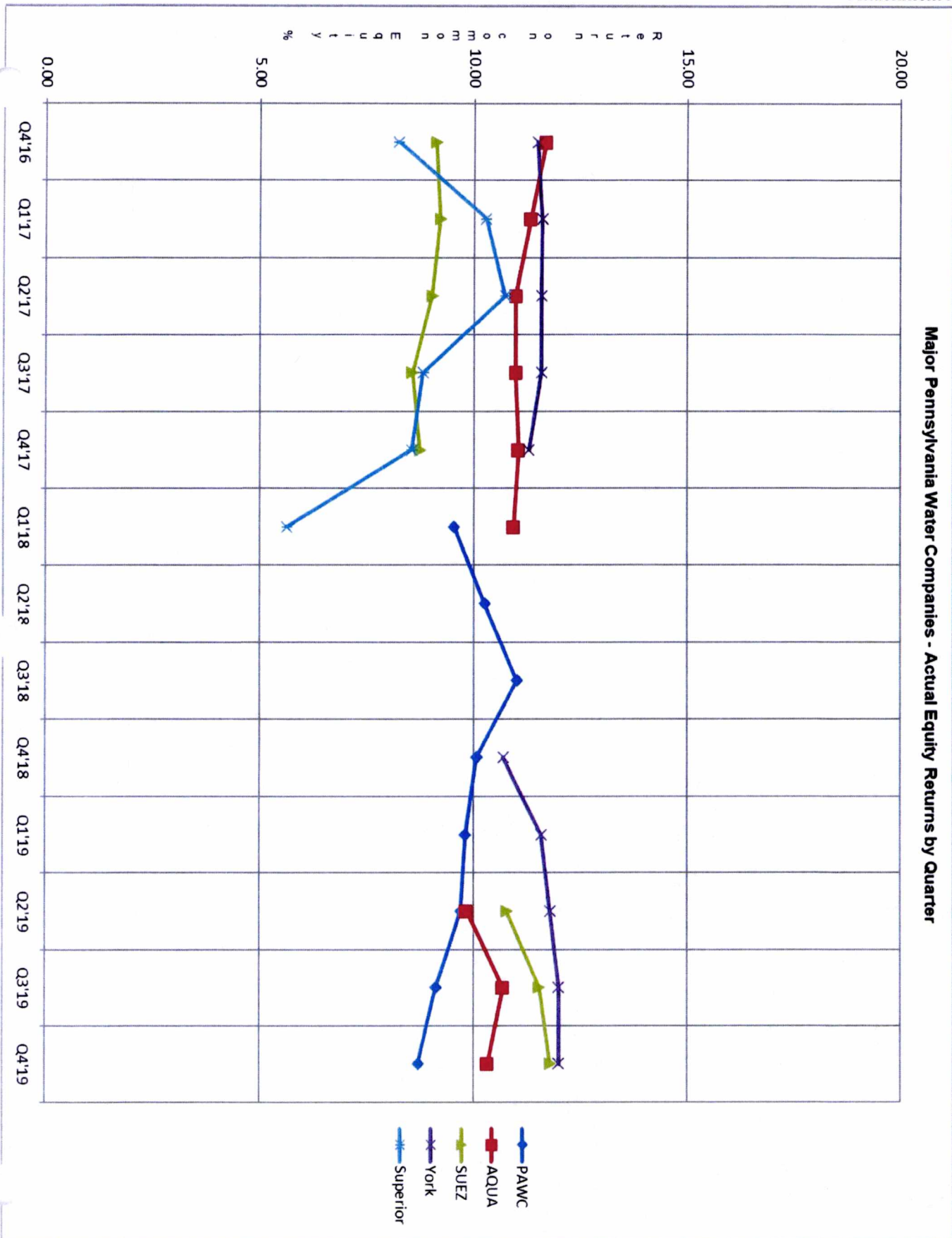
Major Pennsylvania Gas Utilities - Actual Equity Returns by Quarter



**WATER UTILITIES
EQUITY RETURNS BY QUARTER**

| QTR | END | PAWC | | AQUA | | SUEZ | | York | |
|------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| | | ACT | ADJ | ACT | ADJ | ACT | ADJ | ACT | ADJ |
| 2014 | 1 | 10.52 | 9.98 | 13.29 | 11.56 | 8.45 | 9.02 | 10.2 | 10.2 |
| | 2 | 10.51 | 10.02 | 13.01 | 11.42 | 8.81 | 9.32 | 10.7 | 10.7 |
| | 3 | 11.11 | 10.57 | 12.82 | 11.29 | 8.57 | 9.06 | 10.9 | 10.9 |
| | 4 | 10.49 | 9.38 | 12.62 | 11.49 | 8.90 | 9.44 | 12.3 | 11.6 |
| 2015 | 1 | 10.33 | 9.14 | 12.46 | 11.11 | 9.11 | 9.83 | 12.7 | 12.7 |
| | 2 | 10.51 | 9.31 | 12.66 | 11.62 | 8.36 | 9.25 | 12.7 | 12.7 |
| | 3 | 10.06 | 8.81 | 12.41 | 11.95 | 8.39 | 9.37 | 13.6 | 13.6 |
| | 4 | 9.80 | 8.48 | 12.61 | 12.16 | 8.54 | 8.77 | 12.50 | 11.10 |
| 2016 | 1 | 10.12 | 8.68 | 12.31 | 11.71 | 9.27 | 10.19 | 12.40 | 10.90 |
| | 2 | 9.99 | 8.47 | 11.71 | 11.21 | 11.00 | 12.37 | 12.20 | 10.80 |
| | 3 | 9.82 | 8.47 | 11.55 | 10.32 | 8.23 | 9.99 | 12.20 | 11.00 |
| | 4 | 9.37 | 8.51 | 11.70 | 10.57 | 9.13 | 9.90 | 11.50 | 10.40 |
| 2017 | 1 | | | 11.34 | 10.04 | 9.22 | 9.60 | 11.61 | 9.50 |
| | 2 | | | 10.99 | 9.22 | 9.03 | 9.07 | 11.60 | 9.10 |
| | 3 | | | 10.99 | 9.23 | 8.57 | 8.57 | 11.60 | 8.70 |
| | 4 | | | 11.05 | 8.63 | 8.75 | 8.73 | 11.30 | 8.40 |
| 2018 | 1 | 9.55 | 8.97 | 10.94 | 8.41 | | | | |
| | 2 | 10.27 | 9.65 | | | | | | |
| | 3 | 11.03 | 9.48 | | | | | | |
| | 4 | 10.08 | 9.03 | | | | | 10.70 | 10.30 |
| 2019 | 1 | 9.82 | 8.87 | | | | | 11.60 | 11.60 |
| | 2 | 9.72 | 8.90 | 9.84 | 9.04 | 10.78 | 10.36 | 11.80 | 11.80 |
| | 3 | 9.13 | 8.41 | 10.69 | 8.84 | 11.55 | 11.75 | 12.00 | 12.00 |
| | 4 | 8.71 | 8.09 | 10.33 | 8.24 | 11.80 | 12.15 | 12.00 | 9.80 |

Major Pennsylvania Water Companies - Actual Equity Returns by Quarter



Attachment B includes:

A. Overall Returns on rate base

1. Actual
2. Company proposed pro forma and ratemaking adjustments

and

B. Equity Returns

1. Actual
2. Company proposed pro forma and ratemaking adjustments

Summary of Returns
For the Year Ended December 31, 2019

| COMPANY NAME | <u>OVERALL RETURN</u> | | <u>EQUITY RETURN</u> | | ROE AUTH | YEAR AUTH |
|--|-----------------------|-------|----------------------|-------|-------------|--------------|
| | ACTUAL | ADJ | ACTUAL | ADJ | | |
| ELECTRIC | | | | | | |
| <u>\$10,000,000 Revenues</u> | | | | | | |
| PECO Energy - Electric Operations | 8.40 | 6.35 | 12.21 | 8.50 | Settled | 2018 |
| PPL Electric Utilities Corp. | 7.78 | 7.71 | 10.53 | 10.40 | Settled | 2015 |
| Duquesne Light Company | 9.77 | 7.07 | 13.92 | 9.08 | Settled | 2018 |
| West Penn Power Company | 8.97 | 5.53 | 14.13 | 7.07 | Settled | 2017 |
| Pennsylvania Power Company | 6.74 | 6.09 | 8.08 | 6.90 | Settled | 2017 |
| UGI Utilities, Inc. - Electric Division | 6.03 | 3.24 | 7.20 | 2.38 | 9.85 | 2018 |
| Pennsylvania Electric Company | 7.34 | 6.55 | 10.02 | 8.54 | Settled | 2017 |
| Metropolitan Edison Company | 7.47 | 6.59 | 10.96 | 9.27 | Settled | 2017 |
| <u>\$1,000,000 to \$10,000,000 Revenues</u> | | | | | | |
| Citizens Electric Company | 10.43 | 10.43 | 11.61 | 11.61 | 9.54 | 2020 |
| Pike County Light & Power Co. | 5.28 | 4.02 | 6.38 | 3.78 | Settled | 2014 |
| Wellsboro Electric Company | 8.84 | 8.84 | 21.51 | 21.51 | 9.31 | 2020 |
| GAS | | | | | | |
| <u>\$10,000,000 Revenues</u> | | | | | | |
| Columbia Gas of PA, Inc. | 7.10 | 7.10 | 9.21 | 9.09 | Settled | 2018 |
| Peoples Natural Gas Company LLC | 7.79 | 8.49 | 10.74 | 12.26 | Settled | 2019 |
| PECO Energy - Gas Operations | 8.19 | 5.53 | 11.75 | 6.99 | Settled | 2010 |
| UGI Utilities, Inc. – South* | | | | | Settled | 2019 |
| National Fuel Gas Distribution Co. | 9.45 | 7.25 | 14.20 | 9.77 | Settled | 2006 |
| UGI Utilities, Inc. – North* | | | | | Settled | 2019 |
| Peoples Gas Company, LLC | 9.12 | 8.09 | 12.76 | 11.20 | Settled | 2013 |
| UGI Utilities, Inc. – Central* | | | | | Settled | 2019 |
| <u>\$1,000,000 to \$10,000,000 Revenues</u> | | | | | | |
| North East Heat & Light Co. | 9.56 | 9.56 | 9.72 | 9.72 | 11.00 | 2008 |
| Valley Energy | 8.89 | 8.89 | 6.64 | 6.64 | 9.73 | 2020 |
| Pike County Light & Power Co. | 7.40 | 6.13 | 11.56 | 8.79 | Settled | 2014 |
| WATER | | | | | | |
| <u>\$10,000,000 Revenues</u> | | | | | | |
| PA American Water Company | 6.85 | 6.49 | 8.71 | 8.09 | Settled | 2018 |
| Aqua Pennsylvania | 7.34 | 6.21 | 10.33 | 8.24 | Settled | 2018 |
| York Water Company | 9.10 | 7.70 | 12.00 | 9.80 | Settled | 2019 |
| SUEZ Water Pennsylvania, Inc. | 8.22 | 8.40 | 11.80 | 12.15 | Settled | 2018 |
| <u>\$1,000,000 to \$10,000,000 Revenues</u> | | | | | | |
| Newtown Artesian Water Co. | 4.78 | 4.39 | 3.99 | 3.28 | Settled | 2019 |
| Columbia Water Company | 5.18 | 5.18 | 5.31 | 5.31 | Settled | 2015 |

* UGI Utilities, Inc. – South, UGI Utilities, Inc. – North, and UGI Utilities, Inc. – Central, have rate filings at Docket Nos. R-2018-3006814, R-2018-3006814, and R-2018-3006814 respectively, and filed a letter with the Secretary in place of a report in accordance with 52 Pa. Code § 71.4.

ALLOWED RATES OF RETURN ON COMMON EQUITY

This is a historical chart that shows the most recent rate cases for select companies in electric, gas, and water. A docket number followed by their final return on equity and year is also given.

| <u>ELECTRIC</u> | <u>Docket Number</u> | <u>ROE (%)</u> | <u>Year</u> |
|-------------------------------|-----------------------------|-----------------------|--------------------|
| Recent PA PUC Allowed | | | |
| Duquesne Light Company | R-2018-3000124 | Settled | 2018 |
| PECO Energy Company | R-2018-3000164 | Settled | 2018 |
| UGI - Electric | R-2017-2640058 | 9.85 | 2018 |
| Pennsylvania Electric Company | R-2016-2537352 | Settled | 2017 |
| Metropolitan Edison Company | R-2016-2537349 | Settled | 2017 |
| Pennsylvania Power Company | R-2016-2537355 | Settled | 2017 |
| West Penn Power Company | R-2016-2537359 | Settled | 2017 |

Current Market Indicated ROE as calculated by the Bureau of Technical Utility Services. **7.52-10.03**

GAS

| | | | |
|-------------------------------|----------------|---------|------|
| Recent PA PUC Allowed | | | |
| Columbia Gas of Pa. | R-2018-2647577 | Settled | 2018 |
| UGI Utilities, Inc. - South | R-2018-3006814 | Settled | 2019 |
| Peoples Natural Gas Company | R-2018-3006818 | Settled | 2019 |
| UGI Utilities, Inc. - North | R-2018-3006814 | Settled | 2019 |
| UGI Utilities, Inc. - Central | R-2018-3006814 | Settled | 2019 |
| PECO Energy | R-2010-2161592 | Settled | 2010 |
| Peoples Gas Company | R-2013-2355886 | Settled | 2013 |

Current Market Indicated ROE as calculated by the Bureau of Technical Utility Services. **7.33-11.82**

WATER

| | | | |
|-----------------------|----------------|---------|------|
| Recent PA PUC Allowed | | | |
| Aqua Pennsylvania | R-2018-3003558 | Settled | 2018 |
| PA American Water | R-2017-2595853 | Settled | 2017 |
| Columbia Water | R-2017-2598203 | Settled | 2017 |
| York Water | R-2018-3000019 | Settled | 2019 |
| SUEZ Water | R-2018-3000834 | Settled | 2018 |

Current Market Indicated ROE as calculated by the Bureau of Technical Utility Services. **7.94-9.80**

Distribution System Improvement Charge (DSIC) Eligible Utilities
Return on Equity (ROE) Summary

| | Utility Adjusted ROE ² (%) | Commission Approved ROE ³ (%) |
|--|--|---|
| ELECTRIC | | |
| PECO Energy – Electric Operations | 8.50 | 9.45 |
| PPL Electric Utilities Corp. | 10.40 | 9.45 |
| Duquesne Light Company | 9.08 | 9.45 |
| West Penn Power Company | 7.07 | 9.45 |
| Pennsylvania Power Company | 6.90 | 9.45 |
| Pennsylvania Electric Company | 8.54 | 9.45 |
| Metropolitan Edison Company | 9.27 | 9.45 |
| UGI Utilities, Inc.- Electric Division | 2.38 | 9.85 |
| GAS | | |
| Columbia Gas of PA, Inc. | 9.09 | 10.00 |
| Peoples Natural Gas Company LLC | 12.26 | 10.00 |
| PECO Energy – Gas Operations | 6.99 | 10.00 |
| UGI Utilities, Inc. – South* | | 10.00 |
| UGI Utilities, Inc. – North* | | 10.00 |
| Peoples Gas Company, LLC | 11.20 | 10.00 |
| UGI Utilities, Inc. – Central* | | 10.00 |
| WATER | | |
| PA American Water Company | 8.09 | 9.90 |
| PA American – Wastewater | 8.09 | 9.90 |
| AQUA Pennsylvania | 8.24 | 9.90 |
| AQUA Pennsylvania – Wastewater | 8.24 | 9.90 |
| York Water Company | 9.80 | 9.90 |
| SUEZ Water Pennsylvania Inc. | 12.15 | 9.90 |
| Columbia Water Company | 5.31 | 9.90 |
| Newtown Artesian Water | 3.28 | 9.90 |

* UGI Utilities, Inc. – South, UGI Utilities, Inc. – North, and UGI Utilities, Inc. – Central have rate filings at Docket Nos. R-2018-3006814, R-2018-3006814, and R-2018-3006814 respectively, and filed a letter with the Secretary in place of a report in accordance with 52 Pa. Code § 71.4.

² Each utility lists adjustments on Schedule B of their quarterly financial report.

³ The ROE is approved in a utility's most recent fully litigated base rate proceeding for which a final order was entered not more than two years prior to the effective date of the DSIC. If more than two years have elapsed between the entry of a final order and the DSIC effective date, the ROE is from this report. If the base rate proceeding is settled, without a stipulated ROE, the ROE is from this report.

Explanation of Discounted Cash Flow (DCF) and Capital Asset Pricing Model (CAPM)

Barometer Group Criteria

The criteria used for determining the industry barometer groups used to calculate ROEs in this report are as follows:

- 50% or more of the company's assets must be related to the jurisdictional utility industry;
- The company's stock must be publicly traded;
- Companies involved in merger & acquisition activity will be excluded;
- Investment information for the company must be available to the Commission from more than one source; and
- Geographic Regions:
 - EDCs: *Value Line* East, Central, and West Group Electric Utility companies;
 - NGDCs: *Value Line* Investment Survey's Natural Gas Utility industry group companies;
 - Water/Wastewater: *Value Line* Investment Survey's Water Utility industry group companies.

The barometer group companies are reviewed by staff on a quarterly basis and make any changes to these companies based upon the criteria above.

ROE Calculations

The Commission consistently uses the DCF model to determine the appropriate cost of equity for utilities. In this report, the DSIC ROE is calculated using two DCF models.

TUS uses the following formula to calculate the current dividend DCF: $K = D_1/P_0 + G$

TUS uses the following formula to calculate the 52-week average dividend DCF: $K = D_0/P_a + G$

Definitions:

| | | |
|----------------|---|--|
| K | = | Cost of equity |
| D ₁ | = | Dividend expected during the year |
| | = | $D_0 + \frac{1}{2}g$ |
| D ₀ | = | Latest indicated dividend, obtained from Yahoo! Finance |
| g | = | Expected 5-year dividend growth rate of barometer group obtained from Value Line Investment Survey. |
| P ₀ | = | Current price of the stock, obtained from Yahoo! Finance |
| P _a | = | Average of high and low stock price over the latest 52-week period, obtained from Yahoo! Finance |
| G | = | Average of 5-year expected earnings growth rate forecasts obtained from Value Line Investment Survey, Zacks Investment Survey, Yahoo! Finance, Morningstar and/or Reuters. |

The CAPM uses the yield of a risk-free interest-bearing obligation plus a rate of return premium that is proportional to the systematic risk of an investment.

TUS uses the following formula to calculate CAPM: $K = \beta(R_m - R_f)$

Three components are necessary to calculate the CAPM cost of equity:

- β = Beta, a measure of systematic risk for each stock
- R_f = The risk-free rate of return, 10-year U.S. Treasury yields are used for R_f . Yields are taken from the previous two quarters and forecasted next four quarters.
- R_m = Total return of the equity market as determined by the SBBI Yearbook

The Commission determines the ROE used for DSIC purposes based on the range of reasonableness from the DCF barometer group data, CAPM data, recent ROEs adjudicated by the Commission, and informed judgment.

The market indicated common equity cost rate range consists of data used from the barometer groups and is based on a series of calculations to average the DCF methods.

Market Based Returns on Common Equity¹

May 5, 2020

Electric Company Barometer Group

| | Cost Rates % |
|--|-------------------|
| (1) Current DCF: | 8.90 |
| (2) 52-Week Average DCF: | <u>8.65</u> |
| (3) Overall DCF ((1) + (2)) / 2 : | <u>8.78</u> |
| (4) Market Indicated Common Equity Cost Rate Range: @ 1 standard deviation around the mean. ² | <u>7.52-10.03</u> |
| (5) CAPM Check of DCF Reasonableness: | 7.22 |
| (6) Recent Commission Approved ROEs ³ : *UGI Utilities, Inc. - Electric, R-2017-2640058, does not include 0.05% management effectiveness adjustment | 9.80* |
| (7) Distribution System Improvement Charge (DSIC) Return ⁴ : | <u>9.45%</u> |

¹ As calculated by the Bureau of Technical Utility Services

² Standard Deviation of 52 DCF observations

³ Base rate case ROEs within last two years, fully litigated or stipulated for DSIC purposes

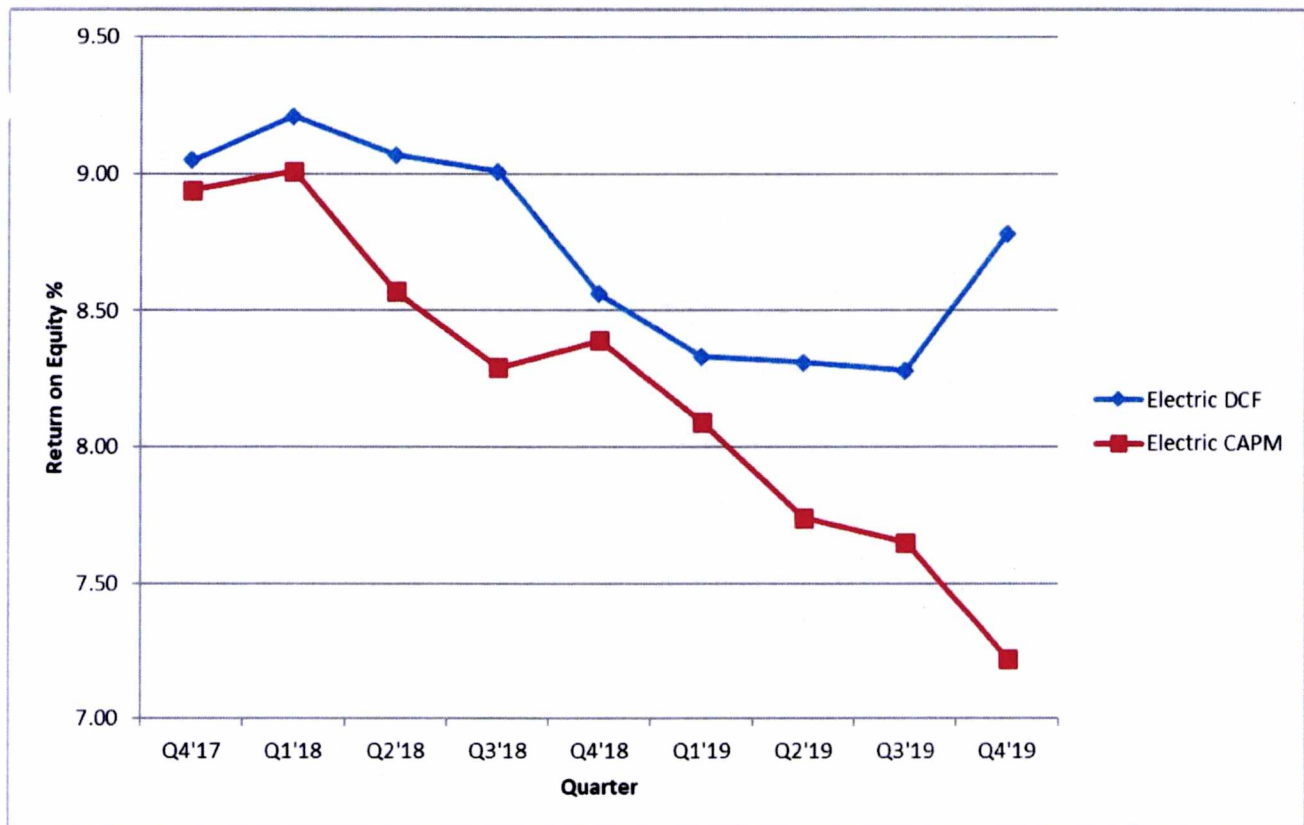
⁴ Commission authorized Return on Equity (ROE) for DSIC purposes

Any questions concerning DSIC should be directed to Marc Hoffer of the Bureau of Technical Utility Services at (717) 787-1869.

Historic Electric Industry Barometer Group DCF and CAPM Average ROEs

| Electric | | |
|----------|------|------|
| | DCF | CAPM |
| Q4'17 | 9.05 | 8.94 |
| Q1'18 | 9.21 | 9.01 |
| Q2'18 | 9.07 | 8.57 |
| Q3'18 | 9.01 | 8.29 |
| Q4'18 | 8.56 | 8.39 |
| Q1'19 | 8.33 | 8.09 |
| Q2'19 | 8.31 | 7.74 |
| Q3'19 | 8.28 | 7.65 |
| Q4'19 | 8.78 | 7.22 |

Chart of Historic Electric Industry DCF and CAPM Average ROEs



Barometer electric companies are used to calculate a current DCF in the first chart. The second chart demonstrates the companies 52-week average DCF. A final average of the two calculations is also shown at the bottom.

**Electric Company Barometer Group
Calculation of a Current Dividend Yield**

| | Closing Market Price (Po) | Latest Indicated Dividend Do | Ind. Div. Plus 1/2 Div. Growth Rate (D1) | Current Dividend Yield(D1/Po) | DCF |
|---------------------------------|---------------------------------|---------------------------------------|---|-------------------------------------|------------|
| | <u>5/5/2020</u> | <u>Do</u> | <u>Rate (D1)</u> | <u>Yield(D1/Po)</u> | <u>DCF</u> |
| | (\$) | (\$) | (\$) | (%) | (%) |
| Allete, Inc. | 56.55 | 2.47 | 2.54 | 4.49 | 10.74 |
| Alliant Energy Corp | 48.02 | 1.52 | 1.56 | 3.25 | 8.99 |
| American Electric Power | 93.88 | 2.80 | 2.88 | 3.06 | 9.26 |
| AVANGRID, Inc. | 42.71 | 1.76 | 1.79 | 4.19 | 11.04 |
| Avista Corp | 41.44 | 1.62 | 1.65 | 3.99 | 8.19 |
| CMS Energy Corp | 57.16 | 1.63 | 1.69 | 2.95 | 10.01 |
| Consolidated Edison | 77.54 | 3.06 | 3.11 | 4.02 | 7.02 |
| DTE Energy Company | 102.41 | 4.05 | 4.18 | 4.08 | 9.35 |
| Duke Energy Company | 83.14 | 3.78 | 3.83 | 4.60 | 9.70 |
| Eversource Energy | 80.99 | 2.27 | 2.34 | 2.89 | 8.98 |
| Exelon Corp | 35.87 | 1.53 | 1.57 | 4.38 | 8.88 |
| FirstEnergy Corp | 41.29 | 1.56 | 1.58 | 3.83 | 9.43 |
| IDACORP, Inc. | 90.91 | 2.68 | 2.77 | 3.04 | 5.79 |
| MGE Energy, Inc. | 63.44 | 1.41 | 1.45 | 2.28 | 7.03 |
| NextEra Energy, Inc. | 230.10 | 5.60 | 5.89 | 2.56 | 10.97 |
| NorthWestern Corp | 57.16 | 2.40 | 2.45 | 4.28 | 7.47 |
| OGE Energy Corp | 30.32 | 1.55 | 1.60 | 5.27 | 8.13 |
| Otter Tail Corp | 43.15 | 1.48 | 1.52 | 3.52 | 10.52 |
| Pinnacle West Capital Corp | 74.64 | 3.13 | 3.22 | 4.31 | 9.46 |
| PNM Resources, Inc. | 38.89 | 1.23 | 1.26 | 3.25 | 9.39 |
| Portland General Electric Co. | 45.52 | 1.54 | 1.59 | 3.48 | 8.24 |
| PPL Corporation | 25.34 | 1.66 | 1.68 | 6.62 | 8.12 |
| Public Service Enterprise Group | 49.84 | 1.96 | 2.01 | 4.03 | 8.14 |
| Southern Company | 55.63 | 2.56 | 2.60 | 4.67 | 9.01 |
| WEC Energy Group, Inc. | 89.58 | 2.53 | 2.61 | 2.92 | 8.98 |
| Xcel Energy Inc. | 63.28 | 1.72 | 1.77 | 2.80 | 8.48 |
| Group Average | 66.11 | 2.29 | 2.35 | 3.80 | 8.90 |
| Group Average G | | | | 5.10 | |
| DCF | | | | 8.90 | |

Electric Company Barometer Group
52-week Average Dividend Yield Calculation

| | <u>High</u> | <u>Low</u> | <u>Average (Pa)</u> | <u>Latest Indicated Dividend (Do)</u> | <u>Average Dividend Yield (Do/Pa)</u> | <u>DCF</u> |
|---------------------------------|-------------|------------|---------------------|---|---|------------|
| | (\$) | (\$) | (\$) | (\$) | (%) | (%) |
| Allete, Inc. | 88.60 | 50.01 | 69.31 | 2.47 | 3.56 | 9.81 |
| Alliant Energy Corp | 60.28 | 37.66 | 48.97 | 1.52 | 3.10 | 8.84 |
| American Electric Power | 104.97 | 65.14 | 85.06 | 2.80 | 3.29 | 9.49 |
| AVANGRID, Inc. | 57.24 | 35.62 | 46.43 | 1.76 | 3.79 | 10.64 |
| Avista Corp | 53.00 | 32.09 | 42.55 | 1.62 | 3.81 | 8.01 |
| CMS Energy Corp | 69.17 | 46.03 | 57.60 | 1.63 | 2.83 | 9.89 |
| Consolidated Edison | 95.10 | 62.03 | 78.57 | 3.06 | 3.89 | 6.90 |
| DTE Energy Company | 135.67 | 71.21 | 103.44 | 4.05 | 3.92 | 9.18 |
| Duke Energy Company | 103.79 | 62.13 | 82.96 | 3.78 | 4.56 | 9.65 |
| Eversource Energy | 99.42 | 60.69 | 80.06 | 2.27 | 2.84 | 8.93 |
| Exelon Corp | 51.18 | 29.28 | 40.23 | 1.53 | 3.80 | 8.30 |
| FirstEnergy Corp | 52.52 | 32.00 | 42.26 | 1.56 | 3.69 | 9.29 |
| IDACORP, Inc. | 114.01 | 69.05 | 91.53 | 2.68 | 2.93 | 5.67 |
| MGE Energy, Inc. | 83.26 | 47.19 | 65.23 | 1.41 | 2.16 | 6.91 |
| NextEra Energy, Inc. | 283.35 | 174.80 | 229.08 | 5.60 | 2.44 | 10.85 |
| NorthWestern Corp | 80.52 | 45.06 | 62.79 | 2.40 | 3.82 | 7.01 |
| OGE Energy Corp | 46.43 | 23.01 | 34.72 | 1.55 | 4.46 | 7.33 |
| Otter Tail Corp | 57.74 | 30.95 | 44.35 | 1.48 | 3.34 | 10.34 |
| Pinnacle West Capital Corp | 105.51 | 60.05 | 82.78 | 3.13 | 3.78 | 8.93 |
| PNM Resources, Inc. | 56.14 | 27.08 | 41.61 | 1.23 | 2.96 | 9.09 |
| Portland General Electric Co. | 63.08 | 37.83 | 50.46 | 1.54 | 3.05 | 7.81 |
| PPL Corporation | 36.83 | 18.12 | 27.48 | 1.66 | 6.04 | 7.54 |
| Public Service Enterprise Group | 63.88 | 34.75 | 49.32 | 1.96 | 3.97 | 8.08 |
| Southern Company | 71.10 | 41.96 | 56.53 | 2.56 | 4.53 | 8.87 |
| WEC Energy Group, Inc. | 109.53 | 68.01 | 88.77 | 2.53 | 2.85 | 8.92 |
| Xcel Energy Inc. | 72.14 | 46.58 | 59.36 | 1.72 | 2.90 | 8.58 |
| Group Average | 85.17 | 50.32 | 67.75 | 2.29 | 3.55 | 8.65 |
| Group Average G | | | | | 5.10 | |
| DCF | | | | | 8.65 | |
| | | | | Average of Current and 52-Week | 8.78 | |

Multiple sources of the Barometer companies projected 5-year Earnings Per Share are used to calculate the Group Average Dividend Growth Estimate.

**Development of a Representative Dividend Growth Rate
for the Barometer Group of Electric Companies**
5 Year Forecast

| | Value Line | Value Line | Zack's | Yahoo | Morningstar | Average | |
|---------------------------------|------------|------------|------------|------------|-------------|-----------------|-----------------|
| | <u>DPS</u> | <u>EPS</u> | <u>EPS</u> | <u>EPS</u> | <u>EPS</u> | <u>Earnings</u> | <u>Growth</u> |
| | (%) | (%) | (%) | (%) | (%) | (%) | <u>Estimate</u> |
| Allete, Inc. | 5.50 | 5.50 | | 7.00 | | 6.25 | 6.25 |
| Alliant Energy Corp | 5.50 | 6.50 | 5.49 | 5.65 | 5.30 | 5.74 | 5.74 |
| American Electric Power | 5.50 | 5.00 | 5.78 | 6.00 | 8.00 | 6.20 | 6.20 |
| AVANGRID, Inc. | 3.58 | 8.50 | 5.50 | 6.30 | 7.10 | 6.85 | 6.85 |
| Avista Corp | 4.00 | 1.00 | 5.31 | 6.30 | | 4.20 | 4.20 |
| CMS Energy Corp | 7.00 | 7.50 | 6.95 | 7.29 | 6.50 | 7.06 | 7.06 |
| Consolidated Edison | 3.50 | 3.00 | 2.00 | 2.41 | 4.60 | 3.00 | 3.00 |
| DTE Energy Company | 6.50 | 5.00 | 5.50 | 5.96 | 4.60 | 5.27 | 5.27 |
| Duke Energy Company | 2.50 | 6.00 | 4.64 | 4.14 | 5.60 | 5.10 | 5.10 |
| Eversource Energy | 6.00 | 5.50 | 6.13 | 5.73 | 7.00 | 6.09 | 6.09 |
| Exelon Corp | 5.50 | 8.00 | 4.00 | -2.45 | 1.50 | 2.76 | 4.50 |
| FirstEnergy Corp | 3.00 | 7.00 | | -6.60 | 4.20 | 1.53 | 5.60 |
| IDACORP, Inc. | 6.50 | 3.00 | 2.63 | 2.60 | | 2.74 | 2.74 |
| MGE Energy, Inc. | 5.50 | 5.50 | | 4.00 | | 4.75 | 4.75 |
| NextEra Energy, Inc. | 10.50 | 10.00 | 7.72 | 7.71 | 9.80 | 8.81 | 8.41 |
| NorthWestern Corp | 4.00 | 2.50 | 3.39 | 3.66 | | 3.18 | 3.18 |
| OGE Energy Corp | 6.00 | 4.50 | 3.37 | 1.70 | 1.90 | 2.87 | 2.87 |
| Otter Tail Corp | 5.00 | 5.00 | | 9.00 | | 7.00 | 7.00 |
| Pinnacle West Capital Corp | 5.50 | 4.50 | 5.21 | 4.98 | 5.90 | 5.15 | 5.15 |
| PNM Resources, Inc. | 5.50 | 6.00 | 6.11 | 6.30 | | 6.14 | 6.14 |
| Portland General Electric Co. | 6.00 | 4.00 | 5.27 | 4.15 | 5.60 | 4.76 | 4.76 |
| PPL Corporation | 2.00 | 2.50 | | 0.50 | -4.10 | -0.37 | 1.50 |
| Public Service Enterprise Group | 5.00 | 6.00 | 3.69 | 2.35 | 4.40 | 4.11 | 4.11 |
| Southern Company | 3.00 | 4.00 | 4.00 | 4.36 | 5.00 | 4.34 | 4.34 |
| WEC Energy Group, Inc. | 6.50 | 6.00 | 5.91 | 5.96 | 6.40 | 6.07 | 6.07 |
| Xcel Energy Inc. | 6.00 | 6.00 | 5.72 | 5.40 | 5.60 | 5.68 | 5.68 |
| Group Average | 5.20 | 5.31 | 4.97 | 4.25 | 4.99 | 4.82 | 5.10 |
| USE | | | | | | | <u>5.10</u> |

Sources: Morningstar, May 5, 2020 (<http://financials.morningstar.com>)

Value Line Investment Survey, May 5, 2020

Zacks, May 5, 2020 (www.zacks.com)

Yahoo!, May 5, 2020 (<http://finance.yahoo.com/>)

The market indicated common equity cost rate range consists of data used from the barometer groups and is based on a series of calculations to average the DCF methods.

Market Based Returns on Common Equity¹

May 5, 2020

Gas Distribution Company Barometer Group

| | Cost Rates |
|---|-------------------|
| | <u>%</u> |
| (1) Current DCF: | 9.58 |
| (2) 52-Week Average DCF: | <u>9.57</u> |
| (3) Overall DCF ((1) + (2)) / 2 : | <u>9.58</u> |
| (4) Market Indicated Common Equity Cost Rate Range: @ 1 standard deviation around the mean. ² | <u>7.33-11.82</u> |
| (5) CAPM Check of DCF Reasonableness: | 8.10 |
| (6) Recent Commission Approved ROEs ³ : *None within last two years | * |
| (7) Distribution System Improvement Charge (DSIC) Return ⁴ : | <u>10.00%</u> |

¹ As calculated by the Bureau of Technical Utility Services

² Standard Deviation of 18 DCF observations

³ Base rate case ROEs within last two years, fully litigated or stipulated for DSIC

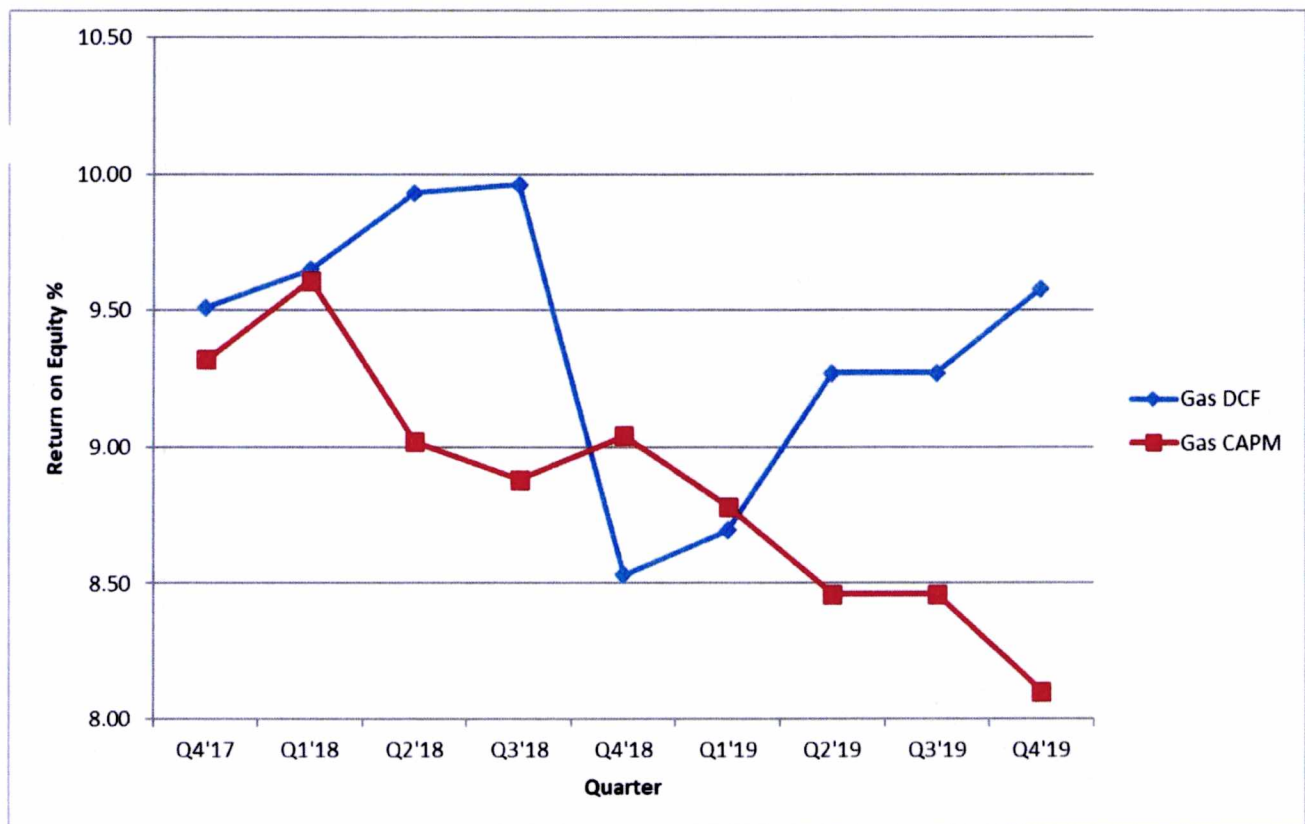
⁴ Commission authorized Return on Equity (ROE) for DSIC purposes

Any questions concerning DSIC should be directed to Marc Hoffer of the Bureau of Technical Utility Services at (717) 787-1869.

Historic Gas Industry DCF and CAPM Average ROEs

| Gas | | |
|-------|------|------|
| | DCF | CAPM |
| Q4'17 | 9.51 | 9.32 |
| Q1'18 | 9.65 | 9.61 |
| Q2'18 | 9.93 | 9.02 |
| Q3'18 | 9.96 | 8.88 |
| Q4'18 | 8.53 | 9.04 |
| Q1'19 | 8.69 | 8.78 |
| Q2'19 | 9.27 | 8.46 |
| Q3'19 | 9.27 | 8.46 |
| Q4'19 | 9.58 | 8.10 |

Graph of Historic Gas Industry DCF and CAPM Average ROEs



Barometer gas companies are used to calculate a current DCF in the first chart. The second chart demonstrates the companies 52-week average DCF. A final average of the two calculations is also shown at the bottom.

**Gas Company Barometer Group
Calculation of a Current Dividend Yield**

| | Closing Market Price (Po) <u>5/5/2020</u> (\$) | Latest Indicated Dividend <u>Do</u> (\$) | Ind. Div. Plus 1/2 Div. Growth <u>Rate (D1)</u> (\$) | Current Dividend <u>Yield(D1/Po)</u> (%) | <u>DCF</u> (%) |
|----------------------------------|--|--|--|---|-------------------|
| Atmos Energy | 101.77 | 2.30 | 2.39 | 2.34 | 9.56 |
| Chesapeake Utilities Corporation | 86.85 | 1.62 | 1.69 | 1.95 | 9.45 |
| New Jersey Resources | 34.04 | 1.25 | 1.29 | 3.78 | 8.62 |
| NiSource Inc. | 24.53 | 0.84 | 0.87 | 3.55 | 7.80 |
| Northwest Natural Gas | 63.20 | 1.91 | 1.91 | 3.03 | 6.78 |
| ONE Gas, Inc. | 80.83 | 2.16 | 2.25 | 2.78 | 9.61 |
| South Jersey Industries | 26.66 | 1.18 | 1.20 | 4.51 | 14.81 |
| Southwest Gas Holdings, Inc. | 73.47 | 2.28 | 2.34 | 3.18 | 10.91 |
| Spire Inc. | 72.57 | 2.49 | 2.55 | 3.52 | 8.49 |
| Group Average | 62.66 | 1.78 | 1.83 | 3.18 | 9.56 |
| Group Average G | | | | 6.40 | |
| DCF | | | | 9.58 | |

**Gas Company Barometer Group
52-week Average Dividend Yield Calculation**

| | <u>High</u> (\$) | <u>Low</u> (\$) | <u>Average (Pa)</u> (\$) | Latest Indicated Dividend <u>(Do)</u> (\$) | Average Dividend <u>Yield (Do/Pa)</u> (%) | <u>DCF</u> (%) |
|----------------------------------|---------------------|--------------------|-----------------------------|--|--|-------------------|
| Atmos Energy | 121.08 | 77.92 | 99.50 | 2.39 | 2.40 | 9.61 |
| Chesapeake Utilities Corporation | 101.29 | 69.47 | 85.38 | 1.69 | 1.98 | 9.48 |
| New Jersey Resources | 51.20 | 21.14 | 36.17 | 1.29 | 3.56 | 8.39 |
| NiSource Inc. | 30.67 | 19.56 | 25.12 | 0.87 | 3.47 | 7.72 |
| Northwest Natural Gas | 77.26 | 50.50 | 63.88 | 1.91 | 3.00 | 6.75 |
| ONE Gas, Inc. | 96.97 | 63.67 | 80.32 | 2.25 | 2.80 | 9.63 |
| South Jersey Industries | 34.48 | 19.62 | 27.05 | 1.20 | 4.45 | 14.75 |
| Southwest Gas Holdings, Inc. | 92.94 | 45.68 | 69.31 | 2.34 | 3.37 | 11.11 |
| Spire Inc. | 88.00 | 57.37 | 72.69 | 2.55 | 3.51 | 8.48 |
| Group Average | 77.10 | 47.21 | 62.16 | 1.83 | 3.17 | 9.55 |
| Group Average G | | | | | 6.40 | |
| DCF | | | | | 9.57 | |

Average of Current and 52-Week **9.58**

Multiple sources of the Barometer companies projected 5-year Earnings Per Share are used to calculate the Group Average Dividend Growth Estimate.

**Development of a Representative Dividend Growth Rate
for the Barometer Group of Gas Companies**

5 Yr Forecast

| | Value Line | Value Line | Zack's | Yahoo | Average | |
|----------------------------------|------------|------------|------------|------------|-----------------|---------------|
| | <u>DPS</u> | <u>EPS</u> | <u>EPS</u> | <u>EPS</u> | <u>Earnings</u> | <u>Growth</u> |
| | (%) | (%) | (%) | (%) | (%) | (%) |
| Atmos Energy | 7.50 | 7.00 | 7.15 | 7.50 | 7.22 | 7.22 |
| Chesapeake Utilities Corporation | 9.00 | 9.00 | | 6.00 | 7.50 | 7.50 |
| New Jersey Resources | 6.00 | 2.50 | 6.00 | 6.00 | 4.83 | 4.83 |
| NiSource Inc. | 7.50 | 2.50 | 5.78 | 4.47 | 4.25 | 4.25 |
| Northwest Natural Gas | 0.50 | 22.50 | | 3.75 | 13.13 | 3.75 |
| ONE Gas, Inc. | 8.00 | 7.00 | 5.50 | 8.00 | 6.83 | 6.83 |
| South Jersey Industries | 4.00 | 10.50 | 10.20 | 10.20 | 10.30 | 10.30 |
| Southwest Gas Holdings, Inc. | 5.00 | 9.00 | 6.00 | 8.20 | 7.73 | 7.73 |
| Spire Inc. | 5.00 | 5.50 | 4.76 | 4.65 | 4.97 | 4.97 |
| Group Average | 6.42 | 8.42 | 6.11 | 5.95 | 7.42 | 6.38 |
| USE | | | | | | <u>6.40</u> |

Sources: Value Line Investment Survey, May 5, 2020

Zacks, May 5, 2020 (www.zacks.com)

Yahoo!, May 5, 2020 (<http://finance.yahoo.com/>)

The market indicated common equity cost rate range consists of data used from the barometer groups and is based on a series of calculations to average the DCF methods.

Market Based Returns on Common Equity ¹

May 5, 2020

Water Company Barometer Group

| | Cost Rates % |
|--|------------------|
| (1) Current DCF | 8.89 |
| (2) 52-Week Average DCF | 8.85 |
| (3) Average DCF | <u>8.87</u> |
| (4) Market Indicated Common Equity Cost Rate Range @ 1 standard deviation around the mean. ² | <u>7.94-9.80</u> |
| (5) CAPM Check of DCF Reasonableness | 7.95 |
| (6) Recent Commission Approved ROEs ³ : *None within last two years | * |
| (7) Distribution System Improvement Charge (DSIC) Return ⁴ : | <u>9.90%</u> |

¹ As calculated by the Bureau of Technical Utility Services

² Standard Deviation of 14 DCF observations

³ ROEs from base rate cases within last two years fully litigated or stipulated for DSIC purposes

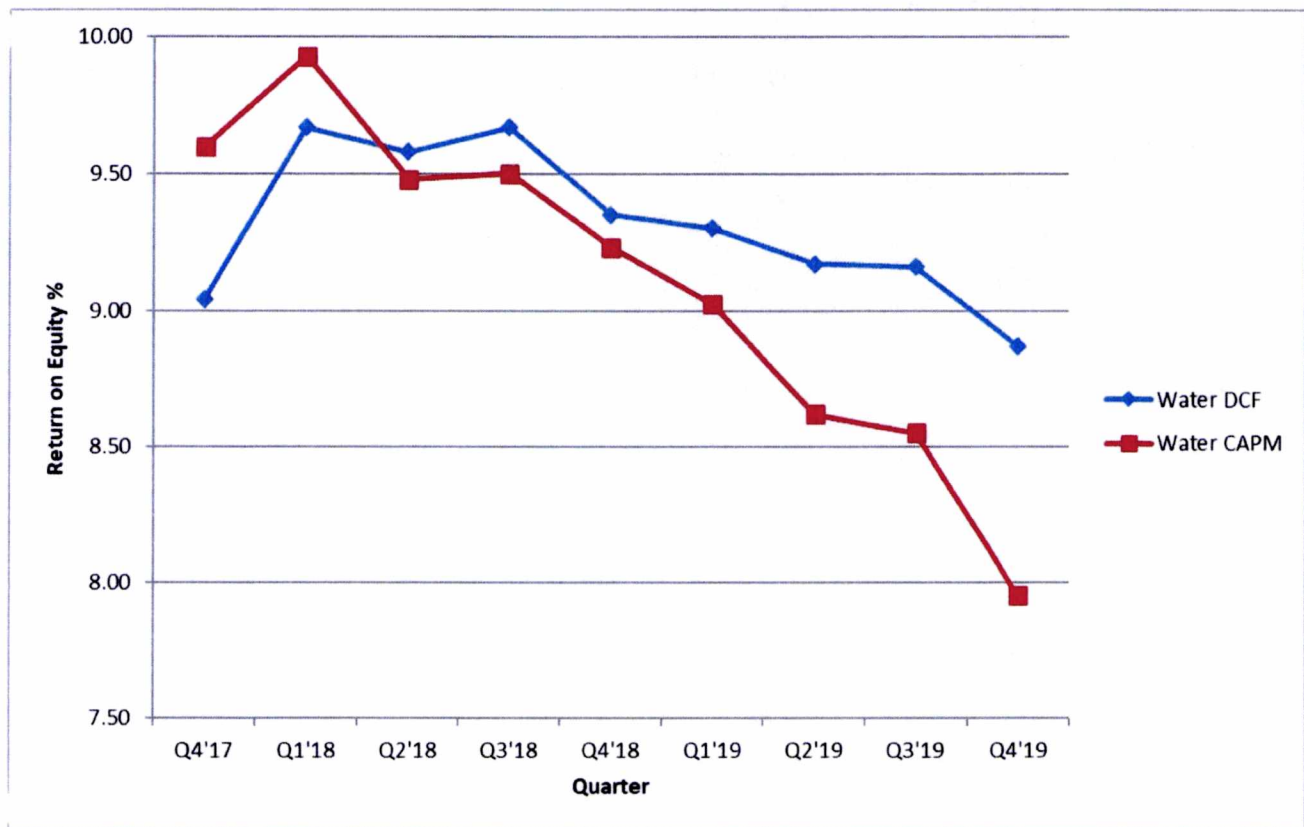
⁴ Commission authorized Return on Equity (ROE) for DSIC purposes

Any questions concerning DSIC should be directed to Marc Hoffer of the Bureau of Technical Utility Services at (717) 787-1869.

Historic Water Industry DCF and CAPM Average ROEs

| Water | | |
|-------|------|------|
| | DCF | CAPM |
| Q4'17 | 9.04 | 9.60 |
| Q1'18 | 9.67 | 9.93 |
| Q2'18 | 9.58 | 9.48 |
| Q3'18 | 9.67 | 9.50 |
| Q4'18 | 9.35 | 9.23 |
| Q1'19 | 9.30 | 9.02 |
| Q2'19 | 9.17 | 8.62 |
| Q3'19 | 9.16 | 8.55 |
| Q4'19 | 8.87 | 7.95 |

Chart of Historic Water Industry DCF and CAPM Average ROEs



Barometer water companies are used to calculate a current DCF in the first chart. The second chart demonstrates the companies 52-week average DCF. A final average of the two calculations is also shown at the bottom.

**Water Company Barometer Group
Calculation of a Current Dividend Yield**

| | Closing Market Price (Po) 5/5/2020 (\$) | Latest Indicated Dividend Do (\$) | Ind. Div. Plus 1/2 Div. Growth Rate (DI) (\$) | Current Dividend Yield(DI/Po) (%) | Growth (%) | DCF (%) |
|--------------------------------|---|---|---|--|---------------|------------|
| American States Water Company | 77.96 | 1.22 | 1.28 | 1.64 | 8.15 | 9.79 |
| American Water Works Co., Inc. | 123.43 | 2.20 | 2.29 | 1.86 | 7.53 | 9.38 |
| Aqua America, Inc. | 52.34 | 0.94 | 0.98 | 1.86 | 7.44 | 9.30 |
| California Water Service Group | 46.39 | 0.85 | 0.87 | 1.88 | 8.15 | 10.03 |
| Middlesex Water Company | 61.81 | 1.02 | 1.05 | 1.70 | 6.00 | 7.70 |
| SJW Corporation | 52.84 | 1.28 | 1.32 | 2.51 | 6.00 | 8.51 |
| The York Water Company | 41.23 | 0.72 | 0.74 | 1.79 | 5.95 | 7.74 |
| Group Average | 65.14 | 1.18 | 1.22 | 1.89 | 7.03 | 8.92 |
| Group Average G | | | | 7.00 | | |
| DCF | | | | 8.89 | | |

52-week High-Low Dividend Yield Calculation

| | High (\$) | Low (\$) | Average (Pa) (\$) | Latest Indicated Dividend (Do) (\$) | Average Dividend Yield (Do/Pa) (%) | Growth (%) | DCF (%) |
|--------------------------------|--------------|-------------|----------------------|--|---|---------------|------------|
| American States Water Company | 96.64 | 65.11 | 80.88 | 1.22 | 1.51 | 8.15 | 9.66 |
| American Water Works Co., Inc. | 141.70 | 92.00 | 116.85 | 2.20 | 1.88 | 7.53 | 9.41 |
| Aqua America, Inc. | 54.52 | 30.40 | 42.46 | 0.94 | 2.21 | 7.44 | 9.65 |
| California Water Service Group | 57.48 | 39.74 | 48.61 | 0.85 | 1.75 | 8.15 | 9.90 |
| Middlesex Water Company | 69.92 | 48.79 | 59.36 | 1.02 | 1.72 | 6.00 | 7.72 |
| SJW Corporation | 74.99 | 45.60 | 60.30 | 1.28 | 2.12 | 6.00 | 8.12 |
| The York Water Company | 49.85 | 33.06 | 41.46 | 0.72 | 1.74 | 5.95 | 7.69 |
| Group Average | 77.87 | 50.67 | 64.27 | 1.18 | 1.85 | 7.03 | 8.88 |
| Group Average G | | | | | 7.00 | | |
| DCF | | | | | 8.85 | | |
| Average of Current and 52-Week | | | | | 8.87 | | |

Multiple sources of the Barometer companies projected 5-year Earnings Per Share are used to calculate the Group Average Dividend Growth Estimate.

**Development of a Representative Dividend Growth Rate
for the Barometer Group of Water Companies**

| | <u>5 Yr Forecast</u> | | | | | |
|--------------------------------|----------------------|-------------------|-------------------|-------------------|----------------------|------------------------|
| | Value Line | Value Line | Zacks | Yahoo | Average Earnings | Growth |
| | <u>DPS</u> (%) | <u>EPS</u> (%) | <u>EPS</u> (%) | <u>EPS</u> (%) | <u>Growth</u> (%) | <u>Estimate</u> (%) |
| American States Water Company | 9.50 | 6.50 | | 9.80 | 8.15 | 8.15 |
| American Water Works Co., Inc. | 8.50 | 8.50 | 8.08 | 6.00 | 7.53 | 7.53 |
| Aqua America, Inc. | 7.50 | 10.00 | 5.91 | 6.40 | 7.44 | 7.44 |
| California Water Service Group | 5.50 | 6.50 | | 9.80 | 8.15 | 8.15 |
| Middlesex Water Company | 5.50 | 6.00 | | 2.70 | 4.35 | 6.00 |
| SJW Corporation | 7.00 | 6.00 | | 14.00 | 10.00 | 6.00 |
| The York Water Company | 5.50 | 7.00 | | 4.90 | 5.95 | 5.95 |
| Group Average | 7.00 | 7.21 | 7.00 | 7.66 | 7.37 | 7.03 |
| USE: | | | | | <u>7.00</u> | |

Sources: Value Line Investment Survey, May 5, 2020
Zacks, May 5, 2020 (www.zacks.com)
Yahoo!, May 5, 2020 (<http://finance.yahoo.com/>)

Water and Wastewater General Information

Appraisal Work Papers

Value Line Investment Surveys Water and Wastewater Industry Market and Financial Ratios

**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**



THE VALUE LINE

Investment Survey®

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ISSUE 9
Pages 1700-1850

File in the binder in order of issue number, removing previous issue bearing the same number.

January 10, 2020

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ESPECIALLY NOTEWORTHY:

Please note that in *The Value Line Investment Survey*, we are replacing the *Insider Decisions* box with the *18-Month Target Price Range*, which seeks to predict a stock's price range over an 18-month horizon. In addition to the high and low values of the range, the percentage difference between the recent stock price and the midpoint of the range is provided. The quantitative formula behind the 18-month range includes a number of variables, such as our analyst estimates and historical figures.

Meanwhile, we welcome one new company to the Survey this week. **Smartsheet Inc.** is a newcomer to the E-Commerce Industry on page 1835.

TD Ameritrade has accepted a buyout offer from **Charles Schwab**. The all-stock transaction is valued at \$26 billion. Please turn to pages 1805 and 1806 to learn more.

LogMeIn, Inc. has entered into a definitive agreement to be acquired in an all cash deal valued at roughly \$4.3 billion. Read more on the pending transaction on page 1825.

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★★ Rank 1 (Highest) for Timeliness.
★ Rank 2 (Above Average).

In three parts: Part 1 is the Summary & Index. Part 2 is Selection & Opinion. This is Part 3, Ratings & Reports. Volume LXXV, No. 22

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Value Line's estimates of sales and earnings growth for individual companies are derived by correlating sales, earnings, and dividends to appropriate components or subcomponents of the Gross Domestic Product, presented below. A more detailed forecast appears periodically in *Selection & Opinion*.

HYPOTHESIZED ECONOMIC ENVIRONMENT 3 TO 5 YEARS HENCE

The hypothesized 2022-2024 economic environment into which earnings are forecast is as follows: Unemployment will average about 4% of the national labor force. There will be no major wars in progress at that time. Industrial production will be expanding slowly. Inflation will continue to be relatively low. Prices as measured by the broad-

based GDP deflator will advance by 2.5% per year, on average. Long-term interest rates on AAA corporate bonds are projected to average just under 4% in the years 2022-2024. We expect the Federal Reserve to pursue stable monetary policies except in years in which the economy is slowing or there is a recession. Based on these assumptions, the Gross Domestic Product will average nearly \$25,300 billion in the years 2022-2024, a level that is roughly 23% above the estimated 2018 total of just over \$20,500 billion.

Things may turn out differently. But in the absence of knowledge of the future, we use the above assumptions, which appear to be most plausible. Thus we are able to apply a common economic environment to all stocks for the purpose of measuring relative growth potential.

THESE ARE THE NATIONAL INCOME SERIES TO WHICH VALUE LINE SALES, EARNINGS, AND DIVIDEND ESTIMATES ARE CORRELATED

| ANNUAL STATISTICS | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019* | 2020* | 2022-24* |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|
| Gross Domestic Product (\$Bil.) | 14713 | 14449 | 14992 | 15543 | 16197 | 16785 | 17522 | 18219 | 18707 | 19485 | 20525 | 21437 | 22335 | 25278 |
| Real GDP (2012 Chained \$Bil.) | 15605 | 15209 | 15599 | 15841 | 16197 | 16495 | 16900 | 17387 | 17659 | 18051 | 18571 | 18856 | 19335 | 20360 |
| Total Consumption (\$Bil.) | 10593 | 10460 | 10643 | 10844 | 11007 | 11167 | 11497 | 11922 | 12248 | 12567 | 12945 | 13283 | 13639 | 14597 |
| Nonresidential Fixed Investment (\$Bil.) | 1994 | 1704 | 1781 | 1935 | 2119 | 2206 | 2365 | 2408 | 2425 | 2531 | 2692 | 2753 | 2796 | 3027 |
| Industrial Prod. (% Change, Annualized) | -3.5 | -11.5 | 5.5 | 3.1 | 3.0 | 2.0 | 3.1 | -1.0 | -2.0 | 2.3 | 3.9 | -1.0 | 0.8 | 1.0 |
| Housing Starts (Mill. Units) | 0.90 | 0.55 | 0.59 | 0.61 | 0.78 | 0.93 | 1.00 | 1.11 | 1.18 | 1.21 | 1.25 | 1.26 | 1.28 | 1.25 |
| Total Light Vehicle Sales (Mill. Units) | 13.2 | 10.4 | 11.6 | 12.7 | 14.4 | 15.5 | 16.4 | 17.4 | 17.5 | 17.1 | 17.2 | 16.9 | 16.7 | 16.5 |
| Personal Savings Rate (%) | 5.0 | 6.1 | 6.6 | 7.2 | 8.9 | 6.4 | 7.4 | 7.6 | 6.8 | 7.0 | 7.7 | 8.1 | 7.6 | 7.0 |
| National Unemployment Rate (%) | 5.8 | 9.3 | 9.6 | 8.9 | 8.1 | 7.4 | 6.2 | 5.3 | 4.9 | 4.4 | 3.9 | 3.7 | 3.4 | 4.0 |
| AAA Corp Bond Rate (%) | 5.6 | 5.3 | 4.9 | 4.6 | 3.7 | 4.2 | 4.2 | 3.9 | 3.7 | 3.8 | 3.9 | 3.4 | 3.2 | 3.8 |
| 10-Year Treasury Note Rate (%) | 3.7 | 3.3 | 3.2 | 2.8 | 1.8 | 2.4 | 2.5 | 2.2 | 1.9 | 2.3 | 2.9 | 2.1 | 2.1 | 3.0 |
| 3-Month Treasury Bill Rate (%) | 1.4 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.9 | 1.9 | 2.1 | 1.6 | 2.3 |
| ANNUAL RATES OF CHANGE | | | | | | | | | | | | | | |
| Real GDP | -0.1 | -2.5 | 2.6 | 1.6 | 2.2 | 1.8 | 2.5 | 2.9 | 1.6 | 2.4 | 2.9 | 2.1 | 2.0 | 1.6 |
| GDP Deflator | 1.9 | 0.8 | 1.2 | 2.1 | 1.9 | 1.8 | 1.8 | 1.0 | 1.0 | 1.9 | 2.4 | 1.9 | 2.2 | 2.5 |
| Consumer Price Index | 3.8 | -0.3 | 1.6 | 3.1 | 2.1 | 1.5 | 1.6 | 0.1 | 1.3 | 2.1 | 2.4 | 2.0 | 1.9 | 2.5 |
| QUARTERLY ANNUALIZED RATES | | 2018 | | | | 2019 | | | | 2020 | | | | |
| | | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | |
| Gross Domestic Product (\$Bil.) | 20041 | 20412 | 20658 | 20865 | 21115 | 21346 | 21537 | 21751 | 21984 | 22219 | 22451 | 22685 | 22919 | |
| Real GDP (2012 Chained \$Bil.) | 18324 | 18512 | 18665 | 18765 | 18821 | 18915 | 19004 | 19084 | 19188 | 19288 | 19384 | 19480 | 19576 | |
| Total Consumption (\$Bil.) | 12783 | 12809 | 13020 | 13066 | 13102 | 13250 | 13345 | 13434 | 13517 | 13598 | 13675 | 13753 | 13830 | |
| Nonresidential Fixed Investment (\$Bil.) | 2640 | 2690 | 2704 | 2736 | 2766 | 2759 | 2738 | 2751 | 2772 | 2785 | 2803 | 2824 | 2845 | |
| Industrial Production (% Change, Annualized) | 2.3 | 4.6 | 5.2 | 3.9 | -1.9 | -2.2 | 1.2 | -1.0 | 0.5 | 0.5 | 1.0 | 1.3 | 1.6 | |
| Housing Starts (Mill. Units) | 1.32 | 1.26 | 1.23 | 1.19 | 1.21 | 1.26 | 1.28 | 1.30 | 1.30 | 1.28 | 1.28 | 1.26 | 1.26 | |
| Total Light Vehicle Sales (Mill. Units) | 17.1 | 17.3 | 17.0 | 17.4 | 16.8 | 17.0 | 17.0 | 16.8 | 16.8 | 16.7 | 16.7 | 16.6 | 16.6 | |

*Estimated

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Donna Webb, Supervisor of Production Control

Howard Brecher, President & Publisher

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The Water Utility Industry consists of eight investor-owned utilities that are mostly regulated by state authorities.

Consolidation continues to occur at a slow, but steady pace.

Regulation continues to be one of the strengths of this sector. Unlike the electric and gas utility sectors, there is less confrontation among regulators and water utilities.

Over the past five years, the performance from the eight primary stocks in the group has been excellent. Indeed, the typical water equity has outperformed the broader market averages by a wide margin. In the fourth quarter of 2019, this was not the case, however.

Due in part to three cuts by the Federal Reserve, short-term rates have declined. Still, on a comparable basis, they seem more attractive than water utility stocks, which carry an average yield of only about 2.0%.

Based on many key indicators, the valuation of this group is close to a historical high.

Finally, even though several equities in the Water Utility Industry are ranked 1 (Highest) for year-ahead relative price performance, almost all have substantially less than average prospects over the next 18-month- and three- to five-year periods. Most equities here are already trading well within their estimated long-term Target Price Range.

Is The Rally Over?

For the most part, water utility stocks turned in another excellent performance in 2019. This has pretty much been the norm over the past decade. The group was once bought by investors for its high dividend yield, good annual payout prospects, and reliable earnings stream. Considered a conservative vehicle, investors were willing to forgo appreciation potential in return for certainty. The price performance has been so strong that the average yield is now lower than the average stock in the Value Line universe. Over the past few years, Wall Street questioned several times whether the rally here could continue. Was the last quarter the beginning of the end? Indeed, these stocks didn't fare well when compared to the broader market averages.

Industry Fundamentals

The water industry in the United States is extremely fragmented. Most water service is provided by authorities that are controlled by municipal or state agencies. There are currently, tens of thousands of these entities in operation. Consolidation has been accelerating as smaller districts are merging with larger ones. *American Water Works* and *Aqua America* are two examples of growth through acquisitions. In addition to increasing the size of their rate base (on which they earn a return), these firms have been able to achieve substantial economies of scale as there are many cost redundancies.

A construction boom is also underway. In the past, insufficient investment was made in maintaining the nation's pipelines and waste water facilities. The average age of a pipe in the United States is well over 50 years, with some assets being much older. Water utilities have been addressing the problem by increasing their capital budgets meaningfully. A good percentage of the

INDUSTRY TIMELINESS: 1 (of 95)

outlays are being targeted at replacing older pipes and valves.

Regulation

Investor-owned utilities are overseen by state regulators. In return for permitting a company to have a monopoly, authorities are allowed to determine what rate of return can be made on investments. Both regulators and companies have had a constructive relationship in determining the best way to improve the country's water system. By comparison, other regulated areas, such as electric and natural gas, relations have been less than cordial. For example, natural gas utilities are trying to expand their pipelines to increase the use of the low-priced commodity. However, there has been push back here due to cost and environmental concerns.

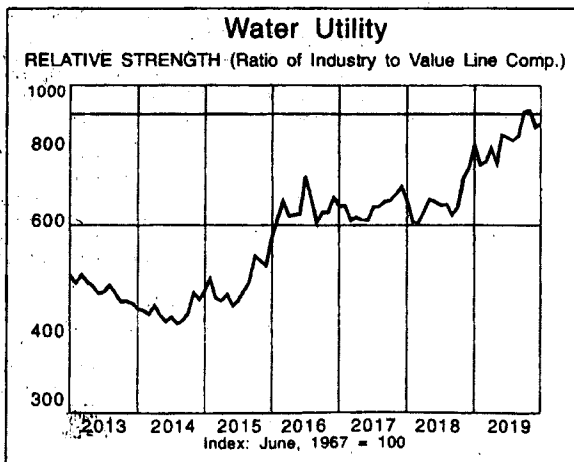
Liquid Gold?

As the world's population continues to grow, so will the demand for potable water. Due to insufficient supply in certain regions, some experts are calling water the next hot commodity. This could very well be true, but we do not know. For certain, a severe supply/demand imbalance is getting worse. In any case, the regulated water sector would not benefit, as these companies' earnings are capped (with the partial exception of *Consolidated Water*). Hence, the allowed rate of return will be set at a reasonable level. Excessive profits generated from operations would be returned to ratepayers in the form of lower water bills.

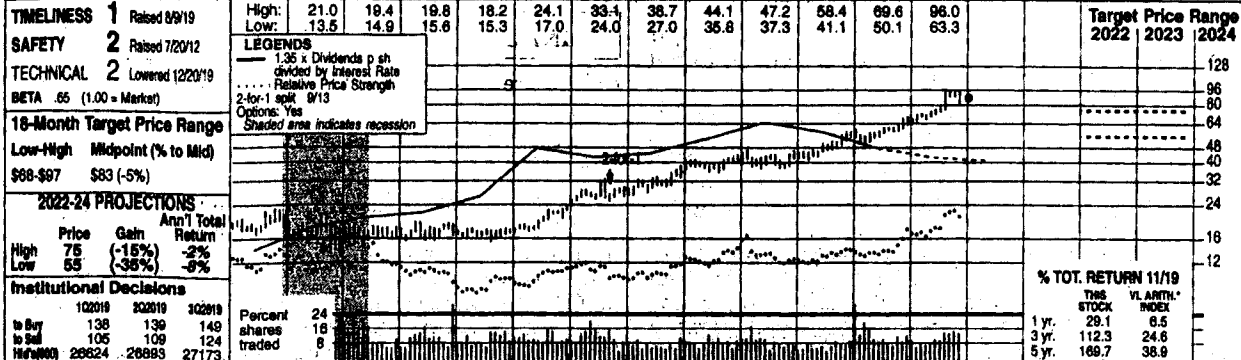
Conclusion

Despite the many positives of this group, the premium that investors have to pay to own a water stock is high based on most metrics. Several stand out for year-ahead performance. However, potential returns over the next 18 months, and through 2022-2024 are subpar. As always, we recommend that subscribers carefully read each individual report before investing to have a better understanding of each company's specific risk profile.

James A. Flood



AMER. STATES WATER NYSE-AWR RECENT PRICE **87.33** P/E RATIO **41.0** (Trailing: 38.7 Median: 21.0) RELATIVE P/E RATIO **2.23** DIV'D YLD **1.4%** VALUE LINE **1787**



| 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 6.99 | 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 | 12.85 | 13.10 | 13.10 | 13.10 | 13.10 | 13.10 | 13.10 |
| 1.04 | 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 | 3.10 | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| .39 | .53 | .66 | .67 | .81 | .78 | .81 | 1.11 | 1.12 | 1.41 | 1.61 | 1.57 | 1.61 | 1.82 | 1.86 | 1.72 | 2.15 | 2.20 | 2.20 | 2.20 | 2.20 | 2.20 | 2.20 |
| .44 | .44 | .45 | .46 | .48 | .50 | .51 | .52 | .55 | .64 | .78 | .83 | .87 | .91 | .89 | 1.06 | 1.16 | 1.28 | 1.28 | 1.28 | 1.28 | 1.28 | 1.28 |
| 1.88 | 2.51 | 2.12 | 1.95 | 1.45 | 2.23 | 2.09 | 2.12 | 2.13 | 1.77 | 2.32 | 1.89 | 2.39 | 3.55 | 3.08 | 3.44 | 3.95 | 3.50 | 3.50 | 3.50 | 3.50 | 3.50 | 3.50 |
| 6.96 | 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 | 18.10 | 17.00 | 17.00 | 17.00 | 17.00 | 17.00 | 17.00 |
| 30.42 | 33.50 | 33.60 | 34.10 | 34.46 | 34.60 | 37.06 | 37.26 | 37.70 | 38.53 | 38.72 | 38.29 | 38.50 | 38.57 | 38.68 | 38.76 | 38.90 | 37.00 | 37.00 | 37.00 | 37.00 | 37.00 | 37.00 |
| 31.9 | 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 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 |
| 1.82 | 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 | 1.63 | 1.83 | 1.83 | 1.83 | 1.83 | 1.83 | 1.83 | 1.83 |
| 3.5% | 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% | 2.0% | 1.8% | 1.8% | 1.8% | 1.8% | 1.8% | 1.8% | 1.8% |

| CAPITAL STRUCTURE as of 9/30/19 | | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---------------------------------|---|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Debt | \$475.3 mill. Due in 5 Yrs \$100.7 mill. | 361.0 | 398.9 | 419.3 | 466.9 | 472.1 | 465.8 | 458.5 | 436.1 | 440.6 | 436.8 | 475 | 485 | 485 | 485 | 485 | 485 | 485 | 485 | 485 | 485 | 485 | 485 |
| LT Debt | \$475.0 mill. LT Interest \$24.0 mill. (45% of Cap) | 29.5 | 41.4 | 42.0 | 54.1 | 62.7 | 61.1 | 60.5 | 59.7 | 69.4 | 63.9 | 80.0 | 82.0 | 82.0 | 82.0 | 82.0 | 82.0 | 82.0 | 82.0 | 82.0 | 82.0 | 82.0 | 82.0 |
| Leases, Uncapitalized | Annual rentals \$2.6 mill. | 38.9% | 43.2% | 41.7% | 39.9% | 36.3% | 38.4% | 38.4% | 36.5% | 36.0% | 22.0% | 23.0% | 23.0% | 23.0% | 23.0% | 23.0% | 23.0% | 23.0% | 23.0% | 23.0% | 23.0% | 23.0% | 23.0% |
| Pension Assets | 12/18 \$162.5 mill. Oblg. \$198.1 mill. | 3.2% | 5.8% | 2.0% | 2.5% | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Ptd Stock | None | 45.9% | 44.3% | 45.4% | 42.2% | 39.6% | 39.1% | 41.1% | 39.4% | 38.0% | 40.5% | 44.0% | 44.5% | 44.5% | 44.5% | 44.5% | 44.5% | 44.5% | 44.5% | 44.5% | 44.5% | 44.5% | 44.5% |
| Common Stock | 36,839,301 shs. as of 11/1/19 | 54.1% | 55.7% | 54.6% | 57.8% | 60.2% | 60.9% | 58.9% | 60.6% | 62.6% | 59.5% | 56.0% | 56.0% | 56.0% | 56.0% | 56.0% | 56.0% | 56.0% | 56.0% | 56.0% | 56.0% | 56.0% | 56.0% |
| MARKET CAP: | \$3.2 billion (Mid Cap) | 865.0 | 677.4 | 749.1 | 787.0 | 818.4 | 832.6 | 791.5 | 815.3 | 854.9 | 938.4 | 1070 | 1130 | 1130 | 1130 | 1130 | 1130 | 1130 | 1130 | 1130 | 1130 | 1130 | 1130 |
| CURRENT POSITION | 2017 2018 9/30/19 | 866.4 | 855.0 | 896.5 | 917.8 | 961.5 | 1003.5 | 1000.8 | 1150.9 | 1205.0 | 1296.3 | 1390 | 1475 | 1475 | 1475 | 1475 | 1475 | 1475 | 1475 | 1475 | 1475 | 1475 | 1475 |
| Cash Assets | 2 | 7.1 | 10.4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Accts Receivable | 26.1 | 23.4 | 28.1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Other | 129.2 | 101.0 | 94.0 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Current Assets | 155.5 | 131.5 | 132.5 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Accts Payable | 51.0 | 59.5 | 59.6 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Debt Due | 59.3 | 40.3 | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Other | 48.4 | 48.8 | 59.7 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Current Liab. | 156.7 | 148.8 | 119.8 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |

BUSINESS: American States Water Co. operates as a holding company. Through its principal subsidiary, Golden State Water Co., it supplies water to 259,919 customers in 70 cities in 10 counties. Service areas include the metropolitan areas of Los Angeles and Orange Counties. The company also provides electricity to 24,363 customers in Big Bear Lake and San Bernardino County. Provides water & wastewater services to U.S. military bases through its ASUS sub. Sold Chaparral City Wtr. of AZ. (6/11). Employs about 815. BlackRock, Inc. owns 15.1% of out. shares; Vanguard, 11.5%; off. & dir. 1.2%. (4/19 Proxy). Chairman: Lloyd Ross. Pres. & CEO: Robert Sprawl. Inc. CA. Addr: 630 East Foothill Blvd., San Dimas, CA 91775. Tel: 909-394-3800. Internet: www.eswater.com.

Shares of American States Water have not participated in the recent market rally. In the last quarter of 2019, the S&P 500 Index rallied almost 10%. Over that same time span, the value of AWR has actually declined approximately 3%, an underperformance of more than 1200 basis points. We think profit taking and sector rotation by institutional investors were at least partially responsible for the poor showing.

Earnings in 2020 should top last year's impressive figure. Even though 2019 likely ended on a down note, American States' share earnings probably climbed to \$2.15, a 25% increase above the previous year's weak number. Rate relief and cost cutting were most likely the primary reasons for the strong comparison. These factors will probably have less of an impact on 2020's bottom line, but earnings per share could still well rise 2% to \$2.20, as the unregulated operations' gain in importance (more below).

| Cal-endar | QUARTERLY REVENUES (\$ mill.) | Full Year |
|-----------|-------------------------------|-----------|
| | Mar.31 Jun.30 Sep.30 Dec.31 | |
| 2016 | 93.5 112.0 123.8 106.8 | 436.1 |
| 2017 | 98.8 113.2 124.4 104.2 | 440.6 |
| 2018 | 94.7 106.9 124.2 111.0 | 436.8 |
| 2019 | 101.7 124.6 134.5 114.2 | 475 |
| 2020 | 105 125 140 115 | 485 |

| Cal-endar | EARNINGS PER SHARE A | Full Year |
|-----------|-----------------------------|-----------|
| | Mar.31 Jun.30 Sep.30 Dec.31 | |
| 2016 | .28 .45 .59 .30 | 1.62 |
| 2017 | .34 .62 .57 .35 | 1.88 |
| 2018 | .29 .44 .62 .37 | 1.72 |
| 2019 | .35 .72 .76 .32 | 2.15 |
| 2020 | .39 .87 .70 .46 | 2.20 |

| Cal-endar | QUARTERLY DIVIDENDS PAID | Full Year |
|-----------|-----------------------------|-----------|
| | Mar.31 Jun.30 Sep.30 Dec.31 | |
| 2016 | .224 .224 .224 .242 | .91 |
| 2017 | .242 .242 .255 .255 | .99 |
| 2018 | .255 .255 .275 .275 | 1.06 |
| 2019 | .275 .275 .305 .305 | 1.16 |
| 2020 | | |

FINANCES ARE SOLID. The company remains a distance third in terms of size in the water industry (American Water Works and Aqua America are the two giants). Nevertheless, thanks to a balance sheet that doesn't have a large amount of debt, American Water is one of the two utilities in this nine-member group that carries a Financial Strength rating as high as an A.

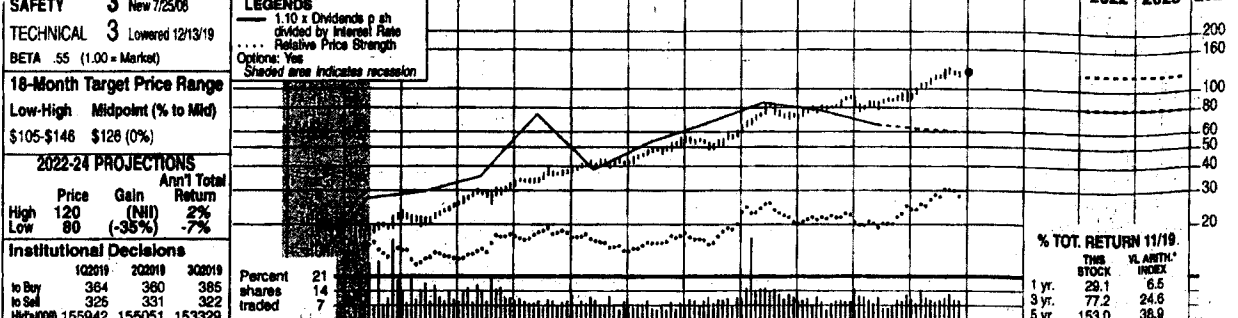
Nonutility operations are generating a steady amount of income. The company's ASUS subsidiary provides water services to military bases via 50-year fixed-priced contracts. As more military installations privatize their water systems, we expect ASUS to raise its presence in this sector, by being successful in the competitive bidding process. This business should account for between 20% to 30% of total income by early next decade.

These shares are only for short-term investors. AWR carries a 1 (Highest) rank for year-ahead relative performance. Over the next 18-month period, our quantitative system believes the stock will actually decrease in value, however. In addition, even with the recent price decline, the equity is trading above our projected 2022-2024 Target Price Range. Finally, the dividend yield is subpar.

James A. Flood January 10, 2020

AMERICAN WATER NYSE-AWK

RECENT PRICE **123.05** P/E RATIO **33.3** (Trailing: 35.1 Median: 18.6) RELATIVE P/E RATIO **1.81** DIV'D YLD **1.7%** VALUE LINE **1788**



| 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 13.08 | 13.84 | 14.61 | 13.98 | 15.40 | 15.16 | 16.25 | 16.28 | 16.78 | 17.72 | 18.54 | 18.81 | 19.04 | 20.05 | 20.95 | 20.95 | 20.95 | 20.95 | 20.95 | 20.95 | 20.95 | 20.95 |
| 0.65 | 0.47 | 2.87 | 2.89 | 3.58 | 3.73 | 4.27 | 4.36 | 5.13 | 5.26 | 5.14 | 6.15 | 6.75 | 7.10 | 7.10 | 7.10 | 7.10 | 7.10 | 7.10 | 7.10 | 7.10 | 7.10 |
| 0.97 | 0.14 | 1.10 | 1.25 | 1.53 | 1.72 | 2.11 | 2.06 | 2.39 | 2.64 | 2.62 | 3.15 | 3.60 | 3.90 | 3.90 | 3.90 | 3.90 | 3.90 | 3.90 | 3.90 | 3.90 | 3.90 |
| 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 | 8.70 | 9.20 | 9.20 | 9.20 | 9.20 | 9.20 | 9.20 | 9.20 | 9.20 |
| 23.86 | 28.39 | 25.84 | 22.91 | 23.59 | 24.11 | 25.11 | 26.52 | 27.39 | 28.25 | 29.24 | 30.13 | 32.42 | 34.40 | 36.35 | 36.35 | 36.35 | 36.35 | 36.35 | 36.35 | 36.35 | 36.35 |
| 160.00 | 160.00 | 160.00 | 174.83 | 175.00 | 175.86 | 176.99 | 178.25 | 179.46 | 178.28 | 178.10 | 178.44 | 180.68 | 181.00 | 182.00 | 182.00 | 182.00 | 182.00 | 182.00 | 182.00 | 182.00 | 182.00 |
| 18.9 | 14.8 | 16.8 | 16.7 | 19.9 | 20.0 | 20.5 | 27.7 | 33.8 | 27.3 | 33.8 | 27.3 | 33.8 | 27.3 | 33.8 | 27.3 | 33.8 | 27.3 | 33.8 | 27.3 | 33.8 | 27.3 |
| 1.14 | 1.04 | .93 | 1.05 | 1.06 | 1.12 | 1.05 | 1.03 | 1.05 | 1.03 | 1.45 | 1.70 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 |
| 1.8% | 2.8% | 3.5% | 3.6% | 4.7% | 4.3% | 4.7% | 4.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% |

| 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 2440.7 | 2710.7 | 2686.2 | 2878.9 | 2901.9 | 3011.3 | 3158.0 | 3302.0 | 3357.0 | 3440.0 | 3690 | 3810 | 3810 | 3810 | 3810 | 3810 | 3810 | 3810 | 3810 | 3810 | 3810 | 3810 |
| 209.9 | 267.8 | 304.9 | 374.3 | 360.3 | 429.8 | 478.0 | 468.0 | 426.0 | 567.0 | 650 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 |
| 37.9% | 40.4% | 39.5% | 40.7% | 39.1% | 38.4% | 39.1% | 39.2% | 53.3% | 28.2% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% |
| 58.8% | 58.8% | 55.7% | 53.9% | 52.4% | 52.4% | 53.7% | 52.4% | 54.7% | 56.3% | 58.0% | 58.0% | 58.0% | 58.0% | 58.0% | 58.0% | 58.0% | 58.0% | 58.0% | 58.0% | 58.0% | 58.0% |
| 43.1% | 43.2% | 44.2% | 46.1% | 47.6% | 47.4% | 46.2% | 47.5% | 45.3% | 43.6% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% |
| 8280.0 | 9581.3 | 9580.3 | 9635.5 | 9940.7 | 10364 | 10911 | 10967 | 11875 | 13433 | 14900 | 15700 | 15700 | 15700 | 15700 | 15700 | 15700 | 15700 | 15700 | 15700 | 15700 | 15700 |
| 10524 | 11059 | 11021 | 11739 | 12391 | 12900 | 13933 | 14992 | 16246 | 17409 | 18350 | 18300 | 18300 | 18300 | 18300 | 18300 | 18300 | 18300 | 18300 | 18300 | 18300 | 18300 |
| 3.8% | 4.4% | 4.8% | 5.4% | 5.1% | 5.5% | 5.7% | 5.8% | 4.9% | 6.4% | 5.5% | 5.5% | 5.5% | 5.5% | 5.5% | 5.5% | 5.5% | 5.5% | 5.5% | 5.5% | 5.5% | 5.5% |
| 5.2% | 6.5% | 7.2% | 8.4% | 7.8% | 8.7% | 9.4% | 9.0% | 7.9% | 8.7% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% |
| 1.8% | 2.8% | 3.5% | 3.6% | 4.7% | 4.3% | 4.7% | 4.0% | 2.5% | 4.2% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% |
| 66% | 59% | 62% | 67% | 40% | 50% | 50% | 56% | 68% | 58% | 54% | 54% | 54% | 54% | 54% | 54% | 54% | 54% | 54% | 54% | 54% | 54% |

CAPITAL STRUCTURE as of 9/30/19
 Total Debt \$9143.0 mil. Due In 5 Yrs \$1555.0 mil.
 LT Debt \$8640.0 mil. LT Interest \$370.0 mil.
 (59% of Cap'l)

Leases, Uncapitalized: Annual rentals \$17.0 mil.
Pension Assets 12/18 \$1490.0 mil.
Pfd Stock \$7.0 mil. Pfd Div'd \$4.4 mil.

Common Stock 180,776,169 shares as of 10/24/19

MARKET CAP: \$22.2 billion (Large Cap)

CURRENT POSITION 2017 2018 9/30/19 (\$MILL)

| | | | |
|------------------|------|------|------|
| Cash Assets | 82 | 158 | 119 |
| Accts Receivable | 272 | 301 | 335 |
| Other | 366 | 322 | 348 |
| Current Assets | 720 | 781 | 799 |
| Accts Payable | 195 | 178 | 149 |
| Debt Due | 1287 | 1036 | 803 |
| Other | 903 | 854 | 859 |
| Current Liab. | 2328 | 2094 | 1498 |

BUSINESS: American Water Works Company, Inc. is the largest investor-owned water and wastewater utility in the U.S., providing services to more than 14 million people in 46 states and Ontario, Canada. Nonregulated business assists municipalities and military bases with the maintenance and upkeep as well. Regulated operations made up 87% of 2018 revenues. New Jersey is its largest market accounting for 24% of regulated revenues; Pennsylvania, 23%. Has 7,100 employees. The Vanguard Grp. owns 11.0% of outstanding shares; BlackRock, Inc., 7.9% officers & directors, less than 1.0%. (3/18 Proxy), President & CEO: Susan N. Story, Chairman: George MacKenzie. Address: 1 Water Street, Camden, NJ 08102. Tel.: 856-346-8200. Internet: www.amwater.com.

ANNUAL RATES Past 10 Yrs. Past 5 Yrs. to 10/24/18 of change (per sh)

| | | | |
|-------------|-------|-------|------|
| Revenue | 3.0% | 3.5% | 4.0% |
| "Cash Flow" | 18.5% | 6.0% | 7.0% |
| Earnings | -- | 6.5% | 8.5% |
| Dividends | -- | 10.5% | 9.0% |
| Book Value | 1.5% | 4.0% | 5.0% |

American Water Works enters the new decade as the most dominant member in this group. By any measure, it is the largest investor-owned water utility in the country. With its acquisition strategy and large spending budget (more below), the company should continue to grow its rate base substantially for the foreseeable future.

| Cal-ender | QUARTERLY REVENUES (\$ mil) | Full Year | | | |
|-----------|-----------------------------|-----------|---------|-------|--------|
| Mar.31 | Jun. 30 | Sep. 30 | Dec. 31 | Year | |
| 2016 | 743.0 | 827.0 | 930.0 | 802.0 | 3302.0 |
| 2017 | 756.0 | 844.0 | 936.0 | 821.0 | 3357.0 |
| 2018 | 761.0 | 853.0 | 976.0 | 850.0 | 3440.0 |
| 2019 | 813.0 | 882.0 | 1013.0 | 822 | 3630 |
| 2020 | 850 | 930 | 1080 | 850 | 3910 |

| Cal-ender | EARNINGS PER SHARE ^ | Full Year | | | |
|-----------|----------------------|-----------|---------|------|------|
| Mar.31 | Jun. 30 | Sep. 30 | Dec. 31 | Year | |
| 2016 | .46 | .77 | .83 | .57 | 2.62 |
| 2017 | .52 | .73 | 1.12 | .01 | 2.38 |
| 2018 | .59 | .91 | 1.03 | .62 | 3.15 |
| 2019 | .62 | .94 | 1.33 | .71 | 3.60 |
| 2020 | .65 | 1.00 | 1.45 | .80 | 3.90 |

| Cal-ender | QUARTERLY DIVIDENDS PAID ^ | Full Year | | | |
|-----------|----------------------------|-----------|--------|------|------|
| Mar.31 | Jun.30 | Sep.30 | Dec.31 | Year | |
| 2016 | .34 | .375 | .375 | .375 | 1.47 |
| 2017 | .375 | .415 | .415 | .415 | 1.62 |
| 2018 | .415 | .455 | .455 | .455 | 1.78 |
| 2019 | .455 | .50 | .50 | .50 | 1.96 |
| 2020 | | | | | |

The consolidation of the water industry is providing the company with plenty of opportunities. The U.S. water sector is composed of thousands of small, inefficient water districts that are mostly run by local municipalities. As more capital is required to upgrade antiquated pipelines and wastewater facilities, many of these districts are looking to be acquired by larger entities. American has been buying up some of these districts every year. Its bottom line benefits from this process because economies of scale are very achievable in this space.

The projected construction program is massive. At the company's recent Investor Day, management announced that it planned on spending about \$1.8 billion this year and about \$21 billion over the next 10 years on expanding and improving its infrastructure. Relations with the different state regulators will remain very important as these authorities will decide what kind of return can be made on these investments. Based on the historical record, the regulatory climate should remain constructive.

Finances will likely just remain average, though. Over the past decade or so, the water utility has relied almost exclusively on debt and internally generated cash to fund the building program. With the value of the equity increasing more than sixfold during the period, the company could do well by increasing its equity base. Until this happens, we don't expect the balance sheet to stand out.

Shares of American Water Works hold our Highest (1) rank for Timeliness. Like most equities in the water utility industry, however, AWK is highly overvalued by several key financial measures. Our 18-month quantitative model also indicates that the stock will not do well. Too, total return potential to 2022-2024 is very unattractive.

James A. Flood January 10, 2020

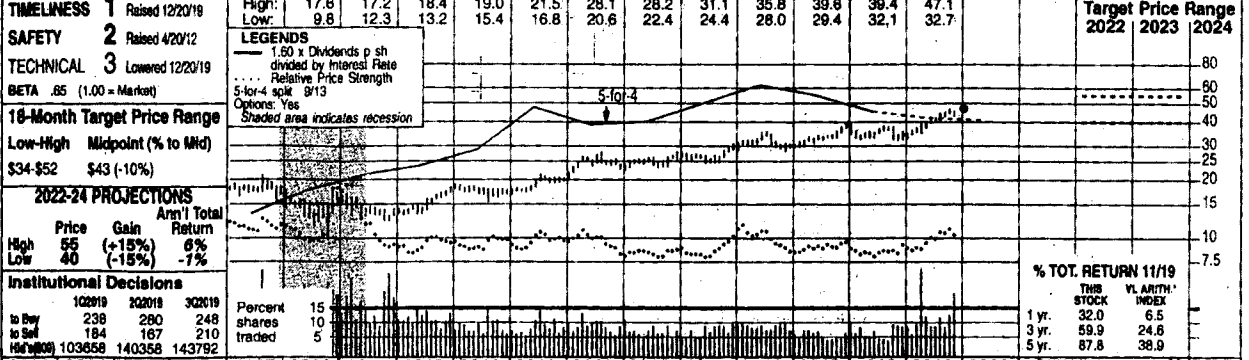
(A) Diluted earnings. Excludes nonrecurring losses: '08, \$4.62; '08, \$2.83; '11, \$0.07. Disc. oper.: '06, (\$0.04); '11, \$0.03; '12, (\$0.10); '13, (\$0.01). GAAP used as of 2014. Next earnings report due mid-February. Quarterly earnings do not sum in '16 due to rounding.
 (B) Dividends paid in March, June, September, and December. ^ Div. reinvestment available.
 (C) In millions. (D) Includes intangibles. On 9/30/19: \$1.850 billion, \$9.13/shares.
 (E) Pro forma numbers for '06 & '07.

Company's Financial Strength B+
 Stock's Price Stability 100
 Price Growth Persistence 85
 Earnings Predictability 80

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AQUA AMERICA NYSE-WTR

RECENT PRICE **47.08** P/E RATIO **35.9** (Trailing: 67.3 Median: 22.0) RELATIVE P/E RATIO **1.95** DIV YLD **2.1%** VALUE LINE **1789**



| 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | VALUE LINE PUB. LLC | 22-24 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------------------------|--------|
| 2.38 | 2.78 | 3.08 | 3.23 | 3.61 | 3.71 | 3.93 | 4.21 | 4.10 | 4.32 | 4.32 | 4.37 | 4.61 | 4.82 | 4.58 | 4.71 | 4.10 | 4.30 | Revenues per sh | 5.70 |
| .77 | .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 | 1.80 | 2.15 | "Cash Flow" per sh | 2.85 |
| .46 | .51 | .57 | .56 | .57 | .58 | .62 | .72 | .83 | .87 | 1.16 | 1.20 | 1.14 | 1.32 | 1.35 | 1.08 | 1.05 | 1.40 | Earnings per sh ^A | 2.00 |
| .28 | .29 | .32 | .35 | .38 | .41 | .44 | .47 | .50 | .54 | .58 | .63 | .69 | .74 | .79 | .85 | .91 | .98 | Div'd Decl'd per sh ^{B=C} | 1.25 |
| 1.06 | 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 | 2.40 | 2.50 | Cap'l Spending per sh | 2.75 |
| 4.27 | 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 | 18.00 | 18.50 | Book Value per sh | 18.40 |
| 154.31 | 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 | 178.06 | 216.00 | 217.00 | Common Shs Outst ^G | 220.00 |
| 24.5 | 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 | 32.6 | 30.5 | Avg Ann'l P/E Ratio | 24.0 |
| 1.40 | 1.33 | 1.89 | 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 | 1.76 | 1.76 | Relative P/E Ratio | 1.35 |
| 2.5% | 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% | 2.4% | 2.4% | Avg Ann'l Div'd Yield | 2.6% |

| CAPITAL STRUCTURE as of 9/30/19 | | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---------------------------------|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Debt | \$3086.4 mill. Due in 5 Yrs \$698.8 mill. | 670.5 | 726.1 | 712.0 | 757.8 | 757.8 | 768.5 | 779.9 | 814.2 | 819.9 | 809.5 | 838.1 | 890 | 930 | 830 | 890 | 830 | 830 | 830 |
| LT Debt | \$2898.3 mill. LT Interest \$122.0 mill. (43% of CapT) | 104.4 | 124.0 | 144.8 | 153.1 | 205.0 | 213.9 | 201.8 | 234.2 | 239.7 | 192.0 | 190 | 305 | 305 | 305 | 305 | 305 | 305 | 305 |
| Pension Assets-12/18 | \$239.0 mill. Oblig. \$282.0 mill. | 39.4% | 39.2% | 32.9% | 39.0% | 10.0% | 10.5% | 6.9% | 8.2% | 6.6% | 6.6% | 6.6% | 6.6% | 6.6% | 6.6% | 6.6% | 6.6% | 6.6% | 6.6% |
| Pfd Stock None | | 55.6% | 56.6% | 52.7% | 52.7% | 48.9% | 48.5% | 50.3% | 48.4% | 50.6% | 54.4% | 42.5% | 43.5% | 43.5% | 43.5% | 43.5% | 43.5% | 43.5% | 43.5% |
| Common Stock | 215,840,774 shares as of 10/23/19 | 44.4% | 43.4% | 47.3% | 47.3% | 51.1% | 51.5% | 49.7% | 51.6% | 49.4% | 45.6% | 57.5% | 56.5% | 56.5% | 56.5% | 56.5% | 56.5% | 56.5% | 56.5% |
| MARKET CAP: | \$10.2 billion (Large Cap) | 2495.5 | 2706.2 | 2646.8 | 2929.7 | 3003.6 | 3216.0 | 3469.5 | 3587.7 | 3965.4 | 4407.8 | 6800 | 7100 | 7100 | 7100 | 7100 | 7100 | 7100 | 7100 |
| CURRENT POSITION | | 3227.3 | 3469.3 | 3612.9 | 3936.2 | 4167.3 | 4402.0 | 4688.9 | 5001.6 | 5399.9 | 5930.3 | 6250 | 6525 | 6525 | 6525 | 6525 | 6525 | 6525 | 6525 |
| Cash Assets | | 5.6% | 5.9% | 6.9% | 6.6% | 8.0% | 7.8% | 6.9% | 7.6% | 7.1% | 5.5% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% |
| Receivables | | 9.4% | 10.6% | 11.6% | 11.0% | 13.4% | 12.9% | 11.7% | 12.7% | 12.2% | 9.6% | 6.0% | 6.5% | 6.5% | 6.5% | 6.5% | 6.5% | 6.5% | 6.5% |
| Inventory (AvgCst) | | 9.4% | 10.6% | 11.6% | 11.0% | 13.4% | 12.9% | 11.7% | 12.7% | 12.2% | 9.6% | 6.0% | 6.5% | 6.5% | 6.5% | 6.5% | 6.5% | 6.5% | 6.5% |
| Other | | 2.7% | 3.7% | 4.6% | 4.3% | 6.4% | 6.1% | 4.7% | 5.6% | 5.1% | 2.1% | 4.0% | 3.0% | 3.0% | 3.0% | 3.0% | 3.0% | 3.0% | 3.0% |
| Current Assets | | 72% | 65% | 60% | 61% | 50% | 52% | 60% | 56% | 59% | 59% | 79% | 87% | 63% | 63% | 63% | 63% | 63% | 63% |

BUSINESS: Aqua America, Inc. is the holding company for water and wastewater utilities that serve approximately three million residents in Pennsylvania (responsible for 53% of 2018 revenue), Ohio, Texas, Illinois, North Carolina, New Jersey, Indiana, and Virginia. Has 1,570 employees. Acquired AquaSource, 7/13; North Maine Utilities, 7/15, and others. Water supply revenues 2018: residential, 58%; commercial, 16%; industrial, wastewater & other, 26%. Off. & dir. own less than 1% of the common stock; Vanguard Group, 10.7%; Blackrock, Inc. 9.5%; State Street Capital, 4.9% (3/19 Proxy). President & Chief Executive Officer: Christopher Franklin, Inc. PA Addr.: 762 West Lancaster Avenue, Bryn Mawr, PA, 19010. Tel.: 610-525-1400. Internet: www.aquaamerica.com.

Aqua America is still awaiting final approval of its acquisition of Peoples Gas. The water utility reached an agreement to buy the regulated Pittsburgh-based natural gas company in 2018 for \$4.3 billion in cash, and the assumption of \$1.4 billion of debt. Because both entities operate in many different states, a host of regulators must provide permission for the transaction to be completed. Currently, our best estimate is that the purchase will close in the early part of this year. **The company will have a new profile.** The natural gas distributor has almost 750,000 customers. Though this is in a sector also overseen by state authorities, the gas sector has historically had a much more adversarial relationship with regulators. In the water segment, both utilities and regulators realize that large amounts of investment are needed to modernize the country's antiquated infrastructure. Cooperation between companies and their overseers has been very constructive. By comparison, in the gas arena, there is much resistance to construction programs such as expanding existing pipelines to meet the needs of a service area.

The balance sheet partially reflects the acquisition. To finance the transaction, a large equity offering was completed last year. More than \$1.3 billion was raised in the transaction, which increased shares outstanding by about 20% (37.3 million). Proceed from the sale of tangible equity units also raised approximately \$700 million. About \$900 million of debt due in 2029 and 2049 was also sold last April. The remaining funds should come from existing credit facilities. **Meanwhile, another rate hike was granted.** On October 29th, about \$60 million in higher rates went into effect in Pennsylvania. During 2019, New Jersey, North Carolina, and Ohio also increased tariffs. **Only short-term investors should take a look here.** By most financial metrics, including the P/E ratio and its yield relative to the average equity, WTR is highly overvalued. It is ranked 1 (Highest) for year-ahead performance, but our 18-month model predicts the stock will post a negative performance. In addition, total return prospects to 2022-2024 are poor. **James A. Flood** January 10, 2020

| Cal-ender | QUARTERLY REVENUES (\$ mill.) | | | | Full Year |
|-----------|-------------------------------|--------|--------|--------|-----------|
| | Mar.31 | Jun.30 | Sep.30 | Dec.31 | |
| 2016 | 192.6 | 203.9 | 226.6 | 196.8 | 819.9 |
| 2017 | 187.8 | 203.4 | 215.0 | 203.3 | 809.5 |
| 2018 | 194.3 | 211.9 | 228.2 | 205.7 | 838.1 |
| 2019 | 201.1 | 218.9 | 243.6 | 226.4 | 890 |
| 2020 | 215 | 235 | 250 | 230 | 830 |

| Cal-ender | EARNINGS PER SHARE ^A | | | | Full Year |
|-----------|---------------------------------|--------|--------|--------|-----------|
| | Mar.31 | Jun.30 | Sep.30 | Dec.31 | |
| 2016 | .29 | .34 | .41 | .28 | 1.32 |
| 2017 | .28 | .34 | .43 | .30 | 1.35 |
| 2018 | .29 | .37 | .44 | 0.02 | 1.08 |
| 2019 | .09 | .25 | .38 | .33 | 1.05 |
| 2020 | .25 | .35 | .47 | .33 | 1.40 |

| Cal-ender | QUARTERLY DIVIDENDS PAID ^{B=C} | | | | Full Year |
|-----------|---|--------|--------|--------|-----------|
| | Mar.31 | Jun.30 | Sep.30 | Dec.31 | |
| 2016 | .178 | .178 | .1913 | .1913 | .74 |
| 2017 | .1913 | .1913 | .2047 | .2047 | .79 |
| 2018 | .2047 | .2047 | .219 | .219 | .85 |
| 2019 | .219 | .219 | .2343 | .2343 | .91 |
| 2020 | | | | | |

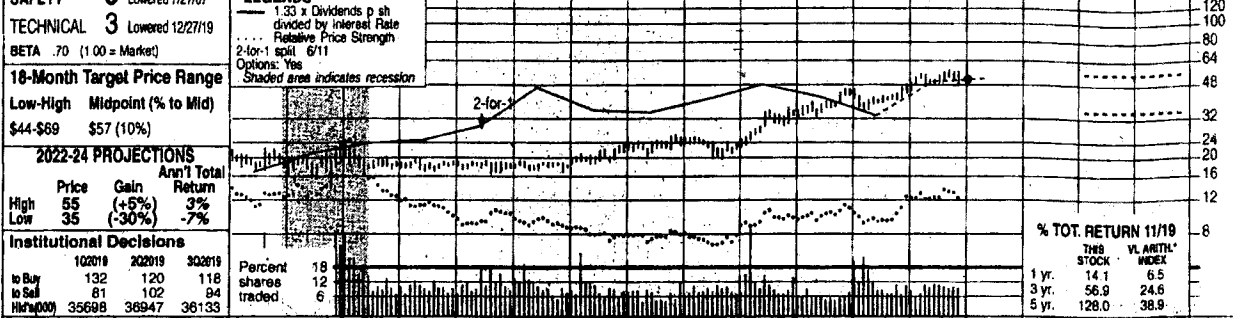
(A) Diluted eps. Excl. nonrec. gains: '03, 3e; '12, 18e. Excl. gain from disc. operations: '12, 7e; '13, 9e; '14, 11e. May not sum due to rounding. Next earnings report due mid-February.
 (B) Dividends historically paid in early March, June, Sept. & Dec. = Div'd. reinvestment plan available (5% discount).
 (C) In millions, adjusted for stock splits.
 (D) Includes intangibles: 9/30/19, \$52.7 mil./\$0.24 a share.

| Company's Financial Strength | | A |
|------------------------------|--|----|
| Stock's Price Stability | | 95 |
| Price Growth Persistence | | 75 |
| Earnings Predictability | | 65 |

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CALIFORNIA WATER NYSE-CWT

RECENT PRICE **51.52** P/E RATIO **31.0** (Trailing: 37.1 Median: 22.0) RELATIVE P/E RATIO **1.68** DIV YLD **1.5%** VALUE LINE **1790**



| 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | VALUE LINE PUBL. LLC | 22-24 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------------------|-------|
| 8.18 | 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 | 14.70 | 14.80 | Revenues per sh | 15.00 |
| 1.26 | 1.42 | 1.52 | 1.36 | 1.56 | 1.86 | 1.93 | 1.93 | 2.07 | 2.32 | 2.21 | 2.27 | 2.22 | 2.34 | 3.00 | 3.11 | 3.06 | 3.30 | "Cash Flow" per sh | 3.50 |
| .61 | .73 | .74 | .67 | .75 | .95 | .98 | .91 | .96 | 1.02 | 1.02 | 1.19 | .94 | 1.01 | 1.40 | 1.36 | 1.40 | 1.70 | Earnings per sh | 2.00 |
| .56 | .57 | .57 | .58 | .58 | .59 | .59 | .60 | .62 | .63 | .64 | .65 | .67 | .69 | .72 | .75 | .79 | .82 | Div'd Decl'd per sh | 1.05 |
| 2.19 | 1.87 | 2.01 | 2.14 | 1.84 | 2.41 | 2.66 | 2.87 | 2.83 | 3.04 | 2.58 | 2.78 | 3.88 | 4.77 | 5.40 | 5.65 | 3.85 | 4.00 | Cap'l Spending per sh | 3.65 |
| 7.22 | 7.83 | 7.90 | 8.07 | 9.25 | 9.72 | 10.13 | 10.45 | 10.76 | 11.28 | 12.54 | 13.11 | 13.41 | 13.75 | 14.44 | 15.19 | 15.85 | 15.70 | Book Value per sh | 16.65 |
| 33.86 | 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 | 48.25 | 50.00 | Common Shs Outst ^g | 53.00 |
| 22.1 | 20.1 | 24.9 | 29.2 | 26.1 | 19.8 | 19.7 | 20.3 | 21.3 | 17.9 | 20.1 | 19.7 | 24.8 | 29.8 | 28.9 | 30.3 | 30.3 | 30.3 | Avg Ann'l P/E Ratio | 23.0 |
| 1.26 | 1.06 | 1.33 | 1.58 | 1.39 | 1.19 | 1.31 | 1.29 | 1.34 | 1.14 | 1.13 | 1.04 | 1.25 | 1.65 | 1.36 | 1.64 | 1.64 | 1.64 | Relative P/E Ratio | 1.25 |
| 4.2% | 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% | 1.8% | 1.8% | Avg Ann'l Div'd Yield | 2.5% |

| CAPITAL STRUCTURE as of 9/30/19 | | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | VALUE LINE PUBL. LLC | 22-24 |
|---|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|------------------------|-------|
| Total Debt \$967.9 mill. Due in 5 Yrs \$430.1 mill. | | 449.4 | 460.4 | 501.8 | 560.0 | 584.1 | 597.5 | 588.4 | 609.4 | 686.9 | 698.2 | 710 | 740 | 795 | 850 | 850 | 850 | 850 | 850 | Revenues (\$/mil) | 795 |
| LT Debt \$807.5 mill. LT Interest \$40.0 mill. (Total interest coverage: 4.1x) (53% of Cap'l) | | 40.6 | 37.7 | 36.1 | 42.6 | 47.3 | 56.7 | 45.0 | 48.7 | 60.0 | 61.0 | 61.0 | 61.0 | 61.0 | 61.0 | 61.0 | 61.0 | 61.0 | 61.0 | Net Profit (\$/mil) | 105 |
| Pension Assets-12/18 \$469.7 mill. Oblig. \$639.9 mill. | | 40.3% | 39.5% | 40.5% | 37.5% | 30.3% | 33.0% | 36.0% | 35.5% | 30.1% | 24.5% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | Income Tax Rate | 21.0% |
| Pld Stock None | | 7.6% | 4.2% | 7.6% | 8.0% | 4.3% | 2.7% | 4.3% | 6.1% | 3.5% | 3.1% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | AFUDC % to Net Profit | 5.0% |
| Common Stock 48,145,000 shs. | | 47.1% | 52.4% | 51.7% | 47.8% | 41.6% | 40.1% | 44.4% | 44.6% | 42.7% | 49.3% | 51.0% | 47.0% | 47.0% | 47.0% | 47.0% | 47.0% | 47.0% | 47.0% | Long-Term Debt Ratio | 39.5% |
| MARKET CAP: \$2.5 billion (Mid Cap) | | 52.9% | 47.6% | 48.3% | 52.2% | 58.4% | 59.9% | 55.6% | 55.4% | 57.3% | 50.7% | 49.0% | 53.0% | 53.0% | 53.0% | 53.0% | 53.0% | 53.0% | 53.0% | Common Equity Ratio | 60.5% |
| CURRENT POSITION | | 794.9 | 914.7 | 831.5 | 908.2 | 1024.9 | 1045.9 | 1154.4 | 1191.2 | 1209.3 | 1440.2 | 1565 | 1485 | 1485 | 1485 | 1485 | 1485 | 1485 | 1485 | Total Capital (\$/mil) | 1400 |
| CASH ASSETS | | 1198.1 | 1294.3 | 1381.1 | 1457.1 | 1516.8 | 1590.4 | 1701.8 | 1859.3 | 2048.0 | 2232.7 | 2300 | 2385 | 2385 | 2385 | 2385 | 2385 | 2385 | 2385 | Net Plant (\$/mil) | 2500 |
| OTHER ASSETS | | 6.5% | 5.5% | 5.5% | 6.3% | 6.0% | 6.3% | 5.2% | 5.5% | 7.1% | 5.9% | 5.0% | 6.5% | 6.5% | 6.5% | 6.5% | 6.5% | 6.5% | 6.5% | Return on Total Cap'l | 8.5% |
| CURRENT LIAB. | | 9.8% | 8.6% | 8.0% | 9.0% | 7.9% | 9.1% | 7.0% | 7.4% | 9.7% | 8.0% | 11.0% | 12.5% | 12.5% | 12.5% | 12.5% | 12.5% | 12.5% | 12.5% | Return on Shr. Equity | 12.5% |
| CURRENT INCOME | | 9.6% | 8.6% | 8.0% | 9.0% | 7.9% | 9.1% | 7.0% | 7.4% | 9.7% | 8.0% | 11.0% | 12.5% | 12.5% | 12.5% | 12.5% | 12.5% | 12.5% | 12.5% | Return on Com Equity | 12.5% |
| CURRENT TAX | | 3.8% | 3.0% | 2.3% | 3.4% | 3.4% | 4.1% | 2.0% | 2.4% | 4.7% | 4.0% | 4.0% | 5.5% | 6.0% | 6.0% | 6.0% | 6.0% | 6.0% | 6.0% | Retained to Com Eq | 6.0% |
| CURRENT DIV. | | 60% | 68% | 71% | 62% | 56% | 55% | 71% | 68% | 51% | 55% | 58% | 48% | 53% | 53% | 53% | 53% | 53% | 53% | All Div'd to Net Prof | 53% |

BUSINESS: California Water Service Group provides regulated and nonregulated water service to 486,900 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, Sajas Valley, San Joaquin Valley & parts of Los Angeles, Ac...

California Water Service Group's net income rose sharply in the third quarter. Share net of \$0.88 increased 17%, year over year, handily topping our \$0.79 call. The solid performance was driven largely by higher rates and lower business development expenses, as these positives more than offset increased water production and operating costs. On balance, we think the water provider closed out the year with earnings of \$1.40 a share. For 2020, we expect noteworthy share-net expansion, which should be supported by a healthy top-line advance.

The company's outstanding share count is poised to rise. This is due primarily to the recent initiation of a three-year equity program in which California Water will periodically sell shares of common stock at market value. The rate of issuance will depend on respective market conditions, with total gross sales not to exceed \$300 million. California Water will likely use net proceeds for general corporate purposes, such as construction and acquisitions, investments, and the redemption of securities.

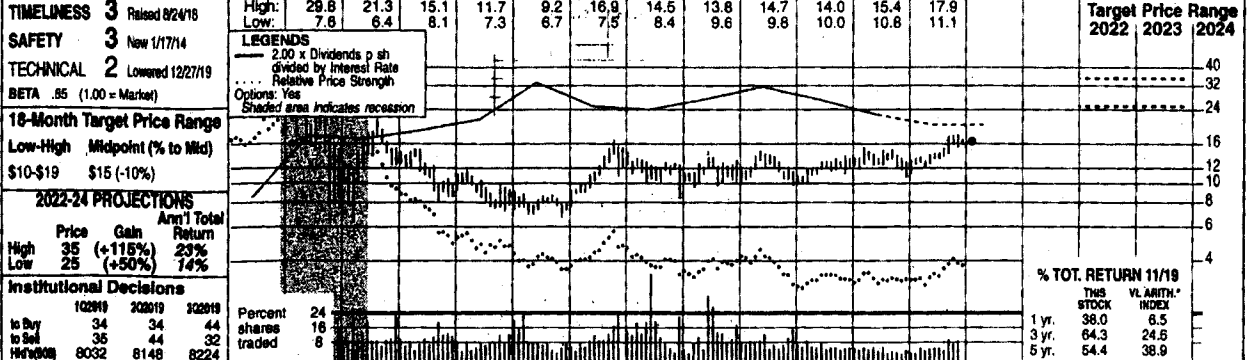
Long term, investment spending and rate increases are probably on tap. Indeed, management is in the early innings of its extensive capital allocation program. As previously noted, upward of \$750 million has been earmarked for infrastructure upgrades, namely improvements to its water transportation systems and treatment plants. To support these initiatives, another settlement agreement was filed in October to address additional matters in its general rate case. To that end, should the Public Utilities Commission approve the agreement, California Water may be able to pass along to customers approximately \$600 million-\$625 million in project spending in the form of rate hikes.

The issue has been upgraded one notch for Timeliness, to 2 (Above Average), and thus it ought to appeal to near-term subscribers. Further, price upside over the 18 month stretch is worthwhile. But despite the equity's attractive business prospects, those with a 3- to 5-year holding period are better off waiting on the sidelines, as CWT is presently trading near the upper end of our Target Price Range.

| Cal-endar | QUARTERLY REVENUES (\$ mil) | Full Year | Cal-endar | EARNINGS PER SHARE | Full Year | Cal-endar | QUARTERLY DIVIDENDS PAID | Full Year | | | | | | | | | | | | | | | | |
|-----------|-----------------------------|-----------|-----------|--------------------|-----------|-----------|--------------------------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| Mar.31 | Jun.30 | Sep.30 | Dec.31 | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Mar.31 | Jun.30 | Sep.30 | Dec.31 | |
| 2016 | 121.7 | 152.4 | 184.3 | 151.0 | 609.4 | 0.02 | .24 | .48 | .31 | 1.01 | 1.725 | 1.725 | 1.725 | 1.725 | .69 | 1.725 | 1.725 | 1.725 | 1.725 | .69 | 1.725 | 1.725 | 1.725 | 1.725 |
| 2017 | 122.1 | 171.1 | 211.7 | 162.0 | 666.9 | .02 | .39 | .70 | .29 | 1.40 | 1.8 | 1.8 | 1.8 | 1.8 | .72 | 1.8 | 1.8 | 1.8 | 1.8 | .72 | 1.8 | 1.8 | 1.8 | 1.8 |
| 2018 | 134.6 | 174.9 | 221.3 | 167.4 | 698.2 | d.02 | .31 | .75 | .32 | 1.36 | 1.875 | 1.875 | 1.875 | 1.875 | .75 | 1.875 | 1.875 | 1.875 | 1.875 | .75 | 1.875 | 1.875 | 1.875 | 1.875 |
| 2019 | 126.1 | 179.0 | 232.5 | 172.4 | 710 | d.16 | .35 | .88 | .33 | 1.40 | 1.975 | 1.975 | 1.975 | 1.975 | .79 | 1.975 | 1.975 | 1.975 | 1.975 | .79 | 1.975 | 1.975 | 1.975 | 1.975 |
| 2020 | 140 | 185 | 237 | 178 | 740 | .03 | .42 | .85 | .40 | 1.70 | | | | | | | | | | | | | | |

(A) Basic EPS. Excl. nonrecurring gain (loss).
 (B) Dividends historically paid in late Feb., May, Aug., and Nov. = Div'd reinvestment plan.
 (C) Incl. intangible assets. In '18: \$24.7 mill., \$0.51/sh.
 (D) In millions, adjusted for splits.
 (E) Excludes non-reg. rev.
 Company's Financial Strength B++
 Stock's Price Stability 80
 Price Growth Persistence 60
 Earnings Predictability 65
 To subscribe call 1-800-VALUELINE

CONSOL. WATER CO. NDQ-CWCO RECENT PRICE **16.46** P/E RATIO **27.4** (Trading: 30.5 Median: 23.0) RELATIVE P/E RATIO **1.49** DIV'D YLD **2.1%** VALUE LINE **1791**



| 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | VALUE LINE PUB. LLC | 22-24 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------------------|-------|-----------------------|-------|
| 1.68 | 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 | 4.50 | 4.55 | Revenues per sh | 9.40 |
| .63 | .77 | .37 | .87 | 1.20 | .95 | 1.18 | .86 | .89 | 1.17 | .96 | .80 | .89 | .95 | 1.12 | 1.15 | 1.00 | 1.10 | "Cash Flow" per sh | 2.00 |
| .42 | .49 | .23 | .59 | .79 | .50 | .74 | .43 | .42 | .64 | .58 | .42 | .51 | .27 | .41 | .68 | .58 | .65 | Earnings per sh A | 1.40 |
| .21 | .23 | .12 | .24 | .20 | .33 | .28 | .30 | .30 | .30 | .30 | .30 | .30 | .30 | .31 | .34 | .34 | .34 | Div'd Decl'd per sh B | .75 |
| .19 | .24 | .77 | 1.83 | .54 | .46 | .18 | .09 | .96 | .31 | .29 | .32 | .21 | .23 | .31 | 1.06 | .25 | .45 | Cap'l Spending per sh | .50 |
| 3.99 | 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 | 10.95 | 11.20 | Book Value per sh D | 12.20 |
| 11.37 | 11.51 | 23.46 | 14.13 | 14.40 | 14.53 | 14.54 | 14.55 | 14.57 | 14.59 | 14.60 | 14.72 | 14.78 | 14.87 | 14.92 | 14.98 | 15.70 | 15.20 | Common Shs Outst'g C | 18.00 |
| 19.3 | 23.1 | NMF | 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 | Bold figures are Value Line estimates | | Avg Ann'l P/E Ratio | 22.0 |
| 1.10 | 1.22 | NMF | 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 | | | Relative P/E Ratio | 1.20 |
| 2.6% | 2.0% | .7% | .9% | .7% | 1.7% | 2.0% | 2.6% | 3.2% | 3.6% | 2.6% | 2.5% | 2.6% | 2.5% | 2.6% | 2.6% | | | Avg Ann'l Div'd Yield | 2.5% |

CAPITAL STRUCTURE as of 9/30/19

| | | | | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|------------------------|-------|
| Total Debt None | 58.0 | 50.7 | 55.2 | 65.5 | 63.8 | 65.6 | 57.1 | 57.9 | 62.3 | 65.7 | 68.0 | 69.0 | Revenues (\$mill) | 150 |
| Leases, Uncapitalized: Annual rentals \$.5 mill. | 10.8 | 6.3 | 6.1 | 9.3 | 8.6 | 6.3 | 7.5 | 4.0 | 6.1 | 10.2 | 9.0 | 10.0 | Net Profit (\$mill) | 23.0 |
| No Defined Benefit Pension Plan | 13.8% | 11.8% | 5.1% | 3.7% | ... | ... | ... | ... | ... | ... | ... | ... | Income Tax Rate | NMF |
| Pfd Stock NMF (34,796 shares out.) | 86.2% | 88.2% | 94.9% | 96.3% | 99.8% | 99.8% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | AFUDC % to Net Profit | NMF |
| Common Stock 15,027,574 shs. as of 11/16/19 | 143.9 | 143.3 | 135.6 | 139.4 | 138.9 | 141.2 | 145.0 | 145.6 | 147.9 | 155.0 | 165 | 170 | Long-Term Debt Ratio | NH |
| MARKET CAP: \$250 million (\$mill Cap) | 61.2 | 56.2 | 64.3 | 61.6 | 58.8 | 58.4 | 53.7 | 53.1 | 50.5 | 64.9 | 65.0 | 70.0 | Common Equity Ratio | 100% |
| CURRENT POSITION (\$mill) | 8.1% | 4.9% | 5.0% | 7.0% | 6.2% | 4.4% | 5.2% | 2.7% | 4.2% | 6.8% | 5.5% | 6.0% | Total Capital (\$mill) | 195 |
| Cash Assets | 47.2 | 31.3 | 43.6 | ... | ... | ... | ... | ... | ... | ... | ... | ... | Net Plant (\$mill) | 100 |
| Accounts Receivable | 18.0 | 24.2 | 23.0 | ... | ... | ... | ... | ... | ... | ... | ... | ... | Return on Total Cap'l | 12.0% |
| Other | 4.6 | 6.9 | 6.9 | ... | ... | ... | ... | ... | ... | ... | ... | ... | Return on Shr. Equity | 12.0% |
| Current Assets | 68.7 | 62.4 | 73.4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | Return on Com Equity | 12.0% |
| Accounts Payable | 6.7 | 4.6 | 2.2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | Retained to Com Eq | 6.5% |
| Debt Due | 7 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | All Div'd to Net Prof | 54% |
| Other | 1.2 | 3.3 | 2.9 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Current Liab. | 7.8 | 7.9 | 8.5 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |

Consolidated Water's share earnings will probably recover, to some extent, in 2020. Last year's bottom line was hurt when bulk water rates were reduced in the Cayman Islands. Year-over-year comparisons were also not favorable due to some unusual gains recorded in 2018. However, increased activity at the Aerex business, which manufactures parts for desalination facilities, should rise as more of these projects are built. All told, Consolidated share net could climb 11%. The desalination segment of the water sector remains attractive. Management currently estimates that there are 18,500 desalination plants in the world that supply water to over 300 million people. Annual growth in this sector is expected to average close to 10%. Much of this will be attributable to rising populations in many parts of the world where potable water is not plentiful. Indeed, in California and the southwestern United States, the use of this process ought to pick up considerably. In the Golden State, there are 11 projects in operation, with another 10 in the planning stages. Consolidated has most of its plants domiciled in countries where operating can be difficult, at times, and would like to increase its presence here. All approvals for the Rosarito project have not yet been granted. The company has completed all of the pre-construction work for developing a desalination plant to serve the city of Tijuana. The most recent delay was due to a newly elected administration coming into office. While the regulatory process may take longer than expected, the chances of it being permitted are excellent, as the water is needed. In any case, Consolidated is limiting its risk here as it will only be the operator and minority owner. Suez International will construct Rosarito. **This stock is not for the typical water utility investor.** For starters, the company's earnings stream is much less predictable than the other regulated companies in this group. Part of this is due to its extensive overseas operations. An average selection for the year ahead, these shares have negative potential in the 18-month period. Over the pull to 2022-2024, however, the equity may well generate above-average returns. *James A. Flood* January 10, 2020

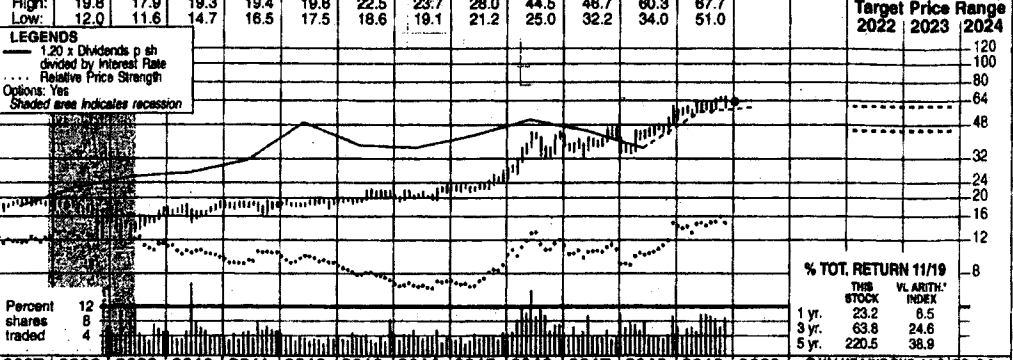
| | | | | | |
|--|--|--|--|------------------------------|----|
| (A) Fully diluted earnings. Excludes gains from discontinued operations: '17, \$0.07 a share; '18, \$0.07 a share; '19, \$0.24 a share. Next earnings report due mid-February. | (B) Dividends historically paid in late January, April, July, and October. = Dividend reinvestment plan available. | (C) In millions, adjusted for stock split. | (D) Includes intangibles. As of 9/30/19, \$9.3 million/\$0.62 a share. | Company's Financial Strength | B+ |
| | | | | Stock's Price Stability | 50 |
| | | | | Price Growth Persistence | 30 |
| | | | | Earnings Predictability | 40 |

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MIDDLESEX WATER NDQ-MSEX

RECENT PRICE **63.56** P/E RATIO **31.5** (Trailing: 32.3 Median: 21.8) RELATIVE P/E RATIO **1.71** DIVD YLD **1.6%** VALUE LINE **1792**

TIMELINESS 3 Lowered 5/24/19
SAFETY 2 New 10/21/11
TECHNICAL 2 Raised 1/9/20
BETA .75 (1.00 = Market)
18-Month Target Price Range
 Low-High Midpoint (% to Mid)
 \$52-\$89 \$71 (10%)



2022-24 PROJECTIONS
 Ann'l Total Return
 High Price 60 Gain (-5%)
 Low Price 45 (-30%)
Institutional Decisions
 10/2019 72 to Buy
 7/2019 79 to Buy
 6/2019 67 to Buy
 4/2019 94 to Buy
 2020 94 to Buy
 2021 94 to Buy
 2022 94 to Buy
 2023 94 to Buy
 2024 94 to Buy
 Percent shares traded: 12, 8, 4, 4

| 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | % VALUE LINE PUB. LLC | 22-24 |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------------|-------|
| 8.12 | 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 | 7.70 | 8.20 | Revenues per sh | 9.15 |
| 1.15 | 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 | 2.80 | 2.95 | "Cash Flow" per sh | 3.45 |
| .61 | .73 | .71 | .82 | .87 | .89 | .72 | .96 | .84 | .90 | 1.03 | 1.13 | 1.22 | 1.38 | 1.38 | 1.96 | 1.95 | 2.10 | Earnings per sh | 2.45 |
| .65 | .66 | .67 | .68 | .69 | .70 | .71 | .72 | .73 | .74 | .75 | .76 | .78 | .81 | .85 | .91 | .98 | 1.04 | Div'd Decl'd per sh | 1.15 |
| 1.87 | 2.54 | 2.18 | 2.31 | 1.66 | 2.12 | 1.49 | 1.90 | 1.50 | 1.38 | 1.26 | 1.40 | 1.59 | 2.91 | 3.08 | 4.40 | 3.50 | 3.50 | Cap'l Spending per sh | 3.50 |
| 7.60 | 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 | 15.70 | 16.15 | Book Value per sh | 17.05 |
| 10.48 | 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 | 17.50 | 17.65 | Common Sh Outst'g | 18.00 |
| 30.0 | 26.4 | 27.4 | 22.7 | 21.6 | 19.8 | 21.0 | 17.8 | 21.7 | 20.8 | 19.7 | 18.5 | 19.1 | 25.8 | 28.4 | 22.2 | 20.0 | 21.0 | Avg Ann'l P/E Ratio | 21.0 |
| 1.71 | 1.39 | 1.46 | 1.23 | 1.15 | 1.19 | 1.40 | 1.13 | 1.36 | 1.32 | 1.11 | .97 | 9.6 | 1.34 | 1.43 | 1.20 | 1.20 | 1.20 | Relative P/E Ratio | 1.15 |
| 3.5% | 3.4% | 3.5% | 3.7% | 3.7% | 4.0% | 4.7% | 4.2% | 4.0% | 4.0% | 3.7% | 3.7% | 3.3% | 2.9% | 2.2% | 2.1% | 2.1% | 2.1% | Avg Ann'l Div'd Yield | 2.2% |
| CAPITAL STRUCTURE as of 9/30/19 | | | | | | | | | | | | | | | | | | | |
| Total Debt \$294.0 mill. Due in 5 Yrs \$85.7 mill. | | | | | | | | | | | | | | | | | | | |
| LT Debt \$228.3 mill. LT Interest \$6.8 mill. | | | | | | | | | | | | | | | | | | | |
| (Total Interest coverage: 8.5x) | | | | | | | | | | | | | | | | | | | |
| (45% of Cap'l) | | | | | | | | | | | | | | | | | | | |
| Pension Assets-12/16 \$66.8 mill. | | | | | | | | | | | | | | | | | | | |
| Oblig. \$83.9 mill. | | | | | | | | | | | | | | | | | | | |
| Pfd Stock \$2.4 mill. Pfd Div'd: \$1 mill. | | | | | | | | | | | | | | | | | | | |
| Common Stock 16,686,540 shs. | | | | | | | | | | | | | | | | | | | |
| as of 10/31/19 | | | | | | | | | | | | | | | | | | | |
| MARKET CAP: \$1.1 billion (Mid-Cap) | | | | | | | | | | | | | | | | | | | |
| CURRENT POSITION | | | | | | | | | | | | | | | | | | | |
| 2017 2018 9/30/19 | | | | | | | | | | | | | | | | | | | |
| Cash Assets 4.9 3.7 3.2 | | | | | | | | | | | | | | | | | | | |
| Other 24.3 27.1 31.5 | | | | | | | | | | | | | | | | | | | |
| Current Assets 29.2 30.8 34.7 | | | | | | | | | | | | | | | | | | | |
| Accts Payable 13.9 19.3 20.2 | | | | | | | | | | | | | | | | | | | |
| Debt Due 34.9 55.8 65.7 | | | | | | | | | | | | | | | | | | | |
| Other 16.7 19.3 17.6 | | | | | | | | | | | | | | | | | | | |
| Current Liab. 64.5 94.4 103.5 | | | | | | | | | | | | | | | | | | | |
| ANNUAL RATES | | | | | | | | | | | | | | | | | | | |
| Past Past Est'd '16-'18 | | | | | | | | | | | | | | | | | | | |
| of change (per sh) 10 Yrs 5 Yrs to 22-'24 | | | | | | | | | | | | | | | | | | | |
| Revenues 2.5% 3.5% 2.0% | | | | | | | | | | | | | | | | | | | |
| "Cash Flow" 5.5% 9.0% 6.5% | | | | | | | | | | | | | | | | | | | |
| Earnings 6.0% 11.0% 7.5% | | | | | | | | | | | | | | | | | | | |
| Dividends 2.0% 3.0% 5.0% | | | | | | | | | | | | | | | | | | | |
| Book Value 3.5% 4.5% 3.0% | | | | | | | | | | | | | | | | | | | |
| QUARTERLY REVENUES (\$ MILL) | | | | | | | | | | | | | | | | | | | |
| Cal-ender Mar.31 Jun.30 Sep.30 Dec.31 Full Year | | | | | | | | | | | | | | | | | | | |
| 2016 30.6 32.7 37.8 31.8 132.9 | | | | | | | | | | | | | | | | | | | |
| 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 33.1 135.0 | | | | | | | | | | | | | | | | | | | |
| 2020 32.0 36.0 42.0 35.0 145.0 | | | | | | | | | | | | | | | | | | | |
| EARNINGS PER SHARE | | | | | | | | | | | | | | | | | | | |
| Cal-ender Mar.31 Jun.30 Sep.30 Dec.31 Full Year | | | | | | | | | | | | | | | | | | | |
| 2016 .29 .36 .54 .19 1.38 | | | | | | | | | | | | | | | | | | | |
| 2017 .27 .33 .46 .32 1.38 | | | | | | | | | | | | | | | | | | | |
| 2018 .27 .52 .74 .43 1.96 | | | | | | | | | | | | | | | | | | | |
| 2019 .39 .49 .66 .47 1.95 | | | | | | | | | | | | | | | | | | | |
| 2020 .40 .55 .70 .45 2.10 | | | | | | | | | | | | | | | | | | | |
| QUARTERLY DIVIDENDS PAID | | | | | | | | | | | | | | | | | | | |
| Cal-ender Mar.31 Jun.30 Sep.30 Dec.31 Full Year | | | | | | | | | | | | | | | | | | | |
| 2016 .19875 .19875 .19875 .21125 .81 | | | | | | | | | | | | | | | | | | | |
| 2017 .21125 .21125 .21125 .22375 .86 | | | | | | | | | | | | | | | | | | | |
| 2018 .22375 .22375 .22375 .24 .91 | | | | | | | | | | | | | | | | | | | |
| 2019 .24 .24 .24 .2662 .98 | | | | | | | | | | | | | | | | | | | |
| 2020 .24 .24 .24 .2662 .98 | | | | | | | | | | | | | | | | | | | |

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 2018, the Middlesex System accounted for 59% of operating revenue. At 12/31/18, the company had 330 employees. Incorporated: NJ. President, CEO, and Chairman: Dennis W. Doil. Officers & directors own 3.5% of the com. stock: BlackRock Inst. Trust Co., 6.8% (4/19 proxy). Add: 485 C Route 1 South, Suite 400, Iselin, NJ 08830. Tel: 732-634-1500. Int: www.middlesexwater.com.

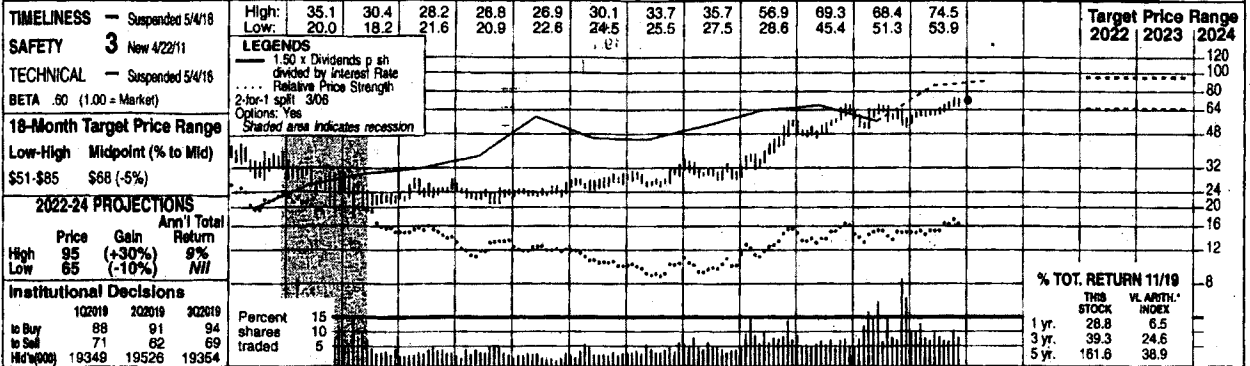
Middlesex Water Company has tapped the equity markets. The company recently finalized a public offering of approximately 760,000 shares of common stock at a price of \$60.50 per share (includes additional shares purchased by underwriters). Middlesex received total net proceeds of \$43.8 million, which have been earmarked for a number of efforts, including general corporate purposes, paying off short-term obligations, completing acquisitions, and funding the continuation of infrastructure investment initiatives. **We are moderately tempering our 2019 and 2020 earnings forecasts.** The Northeast water and wastewater operator saw net income contract year-over-year in the third quarter, to \$0.66 per share, partly due to weaker revenues stemming from softer water consumption related to unfavorable weather. Operating expenses were essentially unchanged, on an annual basis. All told, we are slicing a nickel and a dime off our 2019 and 2020 share-net estimates, to \$1.95 and \$2.10, respectively. **Middlesex shares may be cooling off a bit.** The stock price pulled back modestly since our last report, despite stamping a fresh all-time high in late October. For much of 2019, the stock has traded in a relatively tight range. Indeed, investors may be starting to take some profits off the table following several years of strong price appreciation and the recent dilution. The board of directors increased the quarterly payout 7%, to \$0.2562 per share. While consistent dividend hikes are reassuring, at current levels, this equates to an annual yield of about 1.6%, which does not necessarily jump out to the income-seeking crowd. **What about Middlesex stock?** The company is in decent shape from a fundamental perspective, and long-term business prospects should be enhanced by multiple catalysts, such as an expanding customer base (particularly in Delaware), periodic rate increases, and strong infrastructure spending. However, the issue is presently void of investment appeal. Middlesex shares are just an average selection for relative year-ahead price performance, and most of the gains we envision three to five years out appear to already be baked into the recent quotation. *Nicholas P. Patrikis January 10, 2020*

| | | | | | | | | | | | | | | | | | | |
|-------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Company's Financial Strength | | | | | | | | | | | | | | | | | | |
| Stock's Price Stability B++ | | | | | | | | | | | | | | | | | | |
| Price Growth Persistence 55 | | | | | | | | | | | | | | | | | | |
| Earnings Predictability 75 | | | | | | | | | | | | | | | | | | |

(A) Diluted earnings. Next earnings report due late January. (B) Dividends historically paid in mid-Feb., May, Aug., and November. Div'd reinvestment plan available. (C) In millions.

SJW GROUP NYSE-SJW

RECENT PRICE **71.79** P/E RATIO **44.3** (Trailing: 51.8 Median: 21.0) RELATIVE P/E RATIO **2.41** DIV YLD **1.7%** VALUE LINE **1793**



| 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 8.20 | 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 | 14.15 | 18.15 | 18.75 | 20.85 | 20.85 | 20.85 | 20.85 |
| 1.75 | 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 | 3.15 | 4.15 | 4.15 | 5.30 | 5.30 | 5.30 | 5.30 |
| .91 | .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 | 1.45 | 2.45 | 2.45 | 3.65 | 3.65 | 3.65 | 3.65 |
| .49 | .51 | .53 | .57 | 1.01 | .65 | .66 | .68 | .69 | .71 | .73 | .75 | .78 | .81 | 1.04 | 1.12 | 1.20 | 1.28 | 1.28 | 1.50 | 1.50 | 1.50 | 1.50 |
| 3.41 | 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 | 5.00 | 6.25 | 6.25 | 5.25 | 5.25 | 5.25 | 5.25 |
| 9.11 | 10.11 | 10.72 | 12.48 | 12.90 | 13.99 | 13.66 | 13.75 | 14.20 | 14.71 | 15.92 | 17.75 | 18.83 | 20.61 | 22.57 | 31.31 | 31.20 | 32.70 | 32.70 | 38.35 | 38.35 | 38.35 | 38.35 |
| 18.27 | 18.27 | 18.27 | 18.28 | 18.38 | 18.18 | 18.50 | 18.55 | 18.59 | 18.67 | 20.17 | 20.29 | 20.38 | 20.46 | 20.52 | 28.40 | 29.00 | 29.50 | 29.50 | 30.00 | 30.00 | 30.00 | 30.00 |
| 15.4 | 19.6 | 19.7 | 23.5 | 33.4 | 28.2 | 28.7 | 29.1 | 21.2 | 20.4 | 24.3 | 11.2 | 16.6 | 15.7 | 18.8 | 32.7 | 32.7 | 32.7 | 32.7 | 22.0 | 22.0 | 22.0 | 22.0 |
| .88 | 1.04 | 1.05 | 1.27 | 1.77 | 1.58 | 1.91 | 1.85 | 1.33 | 1.30 | 1.37 | .59 | .84 | .82 | .95 | 1.76 | 1.76 | 1.76 | 1.76 | 1.20 | 1.20 | 1.20 | 1.20 |
| 3.5% | 3.0% | 2.4% | 2.0% | 1.7% | 2.3% | 2.8% | 2.8% | 2.9% | 3.0% | 2.7% | 2.6% | 2.5% | 2.0% | 1.9% | 1.9% | 1.9% | 1.9% | 1.9% | 1.9% | 1.9% | 1.9% | 1.9% |

CAPITAL STRUCTURE as of 9/30/19

| | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Debt \$511.1 mill. | 216.1 | 215.6 | 239.0 | 261.5 | 276.9 | 319.7 | 305.1 | 339.7 | 389.2 | 397.7 | 410 | 535 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 | 625 |
| LT Debt \$511.1 mill. | 15.2 | 15.8 | 20.9 | 22.3 | 23.5 | 51.8 | 37.9 | 52.8 | 59.2 | 38.8 | 42.0 | 72.0 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| LT Interest \$20.0 mill. | 40.4% | 38.8% | 41.1% | 41.1% | 38.7% | 32.5% | 38.1% | 38.8% | 36.7% | 20.6% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% |
| (LT Interest Coverage: 7.1x) | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% |

Leases, Uncapitalized: Annual rentals \$4.4 mill.

Pension Assets-12/18: \$127.6 mill. Oblig. \$187.9 mill.

Pfd Stock None.

Common Stock: 28,456,490 shs. as of 10/28/19

MARKET CAP: \$2.0 billion (Mid Cap)

SJW Group completed the purchase of Connecticut Water Service in October of 2019. The \$70-per-share all-cash transaction took nearly a year to close after both entities finally received the nod from their respective regulatory agencies. The third-largest investor-owned regulated water and wastewater provider now caters to roughly 1.5 million people across the U.S. Moreover, Connecticut Water is well represented on the board of directors, as three former directors have been given seats on SJW Group's board. Accordingly, we are lifting our 2020 financial projections to reflect the deal. The company probably ended 2019 on a mixed note. Added revenues from Connecticut operations may be partially offset by a recent ruling on SJW's conservation memorandum account balance. Nevertheless, the stage is set for a promising 2020, in our view. We now look for revenues of \$535 million and earnings of \$2.45 a share this year. **SJW Group hopes to deploy advanced metering services to its customers over the next several years.** Specifically, the company recently filed an application with the California Public Utilities Commission to deploy Advanced Metering Infrastructure, a technology that can provide essential water usage information to customers on an hourly basis rather than once every two months. Near real-time water consumption data, early leak detection, and usage spike notifications ought to help customers meet California's revised state conservation standards (takes effect in 2022), which are vital given that the area is prone to extreme drought conditions. Further, the AMI program will likely be accompanied by additional infrastructure investment (upgrades to water filtration systems, treatment plants, and pipelines) over the pull to 2022-2024. The issue remains suspended for Timeliness given the recent merger. SJW Group's expanded operational footprint augurs well for long-term business prospects. Also, given that the market continues to print record highs, we think a rotation into noncyclical, defensive assets could develop. Even so, we are not recommending capital commitments at the recently elevated valuation.

ANNUAL RATES of change (per sh)

| Year | 10 Yrs. | 5 Yrs. | 1 Yr. | 16-18 |
|-------------|---------|--------|-------|-------|
| Revenues | 5.0% | 5.5% | 4.0% | 4.0% |
| "Cash Flow" | 7.0% | 11.0% | 3.0% | 3.0% |
| Earnings | 8.0% | 18.5% | 7.0% | 7.0% |
| Dividends | 4.5% | 5.0% | 7.0% | 7.0% |
| Book Value | 5.5% | 8.0% | 7.5% | 7.5% |

QUARTERLY REVENUES (\$mill.)

| Calendar | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|----------|--------|--------|--------|--------|-----------|
| 2016 | 61.1 | 86.9 | 112.3 | 79.4 | 339.7 |
| 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 | 116 | 410 |
| 2020 | 105 | 135 | 170 | 125 | 535 |

EARNINGS PER SHARE

| Calendar | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|----------|--------|--------|--------|--------|-----------|
| 2016 | .16 | .82 | .92 | .67 | 2.57 |
| 2017 | .18 | .90 | .94 | .84 | 2.86 |
| 2018 | .06 | .62 | .76 | .38 | 1.82 |
| 2019 | .21 | .47 | .33 | .44 | 1.45 |
| 2020 | .20 | .65 | .95 | .65 | 2.45 |

QUARTERLY DIVIDENDS PAID (\$mill.)

| Calendar | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|----------|--------|--------|--------|--------|-----------|
| 2016 | .2025 | .2025 | .2025 | .2025 | .81 |
| 2017 | .2175 | .2175 | .2175 | .2175 | 1.04 |
| 2018 | .28 | .28 | .28 | .28 | 1.12 |
| 2019 | .30 | .30 | .30 | .30 | 1.20 |
| 2020 | | | | | |

(A) Diluted earnings. Excludes nonrecurring losses: '03, \$1.97; '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 February. Quarterly earnings 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, adjusted for stock splits. (D) Paid special dividend of \$0.17 per share on 11/17.

Company's Financial Strength B+
Stock's Price Stability 75
Price Growth Persistence 60
Earnings Predictability 45

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YORK WATER NDQ:YORW

RECENT PRICE **46.38** P/E RATIO **39.3** (Trading: 40.7, Median: 25.0) RELATIVE P/E RATIO **2.14** D/PD YLD **1.6%** VALUE LINE **1794**

TIMELINESS 1 Raised 10/11/19
AFETY 3 Lowered 7/17/15
TECHNICAL 3 Raised 1/3/20
 BETA .70 (1.00 = Market)

18-Month Target Price Range
 Low-High Midpoint (% to Mid)
 \$32-\$52 \$42 (-10%)

2022-24 PROJECTIONS

| High | Price | Gain | Ann'l Total Return |
|------|-------|--------|--------------------|
| 45 | | (-5%) | 1% |
| 30 | | (-35%) | -7% |

Institutional Decisions

| to Buy | to Sell | to Hold | Percent shares traded |
|--------|---------|---------|-----------------------|
| 33 | 48 | 55 | 12 |
| 40 | 31 | 30 | 8 |
| 4794 | 4866 | 5111 | 4 |

LEGENDS
 --- 1.10 x Dividends p sh divided by Interest Rate
 ... Relative Price Strength
 3-for-2 split 9/08
 Options: Yes
 Shaded area indicates recession

% TOT. RETURN 11/19

| 1 yr. | 3 yr. | 5 yr. | 6 yr. |
|-------|-------|-------|-------|
| 36.4 | 28.1 | 24.6 | 38.9 |

| 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 2.17 | 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 | 3.95 | 4.05 | 4.05 | 4.05 | 4.05 | 4.05 |
| .65 | .65 | .79 | .77 | .86 | .88 | .95 | 1.07 | 1.09 | 1.12 | 1.19 | 1.36 | 1.45 | 1.42 | 1.53 | 1.58 | 1.75 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 |
| .47 | .49 | .58 | .58 | .57 | .57 | .64 | .71 | .71 | .72 | .75 | .89 | .97 | .92 | 1.01 | 1.04 | 1.15 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 |
| .37 | .39 | .42 | .45 | .48 | .49 | .51 | .52 | .53 | .54 | .55 | .57 | .60 | .63 | .65 | .67 | .70 | .73 | .73 | .73 | .73 | .73 |
| 1.07 | 2.50 | 1.69 | 1.85 | 1.69 | 2.17 | 1.18 | .83 | .74 | .94 | .76 | 1.10 | 1.11 | 1.08 | 1.95 | 1.95 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| 4.06 | 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 | 10.40 | 11.25 | 11.25 | 11.25 | 11.25 | 11.25 |
| 9.63 | 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 | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 |
| 24.5 | 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 | 30.3 | 30.3 | 30.3 | 30.3 | 30.3 | 30.3 |
| 1.40 | 1.38 | 1.40 | 1.68 | 1.61 | 1.48 | 1.19 | 1.32 | 1.50 | 1.55 | 1.48 | 1.22 | 1.18 | 1.72 | 1.74 | 1.63 | 1.63 | 1.63 | 1.63 | 1.63 | 1.63 | 1.63 |
| 3.2% | 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% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% | 2.1% |

CAPITAL STRUCTURE as of 9/30/19
 Total Debt \$100.7 mil. Due in 5 Yrs \$42.5 mil.
 LT Debt \$94.2 mil. LT Interest \$5.5 mil.

Current Position
 Cash Assets: 4.5, Accounts Receivable: 4.8, Inventory (Avg. Cost): .9, Other: 3.2, Current Assets: 8.6, Accts Payable: 3.1, Debt Due: 1.0, Other: 6.0, Current Liab.: 9.1

ANNUAL RATES Past 10 Yrs. Past 5 Yrs. Est'd '16-'18 to '22-'24
 Revenues: 3.0%, 3.0%, 5.5%
 "Cash Flow": 8.0%, 6.0%, 9.0%
 Earnings: 5.5%, 6.5%, 9.5%
 Dividends: 3.5%, 4.0%, 6.5%
 Book Value: 4.5%, 4.0%, 4.5%

| Cal-ender | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|-----------|--------|--------|--------|--------|-----------|
| 2016 | 11.3 | 11.8 | 12.6 | 11.9 | 47.6 |
| 2017 | 11.3 | 12.3 | 12.7 | 12.3 | 48.6 |
| 2018 | 11.8 | 12.0 | 12.7 | 12.1 | 48.4 |
| 2019 | 11.8 | 13.0 | 13.7 | 13.0 | 51.5 |
| 2020 | 12.2 | 13.0 | 14.0 | 13.3 | 52.5 |

| Cal-ender | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|-----------|--------|--------|--------|--------|-----------|
| 2016 | .19 | .23 | .27 | .23 | .92 |
| 2017 | .20 | .23 | .31 | .27 | 1.01 |
| 2018 | .20 | .26 | .29 | .29 | 1.04 |
| 2019 | .22 | .28 | .35 | .30 | 1.15 |
| 2020 | .23 | .30 | .35 | .32 | 1.20 |

| Cal-ender | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|-----------|--------|--------|--------|--------|-----------|
| 2016 | 1.555 | 1.555 | 1.555 | 1.602 | .627 |
| 2017 | 1.602 | 1.602 | 1.602 | 1.666 | .647 |
| 2018 | 1.666 | 1.666 | 1.666 | 1.733 | .673 |
| 2019 | 1.733 | 1.733 | 1.733 | 1.802 | .70 |

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, 2018, the company's average daily availability was 35.4 million gallons and its service territory had an estimated population of 199,000. Has more than 69,000 customers. Residential customers accounted for 65% of 2018 revenues; commercial and industrial (28%); other (7%). It also provides sewer billing services. Incorporated: PA. York had 109 full-time employees at 12/31/18. President/CEO: Jeffrey R. Hines. Officers/directors own 1.2% of the common stock (3/19 proxy). Address: 130 East Market Street, York, Pennsylvania 17401. Telephone: (717) 845-3601. Internet: www.yorkwater.com.

York Water Company posted good results for the September period. Notably, revenues of \$13.7 million rose nearly 8% year over year, easily topping our \$13.2 million call. A number of drivers underpinned the outperformance, including increased rates (most recent base rate hike was March 1, 2019), solid customer growth, as well as higher per capita consumption. These tailwinds outweighed weaker contributions from improvement charges. On the earnings front, the company delivered net income of \$0.35 a share, or 21% better than the previous-year tally. Greater revenues and lower taxes owing to higher allowed deductions from the IRS tangible property regulations helped mitigate a modest rise in operation and maintenance expenses. The company likely closed out the year earning \$1.15 a share from \$51.5 million in revenues. Given the recent showing, we have added \$1 million and \$0.05 a share to our current-year top- and bottom-line estimates, respectively. Infrastructure upgrades are on track. For 2019, York likely spent upwards of \$18.0 million, excluding acquisitions, on dam construction, pipe and valve replacements, and other improvements. As we move deeper into this decade, it's probable that leadership will continue to focus on upgrades to ensure safe wastewater management and reliable water delivery to its expanding customer base. The stock remains in favor among the investment community. Indeed, York shareholders have enjoyed a fruitful 2019 thus far, as the stock is up almost 50% in price year to date. Over the past three months, shares have appreciated approximately 7% in value, etching a fresh high-water mark along the way. We continue to recommend subscribers with a short-term view have a look here, as this timely (1: Highest) issue may still have some room to run over the coming six to 12 months. But those with an eye toward the long pull should hold off at this juncture. As a result of the recent share-price ascent, capital appreciation potential three to five years hence is unappealing. Further, despite annual payout hikes, the dividend yield has struggled to keep pace with historical averages. *Nicholas P. Patrikis* January 10, 2020

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ESPECIALLY NOTEWORTHY:

This week, we welcome Alamo Group, a leading maker of specialized equipment for infrastructure maintenance and farming & landscaping, to The Value Line Investment Survey. Turn to page 1703 to learn more.

*On February 20th, Morgan Stanley entered into a definitive agreement to acquire E*TRADE, a leader in the online brokerage industry, in an all-stock transaction valued at about \$13 billion. Read more on the pending transaction on page 1809.*

Meanwhile, TD Ameritrade accepted a buyout offer from Charles Schwab in November of last year. The all-stock transaction is valued at \$26 billion, but is not yet a fait accompli. Please turn to pages 1803 and 1804 for updates.

The separation of United Technologies into three separate stand-alone entities was set to be completed as this Issue went to press. Shortly thereafter, the buyout of Raytheon should commence. Turn to page 1780 to learn more.

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SUPPLEMENTARY REPORTS 1850

★★ Rank 1 (Highest) for Timeliness.
★ Rank 2 (Above Average).

In three parts: Part 1 is the Summary & Index. Part 2 is Selection & Opinion. This is Part 3, Ratings & Reports. Volume LXXV, No. 35
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INDUSTRY TIMELINESS: 5 (of 95)

The Water Utility Industry consists of eight investor-owned utilities. These companies are very much like electric or gas utilities, but operate in a much smaller universe because the overwhelming amount of water services in the United States are provided by municipally run entities.

These companies have much less exposure to the economic turmoil related to the coronavirus than other industries we follow. Water is essential and its usage doesn't change substantially during an economic expansion or a contraction.

Following years of underinvestment, almost every member of this group is involved in a major construction program aimed at replacing large quantities of old pipelines.

Finances in this group are just average as modernizing the nation's aging water infrastructure is not cheap. Utilities often have taken on decent amounts of debt to fund the construction programs.

One of the biggest influences on how any utility performs is the treatment it receives from regulators. For the most part, the relationship between water companies and state authorities has been constructive.

Coronavirus And Water Utilities

Certain industries are cyclical and very dependent on the state of the general economy. The demand for water is relatively inelastic and people's usage of it is fairly constant. During difficult periods households will cut back on all expenses, including water. However, due to it being such a necessity, demand does not change significantly. So, even though COVID-19 has caused economic uncertainty on a global basis, this sector ought to remain fine. Only should the pandemic become much worse would it have an impact. Ratepayers are citizens that vote, and should a sharp recession or depression take place, regulators would be reluctant to pass along increased operating costs incurred by a utility in the form of higher water bills, no matter how justified the expenses.

Large Construction Programs

Until the past decade, or so, both municipal and investor-owned utilities didn't sufficiently invest in keeping pipelines and other assets in proper condition. As a result, the average age of pipelines in the U.S. is estimated to be between 50 and 75 years. Utilities and regulators have realized that more funds would have to be allocated to replacing and modernizing large portions of the nation's water infrastructure. That's why this group's construction budget is large, though manageable. Authorities also realize that water bills were kept artificially low for years, especially in relation to other vital utility services, and have to be gradually raised.

Average Finances

Although domestic water utilities are very stable, their balance sheets reflect the industry's hefty capital budget. Still, these companies are not overleveraged, with the average Financial Strength rating for the group being a B+. As an increased amount of money is used to replace pipes, we think the overall financial health of the industry ought to remain unchanged.

Regulation

Probably the prime reason for water utilities stocks performing so well over the past five years has been due to constructive regulation. Unlike, electric utilities, for example, both sides are basically in agreement that upgrades are required and ratepayers bills will have to be raised. Investors should be aware of what can happen when authorities and utilities do not work as partners (i.e. the Electric Utility Industry). As of now, we see no signs of rifts between the water group and regulators.

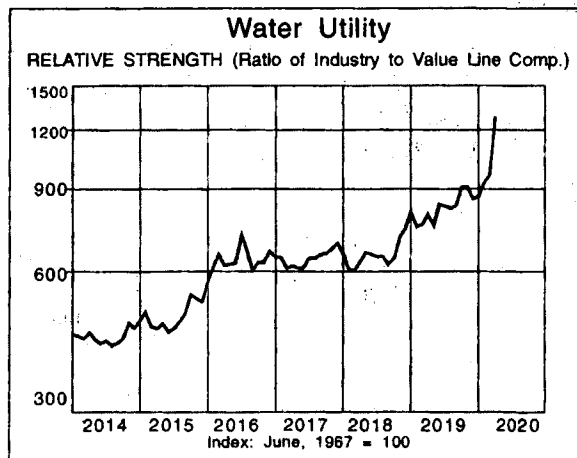
Untraditional Behavior

As we mentioned earlier, these equities were historically purchased by conservative investors looking for income. Over the past several years, the profile of the stocks has changed. Indeed, no longer are the yields on these shares high. In fact, the average water equity has a much lower dividend yield than the typical stock in the Value Line universe. Moreover, utility stocks typically underperformed during bull markets and outperformed in bear markets. Over the past five years, however, many in this group posted higher total returns than the S&P 500 Index. We attribute this to two factors: the scarcity of stocks in this sector, and the low interest rate environment. For example, only two of these equities have a market capitalization of over \$5 billion. Professional money managers looking to diversify their holdings in the utility segment (electric, gas, and water) have very few options here. Therefore, a premium has to be paid to own these stocks. Furthermore, since these equities are often seen as alternative to bonds by income-investors, near-zero interest rates make them look more attractive to fixed-income accounts.

Conclusion

Despite the industry's high rank, we advise subscribers to exercise caution when investing here. While there is very little operational risk, these equities often have well below average long-term total return potential.

James A. Flood



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AMER. STATES WATER NYSE-AWR

| | | | | | | | | | | | |
|--------------------------------|----------------------|------------------------------------|--|---------------------------|--|----------------|-------------|-------------------|-------------|---------------------------|----------------|
| RECENT PRICE | 84.60 | P/E RATIO | 37.6 (Trading: 37.1) (Median: 22.0) | RELATIVE P/E RATIO | 2.85 | DIV YLD | 1.5% | VALUE LINE | 1785 | | |
| TIMELINESS | 2 Lowered 3/20/20 | High: | 19.4 19.8 18.2 24.1 33.1 38.7 44.1 47.2 58.4 | Low: | 14.9 15.6 15.3 17.0 24.0 27.0 35.8 37.3 41.1 | 99.6 | 96.0 | 96.6 | 96.6 | | |
| SAFETY | 2 Raised 7/20/12 | LEGENDS | 1.35 x Dividends p sh divided by Interest Rate Relative Price Strength 2-for-1 split 9/13 Shaded area indicates recession | | | | | | | Target Price Range | 2023 2024 2025 |
| TECHNICAL | 3 Raised 3/6/20 | 18-Month Target Price Range | Low-High Midpoint (% to Mid) | | | | | | | % TOT. RETURN 2/20 | 1yr. 3yr. 5yr. |
| BETA | .80 (1.00 = Market) | 2023-25 PROJECTIONS | Price Gain Ann'l Total High 80 00 (-5%) 1% Low 60 (-30%) -6% | | | | | | | 2023-25 | 23-25 |
| Institutional Decisions | 302819 302819 402819 | Percent | 24 | | | | | | | 2020 | 23-25 |
| To Buy | 139 149 137 | shares | 16 | | | | | | | 2021 | 23-25 |
| To Sell | 109 124 145 | traded | 8 | | | | | | | 2022 | 23-25 |
| Highways | 26993 27173 26794 | | | | | | | | | 2023 | 23-25 |

| 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 | 12.58 | 11.92 | 12.01 | 11.88 | 12.06 | 12.95 | 13.30 | 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 | 3.55 | "Cash Flow" per sh | 4.50 |
| .53 | .66 | .67 | .81 | .78 | .81 | 1.11 | 1.12 | 1.41 | 1.61 | 1.57 | 1.61 | 1.82 | 1.88 | 1.72 | 2.20 | 2.25 | 2.40 | Earnings per sh A | 2.90 |
| .44 | .45 | .48 | .48 | .50 | .51 | .52 | .55 | .64 | .76 | .83 | .87 | .91 | .99 | 1.06 | 1.16 | 1.25 | 1.35 | 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 | 3.50 | 3.50 | 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 | 17.16 | 18.10 | 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 | 24.40 | 22.6 | 21.2 | 15.7 | 15.4 | 14.3 | 17.2 | 20.1 | 24.6 | 25.6 | 25.7 | 34.0 | 34.4 | 34.0 | 34.4 | Bold figures are Value Line estimates | 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 | 1.84 | 1.87 | 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% | 1.8% | 1.5% | Avg Ann'l Div'd Yield | 2.6% |

CAPITAL STRUCTURE as of 12/31/19
 Total Debt \$286.3 mill. Due in 5 Yrs \$6.9 mill.
 LT Debt \$281.0 mill. LT Interest \$24.5 mill. (32% of Cap'l)

Leases, Uncapitalized: Annual rentals \$2.7 mill.
Pension Assets-12/19 \$192.5 mill.
Obliq. \$231.9 mill.

Pfd Stock None

Common Stock 36,859,505 shs. as of 2/20/20

MARKET CAP: \$3.1 billion (Mkd Cap)

CURRENT POSITION

| (Mill.) | 2017 | 2018 | 12/31/19 |
|------------------|-------|-------|----------|
| Cash Assets | 2 | 7.1 | 1.3 |
| Accts Receivable | 26.1 | 23.4 | 20.9 |
| Other | 129.2 | 101.0 | 100.3 |
| Current Assets | 155.5 | 131.5 | 122.5 |
| Accts Payable | 51.0 | 59.5 | 55.6 |
| Debt Due | 59.3 | 40.3 | 5.3 |
| Other | 46.4 | 46.8 | 55.1 |
| Current Liab. | 156.7 | 146.6 | 116.0 |

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. (8/11). Employs 841. BlackRock, Inc. owns 15.1% of out. shares; Vanguard, 11.5%; off. & dir. 1.2%. (4/19 Proxy). Chairman: Lloyd Ross. Pres. & CEO: Robert Sprouts, Inc. CA. Address: 630 East Foothill Blvd., San Dimas, CA 91773. Tel: 909-394-3600. Internet: www.aswater.com.

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% | 7.0% |
| Earnings | 9.5% | 6.6% |
| Dividends | 8.0% | 9.5% |
| Book Value | 5.5% | 5.5% |

QUARTERLY REVENUES (\$ mill.)

| Cal-ender | 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 | 105 | 120 | 140 | 115 | 480 |
| 2021 | 107 | 123 | 145 | 120 | 495 |

EARNINGS PER SHARE A

| Cal-ender | 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 | .40 | .68 | .72 | .50 | 2.25 |
| 2021 | .43 | .72 | .75 | .55 | 2.40 |

QUARTERLY DIVIDENDS PAID B

| Cal-ender | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|-----------|--------|--------|--------|--------|-----------|
| 2016 | .224 | .224 | .224 | .242 | .91 |
| 2017 | .242 | .242 | .255 | .255 | .99 |
| 2018 | .255 | .255 | .275 | .275 | 1.06 |
| 2019 | .275 | .275 | .305 | .305 | 1.16 |
| 2020 | .305 | | | | |

The stock of American States Water has performed better than most equities during the latest disruption in the financial markets. The utility provides a service that is essential. So, whether the economy is booming or experiencing problems, people's usage of water will not change significantly. Hence, American States' income stream is much better defined than the typical corporation. This has been reflected in AWR's year-to-date price performance, as the equity has declined less than 7%, versus the approximately 19% decrease posted by the broader market averages.

Earnings in 2020 will most likely not be able to match last year's impressive showing. The company's stronger-than-expected fourth quarter of 2019 will make year-over-year comparisons difficult. Still, a combination of rate relief, cost control improvements, and a greater contribution from ASUS (more below), could enable share net to reach \$2.25. These same factors, along with growth in the rate base, ought to result in an increase in earnings per share to \$2.40, a 6% rise, in 2021.

The nonregulated business should remain a key growth driver. Through its ASUS subsidiary, American States provides water services to U.S. Army bases. As more water services at military installations are privatized, we expect ASUS to continue to increase, or at least maintain, its market share. The typical contract is for 50 years, and unlike its other operations, income is not regulated by state authorities. In 2019, profits increased here by 12%, and represented \$0.47 of the company's total share net.

Dividend growth prospects are bright. The board usually announces a new annual increase in the payout in mid-August. While we do not think that 2019's 11% hike will be equaled, the new dividend per share should be somewhere between \$0.325 and \$0.33. This would still represent a percentage increase that is higher than the group norm. Moreover, the trend should continue to mid-decade.

These shares are timely. Investors may want to note that like most members of this group, the stock's total return potential to 2023-2025 is well below average.

James A. Flood April 10, 2020

(A) Primary earnings. Excludes nonrecurring gains/losses: '04, '76, '05, '13c, '06, '3c, '08, '14e, '10, '23e; '11, '10c. Next earnings report due mid-May.
 (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 12/31/19; \$28.6 million/\$0.76 a share.

Company's Financial Strength A
Stock's Price Stability 85
Price Growth Persistence 95
Earnings Predictability 85

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AMERICAN WATER NYSE-AWK

RECENT PRICE **126.72** P/E RATIO **36.0** (Trailing: 36.9 Median: 22.0) RELATIVE P/E RATIO **2.73** DIV'D YLD **1.7%** VALUE LINE **1786**

TIMELINESS 3 Lowered 4/3/20
SAFETY 3 New 7/25/08
TECHNICAL 3 Raised 4/10/20
BETA .50 (1.00 = Market)

High: 23.0 25.8 32.8 39.4 45.1 56.2 61.2 85.2 92.4 98.2 129.9 141.7
Low: 16.2 19.4 25.2 31.3 37.0 41.1 48.4 58.9 70.0 76.0 88.0 92.0

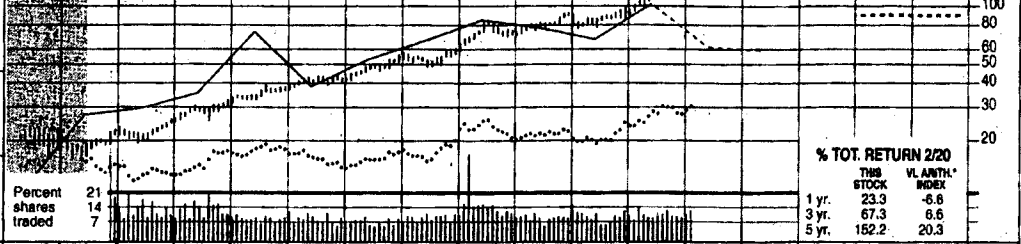
LEGENDS
 1.10 x Dividends p sh divided by Interest Rate
 Relative Price Strength
 Options: Yes
 Shaded area indicates recession

18-Month Target Price Range
 Low-High **Midpoint (% to Mid)**
 \$119-\$173 **\$146 (15%)**

2023-25 PROJECTIONS
 Price Gain Ann'l Total
 High Low **140 (+10%) 5%**
90 (-30%) -8%

Institutional Decisions

| | | | |
|---------|-------|--------|--------|
| | 2020 | 2021 | 2022 |
| to Buy | 360 | 385 | 393 |
| to Sell | 331 | 322 | 361 |
| Net Buy | 15561 | 153329 | 155435 |



| | 2004 | 2005 | 2006* | 2007* | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Revenue | 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 | 20.90 | 21.85 | 21.86 | 21.85 | 24.75 |
| Cash Flow | .65 | 0.47 | 2.87 | 2.89 | 3.56 | 3.73 | 4.27 | 4.36 | 4.75 | 5.13 | 5.26 | 5.14 | 6.15 | 6.65 | 8.00 | 8.15 | 8.15 | 8.15 | 8.75 |
| Earnings | 0.97 | 0.24 | 1.10 | 1.25 | 1.53 | 1.72 | 2.11 | 2.06 | 2.39 | 2.64 | 2.62 | 2.38 | 3.15 | 3.43 | 3.70 | 4.00 | 4.00 | 4.00 | 4.90 |
| Div'd | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Cap'l Spending | 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 | 8.70 | 9.20 | 9.20 | 9.20 | 9.00 |
| Book Value | 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 | 35.35 | 36.95 | 36.95 | 36.95 | 42.50 |
| Common Sh | 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 | 181.00 | 182.00 | 182.00 | 182.00 | 182.00 |

| | 2004 | 2005 | 2006* | 2007* | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Revenue | 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 | 20.90 | 21.85 | 21.86 | 21.85 | 24.75 |
| Cash Flow | .65 | 0.47 | 2.87 | 2.89 | 3.56 | 3.73 | 4.27 | 4.36 | 4.75 | 5.13 | 5.26 | 5.14 | 6.15 | 6.65 | 8.00 | 8.15 | 8.15 | 8.15 | 8.75 |
| Earnings | 0.97 | 0.24 | 1.10 | 1.25 | 1.53 | 1.72 | 2.11 | 2.06 | 2.39 | 2.64 | 2.62 | 2.38 | 3.15 | 3.43 | 3.70 | 4.00 | 4.00 | 4.00 | 4.90 |
| Div'd | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Cap'l Spending | 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 | 8.70 | 9.20 | 9.20 | 9.20 | 9.00 |
| Book Value | 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 | 35.35 | 36.95 | 36.95 | 36.95 | 42.50 |
| Common Sh | 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 | 181.00 | 182.00 | 182.00 | 182.00 | 182.00 |

CAPITAL STRUCTURE as of 12/31/19
 Total Debt \$9453.0 mil. Due in 5 Yrs \$1773.0 mil.
 LT Debt \$6639.0 mil. LT Interest \$354.0 mil. (59% of Cap'l)

Leases, Uncapitalized: Annual rentals \$14.0 mil.
Pension Assets 12/19 \$1747.0 mil. Oblig. \$2161.0 mil.
Pfd Stock \$5.0 mil. Pfd Div'd \$.4 mil

Common Stock 180,974,719 shares as of 2/13/20

CURRENT POSITION 2017 2018 12/31/19 (\$ MILL)

| | | | |
|------------------|------|------|------|
| Cash Assets | 82 | 158 | 91 |
| Accts Receivable | 272 | 301 | 294 |
| Other | 366 | 322 | 900 |
| Current Assets | 720 | 781 | 1285 |
| Accts Payable | 195 | 175 | 203 |
| Debt Due | 1227 | 1035 | 814 |
| Other | 903 | 884 | 1028 |
| Current Liab. | 2325 | 2084 | 2045 |

ANNUAL RATES OF change (per sh)

| | | | |
|------------|-------|-------|------|
| Revenue | 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% |

QUARTERLY REVENUES (\$ MILL)

| Calendar | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|----------|--------|--------|--------|--------|-----------|
| 2017 | 756.0 | 844.0 | 936.0 | 821.0 | 3357.0 |
| 2018 | 761.0 | 853.0 | 976.0 | 850.0 | 3440.0 |
| 2019 | 813.0 | 882.0 | 1013.0 | 902.0 | 3610.0 |
| 2020 | 835 | 920 | 1080 | 950 | 3785 |
| 2021 | 885 | 970 | 1120 | 1000 | 3975 |

EARNINGS PER SHARE

| Calendar | 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 | .66 | .97 | 1.35 | .72 | 3.70 |
| 2021 | .73 | 1.05 | 1.45 | .77 | 4.00 |

QUARTERLY DIVIDENDS PAID

| Calendar | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|----------|--------|--------|--------|--------|-----------|
| 2016 | .34 | .375 | .375 | .375 | 1.47 |
| 2017 | .375 | .415 | .415 | .415 | 1.62 |
| 2018 | .415 | .455 | .455 | .455 | 1.78 |
| 2019 | .455 | .50 | .50 | .50 | 1.96 |
| 2020 | .50 | | | | |

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

Shares of American Water Market have been a safe haven for investors during the recent turmoil caused by the coronavirus. Year to date, the price of the stock has increased nearly 3%. By comparison, the S&P 500 Index has declined about 19% over the same time period. Indeed, both long- and short-term investors have done well holding this equity, as it has outpaced bull markets, as well as outperformed most stocks during the downturns.

What's the reason behind American Water's success? There are a few basic principles behind the company's consistent positive performance. The first is to expand the asset base on which it earns a return. That's one of the reasons for the large construction program. (Domestic pipelines are in desperate need of repair.) The second is the ongoing acquisition program. Third, is a focus on cost controls. **Earnings and dividend growth prospects are bright through mid-decade.** American Water is perhaps the biggest beneficiary of the consolidation taking place in the domestic water market. As the largest water utility, it is able to contin-

ually acquire smaller water districts and merge them into its existing operations. Unlike many other industries, synergies are easily achievable in the water business. The company is able to increase its ratebase, and simultaneously make the acquired assets more efficient. This is one of the reasons that management has a constructive relationship with regulators in states where it operates. **Finances are only average.** The combination of the aggressive construction program, together with an aversion to selling new equity has resulted in American Water having the highest debt-to-total capital ratio of all the water utilities we follow, by a wide margin. Over the past decade, shares outstanding have risen just 3.5%. Thus, now would seem to be a good time to have an equity offering. **Despite all of the company's positive attributes, the stock does not stand out at this time.** Our ranking system pegs AWK to mirror the market in the year ahead. Moreover, like most water utilities, AWK has unattractive long-term total return potential.

James A. Flood April 10, 2020

CALIFORNIA WATER NYSE-CWT

RECENT PRICE **52.32** P/E RATIO **35.8** (Trailing: 39.9 Median: 23.0) RELATIVE P/E RATIO **2.71** DIV YLD **1.6%** VALUE LINE **1787**

| | | | |
|--|--|--|--------------------------------------|
| TIMELINESS 3 Lowered 3/6/20 | 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 44.8 39.7 | Target Price Range 2023 2024 2025 |
| SAFETY 3 Lowered 7/27/07 | 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 | | |
| TECHNICAL 3 Raised 4/10/20 | | | |
| BETA 60 (1.00 = Market) | % TOT. RETURN 2/20 1 yr. -6.7 3 yr. 36.9 5 yr. 108.3 | | |
| 18-Month Target Price Range Low-High Midpoint (% to Mid) \$47-\$75 \$81 (15%) | W.A.R.T.H. INDEX 1 yr. -6.8 3 yr. 36.6 5 yr. 108.3 | | |
| 2023-25 PROJECTIONS | © VALUE LINE PUBL. LLC 23-25 | | |
| Price Gain Return High 55 (+8%) 3% Low 35 (-36%) -7% | Institutional Decisions to Buy 202019 302019 402019 120 118 115 to Sell 102 94 101 Returned 36947 36133 36624 Percent shares traded 18 12 6 | | |

| 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Revenues per sh | 15.00 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------------|-------|
| 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 | 14.80 | 15.20 | Cash Flow per sh | 3.50 |
| 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 | 3.15 | 3.20 | Earnings per sh A | 2.00 |
| .73 | .74 | .67 | .75 | .95 | .98 | .91 | .86 | 1.02 | 1.02 | 1.19 | .94 | 1.01 | 1.40 | 1.36 | 1.31 | 1.55 | 1.65 | Div'd Decl'd per sh B | 1.05 |
| .57 | .57 | .58 | .58 | .59 | .59 | .60 | .62 | .69 | .64 | .65 | .67 | .69 | .72 | .75 | .79 | .82 | .86 | Cap'l Spending per sh C | 3.75 |
| 1.67 | 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 | 4.25 | 4.25 | Book Value per sh C | 16.65 |
| 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 | 15.70 | 15.90 | Common Shs Outst'g D | 53.00 |
| 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 | Avg Ann'l P/E Ratio | 23.0 |
| 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 | 30.0 | 21.3 | Relative P/E Ratio | 1.25 |
| 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 | 1.64 | 2.13 | Avg Ann'l Div'd Yield | 2.3% |
| 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% | 1.5% | 1.5% | | |

| CAPITAL STRUCTURE as of 12/31/19 | | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Revenues (\$mill) E | 795 |
|-------------------------------------|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|------------------------|-------|
| Total Debt | \$983.8 mill. Due in 5 Yrs \$229.0 mill. | 37.7 | 38.1 | 42.6 | 47.3 | 58.1 | 59.5 | 58.4 | 57.5 | 58.4 | 60.9 | 66.9 | 69.2 | 71.6 | 74.0 | 77.5 | 78.0 | 77.5 | 77.5 | Net Profit (\$mill) | 105 |
| LT Debt | \$786.8 mill. LT Interest \$40.0 mill. (Total interest coverage: 4.2x) | 39.5% | 40.5% | 37.5% | 30.3% | 33.0% | 36.0% | 35.5% | 30.1% | 24.5% | 19.1% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | Income Tax Rate | 21.0% |
| Pension Assets-12/18 | \$573.6 mill. Oblig. \$812.0 mill. | 4.2% | 5.1% | 4.7% | 4.6% | 4.6% | 4.6% | 4.6% | 4.6% | 4.6% | 4.6% | 4.6% | 4.6% | 4.6% | 4.6% | 4.6% | 4.6% | 4.6% | 4.6% | AFUDC % to Net Profit | 5.0% |
| Pfd Stock | None | 52.4% | 48.3% | 52.2% | 58.4% | 59.9% | 55.6% | 55.4% | 57.3% | 50.7% | 49.8% | 51.0% | 53.0% | 53.0% | 53.0% | 53.0% | 53.0% | 53.0% | 53.0% | Long-Term Debt Ratio | 43.5% |
| Common Stock | 48,532,000 shs. | 914.7 | 931.5 | 908.2 | 1024.9 | 1045.9 | 1154.4 | 1191.2 | 1209.3 | 1440.2 | 1568.7 | 1535 | 1525 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | Total Capital (\$mill) | 1500 |
| MARKET CAP: \$2.5 billion (Mid Cap) | | 1294.3 | 1381.1 | 1457.1 | 1515.8 | 1590.4 | 1701.8 | 1859.3 | 2048.0 | 2232.7 | 2408.4 | 2425 | 2450 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | Net Plant (\$mill) | 2500 |
| CURRENT POSITION (MILL) | | 5.5% | 5.5% | 6.3% | 6.0% | 6.3% | 5.2% | 5.5% | 7.1% | 5.9% | 5.5% | 6.0% | 6.0% | 6.0% | 6.0% | 6.0% | 6.0% | 6.0% | 6.0% | Return on Total Cap'l | 8.0% |
| Cash Assets | 94.8 | 47.2 | 42.7 | | | | | | | | | | | | | | | | | Return on Shr. Equity | 12.5% |
| Other | 133.1 | 141.5 | 142.0 | | | | | | | | | | | | | | | | | Return on Com Equity | 12.5% |
| Current Assets | 227.9 | 188.7 | 184.7 | | | | | | | | | | | | | | | | | Retained to Com Eq | 6.0% |
| Accts Payable | 94.0 | 95.6 | 108.5 | | | | | | | | | | | | | | | | | All Div'ds to Net Prof | 55% |
| Debt Due | 281.0 | 170.0 | 197.0 | | | | | | | | | | | | | | | | | | |
| Other | 106.0 | 55.6 | 53.2 | | | | | | | | | | | | | | | | | | |
| Current Liab. | 491.0 | 321.2 | 358.7 | | | | | | | | | | | | | | | | | | |

BUSINESS: California Water Service Group provides regulated and nonregulated water service to 489,800 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 dr. own 1% of common stock (4/19 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 hopes to invest more than \$800 million in infrastructure-related projects over the pull to 2021. At this time, its currently running general rate case with the California Public Utilities Commission was granted a settlement extension to July 1, 2020. The agreement covers various topics including, most importantly, CWT's long-term infrastructure investment plan and associated rate increases. The company already accumulated an approximate \$275 million tab last year, completing several notable upgrades, including water main replacements, new treatment facilities, the installation of backup generators, and pump station replacements. Through 2020 and 2021, it is likely that capital expenditures will range between \$550 million to \$600 million, and cover a similar scope of improvement projects. Finally, we are optimistic that regulators will eventually rule favorably.

California Water should be a consistent performer even amidst a difficult economic backdrop. Notably, California has been one of the major domestic hot spots for the fast-spreading coronavirus, which has severely impacted business and consumer activity. That said, with many residents urged to stay at home, increased hand washing and general utility use ought to translate into greater water usage. Thus, we are keeping intact our current-year revenue call, at \$740 million. On the other hand, a number of factors, namely rising operating costs, lower income tax benefits, as well as potential equity dilution, have spurred us to trim our share-net forecast from \$1.70 to \$1.55. Lastly, we are introducing our preliminary 2021 top- and bottom-line estimates of \$775 million and \$1.65 a share, respectively.

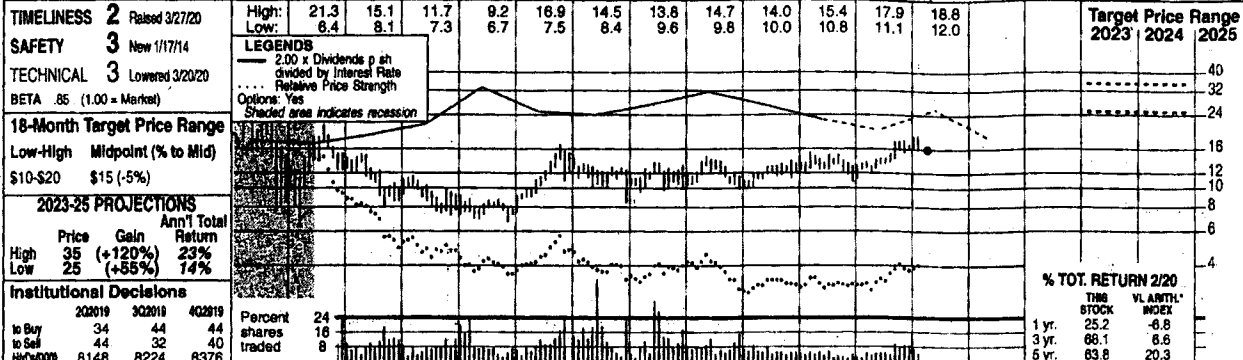
From an investment perspective, California Water stock leaves much to be desired. The shares have slipped one notch on our Timeliness Ranking scale, to 3 (Average). Moreover, total return potential over the 3- to 5-year stretch is considerably below the Value Line median. While the stock may have held up relatively well during recent broader market volatility, we think more-attractive options can be found elsewhere, at this juncture.

Nicholas P. Patrikis April 10, 2020

| | | | | | | |
|---|--|---|--------------------------------------|----------------------------|------------------------------|-----|
| (A) Basic EPS. Excl. nonrecurring gain (loss): 11.4¢. Next earnings report due early May. | (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-reg. rev. | Company's Financial Strength | B++ |
| | | | | | Stock's Price Stability | 80 |
| | | | | | Price Growth Persistence | 60 |
| | | | | | Earnings Predictability | 65 |

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CONSOL. WATER CO. NDQ-CWCO RECENT PRICE **15.93** P/E RATIO **27.0** (Trailing: 28.0 Median: 23.0) RELATIVE P/E RATIO **2.05** DIV'D YLD **2.1%** VALUE LINE **1788**



| 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 | 3.88 | 3.89 | 4.18 | 4.39 | 4.57 | 4.60 | 4.75 | Revenues per sh | 8.75 |
| .77 | .37 | .87 | 1.20 | .95 | 1.18 | .86 | .88 | 1.17 | .96 | .80 | .89 | .95 | 1.12 | 1.15 | 1.05 | 1.05 | 1.15 | "Cash Flow" per sh | 1.95 |
| .49 | .23 | .59 | .79 | .50 | .74 | .43 | .42 | .64 | .58 | .42 | .51 | .27 | .41 | .68 | .56 | .60 | .70 | 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 | .29 | .25 | .30 | 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 | 11.20 | 11.35 | 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 | 14.89 | 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 | 25.7 | 25.7 | 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 | 1.40 | 1.40 | 1.40 | 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% | 2.4% | 2.4% | Avg Ann'l Div'd Yield | 2.5% |

CAPITAL STRUCTURE as of 12/31/19

| | 2017 | 2018 | 12/31/19 |
|------------------|------|------|----------|
| Total Debt \$0.1 | 50.7 | 55.2 | 65.5 |
| LT Debt \$0.1 | 6.3 | 6.1 | 9.3 |
| LT Interest NMF | --- | --- | --- |

Leases, Uncapitalized: Annual rentals \$.9 mil.

No Defined Benefit Pension Plan

Pfd Stock NMF (34,796 shares out.) Div'd NMF

Common Stock 15,078,499 shs. as of 3/8/20

MARKET CAP: \$260 million (Small Cap)

CURRENT POSITION

| | 2017 | 2018 | 12/31/19 |
|---------------------|------|------|----------|
| Cash Assets | 47.2 | 31.3 | 42.9 |
| Accounts Receivable | 16.0 | 24.2 | 23.2 |
| Other | 4.8 | 6.9 | 7.3 |
| Current Assets | 68.7 | 62.4 | 73.4 |
| Accounts Payable | 6.7 | 4.6 | 3.7 |
| Debt Due | 1.2 | 3.3 | 4.8 |
| Other | 1.9 | 3.3 | 4.8 |
| Current Liab. | 7.8 | 7.9 | 8.5 |

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 28.6 million gallons per day. Sold Ball operations and divested Belize assets in '18.

Also manufactures products for the industry through Aerex sub. Inc.: Cayman Islands. Employs 105. Pres. & CEO: F. McTaggart. Offs./Dirs. own 4.8% of stock; Amundi Asset Mgt.: 7.7%; BlackRock, 5.8% (4/19 proxy). Addr.: Pagetta Off. Pk. Windward Three, 4th Floor, West Bay Road, P.O. Box 1114 Grand Cayman, KY-1102, Cayman Islands. Tel.: (345) 948-4277. Int.: www.cwco.com.

Consolidated Water's stock has done better than most of late. Indeed, since our last report three months ago, the value of the equity has fallen about 8%, versus the broader market decline of about 19%. The company's low exposure to the coronavirus is most likely the primary reason for the better-than-average showing. Consolidated builds, operates, and manufactures products used in desalination plants that provide water to regions where the commodity is scarce. Its main facilities are located in the Cayman Islands, the Bahamas, and the British Virgin Islands. So far, these countries have not been impacted by the pandemic. Should COVID-19 spread, however, Consolidated is more at risk than others in the water industry. Of the seven other companies in this group, all are based in the United States. And while the virus is causing havoc in financial markets, water utilities located here are less vulnerable to economic downturns than most other corporations. Water is essential, and though some people may reduce consumption, the decrease would probably be marginal. Being located in

countries that do not have the wealth of America, could be a problem. Specifically, Consolidated has had past difficulties with account receivables in the Bahamas. The major Mexico project remains on track. Since 2016, the company has been heavily involved in planning the construction of the Rosarito desalination facility that would be built in Mexico and service a region that includes Tijuana. The plant would purify 50 million gallons of water a day to this desert area. Consolidated will not construct the facility, but will operate it in a joint venture. Management has indicated in the latest 10-K report that it would look to sell parts of its interest at some point. In any case, many hurdles have been overcome, but some small ones remain. Completion of Rosarito is still years away, however. These shares are ranked to outperform the market averages in the year ahead. The stock is probably not suitable for the typical water utility investors, as its earnings streams are not nearly as well-defined as utilities operating in America.

James A. Flood April 10, 2020

| Cal-ender | 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 | 17.0 | 18.0 | 16.5 | 18.5 | 70.0 |
| 2021 | 18.0 | 19.0 | 17.0 | 19.0 | 73.0 |

| Cal-ender | 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 | .16 | .16 | .15 | .13 | .60 |
| 2021 | .18 | .18 | .18 | .16 | .70 |

| Cal-ender | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|-----------|--------|--------|--------|--------|-----------|
| 2018 | .075 | .075 | .075 | .075 | .30 |
| 2017 | .075 | .075 | .075 | .075 | .30 |
| 2018 | .085 | .085 | .085 | .085 | .34 |
| 2019 | .085 | .085 | .085 | .085 | .34 |
| 2020 | .085 | | | | |

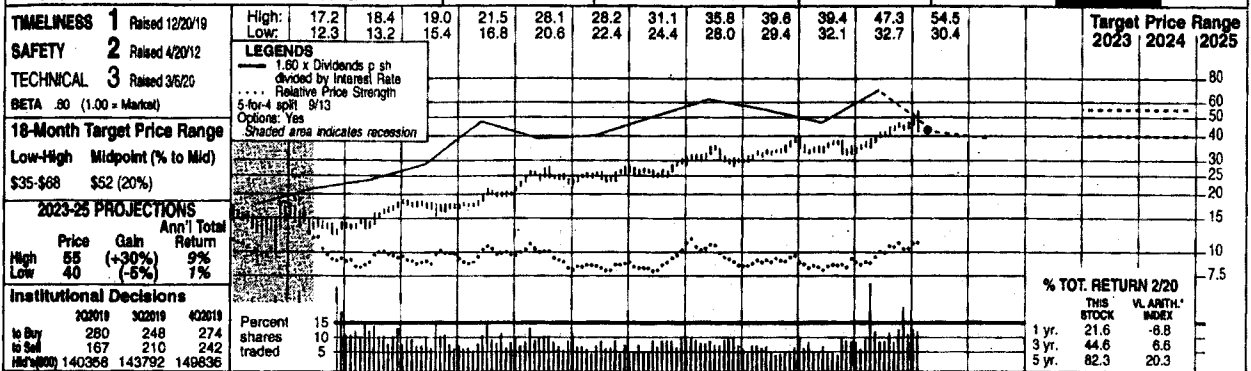
(A) Fully diluted earnings. Excludes gains from discontinued operations: '17, \$0.07 a share; '18, \$0.07 a share; '19, \$0.24 a share. Next earnings report due early June.
 (B) Dividends historically paid in late January, April, July, and October. ■ Dividend reinvestment plan available.
 (C) In millions, adjusted for stock split.
 (D) Includes intangibles. As of 12/31/19, \$13.3 million/\$0.88 a share.

Company's Financial Strength 8-
 Stock's Price Stability 50
 Price Growth Persistence 30
 Earnings Predictability 40

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ESSENTIAL UTIL. NYSE-WTRG

RECENT PRICE **43.05** P/E RATIO **32.4** (Trading: 43.1 Median: 23.0) RELATIVE P/E RATIO **2.45** DIV YLD **2.3%** VALUE LINE **1789**



| 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 | 6.50 | 7.70 | Revenues per sh | 8.70 |
| .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 | 2.40 | 2.65 | "Cash Flow" per sh | 3.50 |
| .51 | .57 | .56 | .57 | .58 | .62 | .72 | .83 | .87 | 1.16 | 1.20 | 1.14 | 1.32 | 1.35 | 1.06 | 1.04 | 1.45 | 1.55 | Earnings per sh A | 2.05 |
| .29 | .32 | .35 | .38 | .41 | .44 | .47 | .50 | .54 | .58 | .63 | .69 | .74 | .79 | .85 | .91 | .97 | 1.05 | 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 | 2.60 | 2.78 | 2.49 | 3.75 | 4.45 | 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 | 17.35 | 17.80 | Book Value per sh | 19.55 |
| 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 | 178.09 | 220.76 | 225.00 | 227.00 | Common Shs Outs'tg C | 230.00 |
| 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 | 32.0 | 27.0 | Avg Ann'l P/E Ratio | 24.0 |
| 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 | 2.12 | 2.12 | Relative P/E Ratio | 1.35 |
| 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% | 2.2% | Avg Ann'l Div'd Yield | 2.6% |

CAPITAL STRUCTURE as of 12/31/19
 Total Debt \$3074.1 mill. Due in 5 Yrs \$252.0 mill.
 LT Debt \$2943.3 mill. LT Interest \$123.5 mill. (43% of Cap'l)
 Pension Assets-12/19 \$266.4 mill. Oblig. \$310.5 mill.
 Pfd Stock None
 Common Stock 222,781,536 shares as of 2/19/20

MARKET CAP: \$9.6 billion (Large Cap)

CURRENT POSITION (SMILL)

| | 2017 | 2018 | 12/31/19 |
|--------------------|-------|-------|----------|
| Cash Assets | 4.2 | 3.6 | 1868.9 |
| Receivables | 98.6 | 101.2 | 87.1 |
| Inventory (AvgCst) | 14.4 | 15.8 | 18.4 |
| Other | 14.0 | 26.6 | 58.3 |
| Current Assets | 131.2 | 147.2 | 2012.7 |
| Accts Payable | 59.2 | 77.3 | 74.9 |
| Debt Due | 117.4 | 180.0 | 130.8 |
| Other | 107.9 | 161.7 | 113.1 |
| Current Liab. | 284.5 | 399.0 | 318.8 |

ANNUAL RATES Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 to '23-'25

| | 10 Yrs. | 5 Yrs. | Est'd '17-'19 to '23-'25 |
|-------------|---------|--------|--------------------------|
| Revenues | 1.5% | 5% | 12.0% |
| "Cash Flow" | 5.0% | 2.0% | 10.5% |
| Earnings | 7.0% | 1.5% | 10.0% |
| Dividends | 7.5% | 8.0% | 7.5% |
| Book Value | 8.0% | 9.0% | 6.5% |

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.

Essential Utilities is the new name for Aqua America. The water company officially made the change in February, six weeks before the completion of the acquisition of Peoples, a Pittsburgh-based natural gas utility. The cost of the transaction was \$4.275 billion in cash, including the assumption of \$1.1 billion of debt. In connection with the deal, Essential closed on the previously announced \$750 million investment from the Canadian Pension Plan, which received 21.7 million shares of newly issued stock. The equity is also trading with a new ticker: WTRG.

The coronavirus will most likely have only a minor impact on the company. People are going to be using water and gas no matter what the economic conditions. Should unemployment rise or a recession occurs, customers will obviously try to cut back on all of their expenditures, but the usage of these vital resources is required. Hence, demand for Essential's services will not take as large a hit as the typical corporation should this pandemic worsen. **The regulatory climate in Pennsylvania will have a major impact on earnings.** Nearly two-thirds of the new company's customer base is now in the Keystone state. Since Aqua had done business there for a long time, we assume that management was very aware of what the expectations are from the state's regulators. (It has promised to replace 3,000 miles of old gas lines over the next 15-year period.) **Our initial estimates for the new entity are tentative.** Not much guidance on Essential's operating and financial outlook has been made public. The utility's rate base will be \$2.3 billion larger, but as far as the amount of the capital budget and what revenues may total, have not been discussed. As for the bottom line, much will depend on acquisition costs. Peoples is in a different business, so we don't look for much overlap, except in dealing with regulators. Moreover, since the purchase was only just approved, we won't have a good idea about quarterly earnings until after the June period, though the March interim balance sheet should provide some insight. **This stock is timely.** However, like most members of this industry, long-term total return potential is unappealing.

James A Flood April 10, 2020

| Cal-ender | QUARTERLY REVENUES (\$ MILL.) | Full Year |
|-----------|-------------------------------|-----------|
| | Mar.31 Jun.30 Sep.30 Dec.31 | |
| 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 | 215 385 410 450 | 1460 |
| 2021 | 390 410 450 500 | 1750 |

| Cal-ender | EARNINGS PER SHARE A | Full Year |
|-----------|-----------------------------|-----------|
| | Mar.31 Jun.30 Sep.30 Dec.31 | |
| 2017 | .28 .34 .43 .30 | 1.35 |
| 2018 | .29 .37 .44 d.02 | 1.08 |
| 2019 | .09 .25 .38 .28 | 1.04 |
| 2020 | .25 .35 .45 .40 | 1.45 |
| 2021 | .28 .40 .45 .42 | 1.55 |

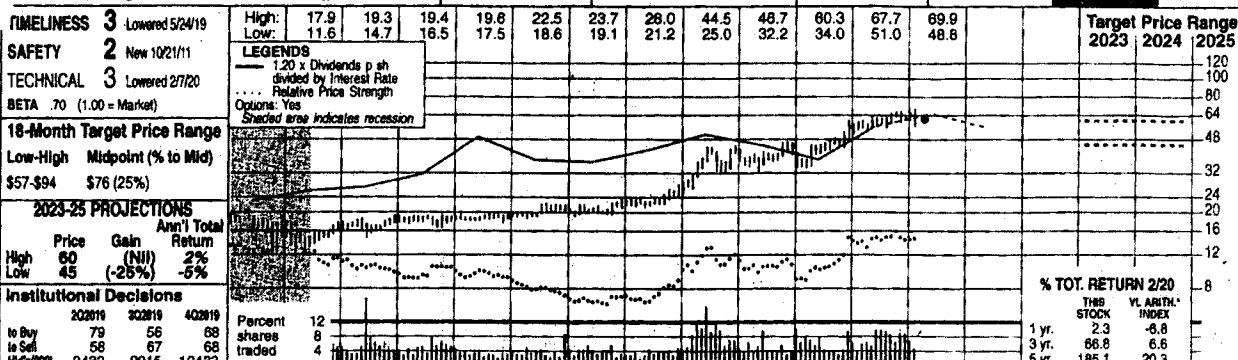
| Cal-ender | QUARTERLY DIVIDENDS PAID B=C | Full Year |
|-----------|------------------------------|-----------|
| | Mar.31 Jun.30 Sep.30 Dec.31 | |
| 2016 | .178 .178 .1913 .1913 | .74 |
| 2017 | .1913 .1913 .2047 .2047 | .79 |
| 2018 | .2047 .2047 .219 .219 | .85 |
| 2019 | .219 .219 .2343 .2343 | .91 |
| 2020 | .2343 | |

(A) Diluted eps. Excl. nonrec. gains: '12, 184. Excl. gain from disc. operations: '12, 76; '13, 94; '14, 114. Quarterly EPS do not add in '19 due to a large change in the number of shares.
 (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: 12/31/19, \$63.8 mill./\$0.29 a share.

Company's Financial Strength A
Stock's Price Stability 95
Price Growth Persistence 75
Earnings Predictability 55

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MIDDLESEX WATER NDQ-MSEX **RECENT PRICE 61.47** **P/E RATIO 29.4** (Trailing: 30.6 Median: 21.0) **RELATIVE P/E RATIO 2.23** **DIV YLD 1.7%** **VALUE LINE 1790**



| 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 | 6.80 | 6.50 | 6.98 | 7.19 | 7.28 | 7.77 | 8.16 | 8.00 | 8.42 | 7.72 | 8.20 | 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 | 2.95 | 3.10 | "Cash Flow" per sh | 3.50 | |
| .73 | .71 | .82 | .87 | .89 | .72 | .96 | .84 | .90 | 1.03 | 1.13 | 1.22 | 1.38 | 1.38 | 1.96 | 2.01 | 2.10 | 2.20 | Earnings per sh ^A | 2.50 | |
| .86 | .67 | .68 | .69 | .70 | .71 | .72 | .73 | .74 | .75 | .76 | .78 | .81 | .86 | .91 | .98 | 1.04 | 1.10 | Div'd Decl'd per sh ^B | 1.25 | |
| 2.54 | 2.18 | 2.31 | 2.16 | 2.12 | 1.49 | 1.90 | 1.50 | 1.38 | 1.26 | 1.40 | 1.59 | 2.91 | 3.08 | 4.40 | 5.11 | 3.50 | 3.50 | Cap'l Spending per sh | 3.50 | |
| 8.02 | 8.28 | 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 | 17.35 | |
| 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 | 17.85 | 17.75 | Common Shs Outst'g ^C | 18.00 | |
| 26.4 | 27.4 | 22.7 | 21.6 | 19.8 | 21.0 | 17.8 | 21.7 | 20.8 | 19.7 | 18.5 | 19.1 | 25.8 | 28.4 | 22.2 | 29.7 | Bold figures are Value Line estimates | 145 | 150 | Avg Ann'l P/E Ratio | 21.0 |
| 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 | | 39.0 | 39.0 | Relative P/E Ratio | 1.15 |
| 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% | | 50% | 50% | Avg Ann'l Div'd Yield | 2.4% |

CAPITAL STRUCTURE as of 12/31/19
 Total Debt \$258.0 mill. Due in 5 Yrs \$33.3 mill.
 LT Debt \$230.8 mill. LT Interest \$7.2 mill.
 (Total interest coverage: 7.3x)
 (42% of Cap'l)

Pension Assets-12/18 \$80.4 mill.
 Oblig. \$100.9 mill.
 Pfd Stock \$2.4 mill. Pfd Div'd: \$1 mill.

Common Stock 17,434,000 shs.

MARKET CAP: \$1.1 billion (Mid-Cap)

| CURRENT POSITION | 2017 | 2018 | 12/31/19 |
|------------------|------|------|----------|
| (\$MILL) | | | |
| Cash Assets | 4.9 | 3.7 | 2.2 |
| Other | 24.3 | 27.1 | 26.9 |
| Current Assets | 29.2 | 30.8 | 29.1 |
| Accts Payable | 13.9 | 19.3 | 23.3 |
| Debt Due | 34.9 | 55.8 | 27.2 |
| Other | 15.7 | 19.3 | 14.5 |
| Current Liab. | 64.5 | 94.4 | 65.0 |

ANNUAL RATES

| | Past 10 Yrs. | Past 5 Yrs. | Past Est'd '17-'19 |
|--------------------|--------------|-------------|--------------------|
| of change (per sh) | | | to 23-25 |
| Revenues | 2.0% | 2.5% | 2.0% |
| "Cash Flow" | 6.0% | 9.5% | 4.5% |
| Earnings | 8.0% | 12.0% | 6.0% |
| Dividends | 2.5% | 4.0% | 5.5% |
| Book Value | 4.5% | 6.0% | 1.5% |

QUARTERLY REVENUES (\$ MILL)

| Cal-ender | 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 | 32.0 | 36.0 | 42.0 | 35.0 | 145 |
| 2021 | 33.0 | 37.0 | 44.0 | 36.0 | 150 |

EARNINGS PER SHARE^A

| Cal-ender | 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 | .40 | .59 | .70 | .47 | 2.10 |
| 2021 | .42 | .55 | .73 | .50 | 2.20 |

QUARTERLY DIVIDENDS PAID^B

| Cal-ender | Mar.31 | Jun.30 | Sep.30 | Dec.31 | Full Year |
|-----------|--------|--------|--------|--------|-----------|
| 2016 | 1.9875 | 1.9875 | 1.9875 | 2.1125 | .81 |
| 2017 | 2.1125 | 2.1125 | 2.1125 | 2.2375 | .86 |
| 2018 | 2.2375 | 2.2375 | 2.2375 | .24 | .91 |
| 2019 | .24 | .24 | .24 | 2.562 | .98 |
| 2020 | | | | | |

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 3.5% of the com. stock; BlackRock Inst. Trust Co., 6.8% (4/19 proxy). Add: 485 C Route 1 South, Suite 400, Iselin, NJ 08830. Tel: 732-634-1500. Int.: www.middlesexwater.com.

Middlesex Water Company is well positioned to handle the currently ambiguous economic climate. Indeed, impacts from the sweeping coronavirus are still largely unknown, but will likely take a major toll on consumer spending and domestic business activity in the near term. However, taking into consideration that water is one of our most basic necessities, it is highly unlikely that service will undergo even the slightest pause or consumer disruption. Additionally, health-conscious actions, such as more frequent hand washing, as well as a greater number of residents presently staying in their homes, may well drive increased water usage. Meanwhile, the company recently raised some capital via an equity issuance, which should provide financial flexibility. **The stock has held up decently since our last report.** Middlesex shares etched fresh highs in mid-February before crumbling market indices resulted in the capitulation of some gains. On balance, the stock is down only about 10% in value over the past three months. **We are introducing our preliminary 2021 top- and bottom-line forecasts at \$150 million and \$2.20 a share, respectively.** This represents modest single-digit growth over our current-year projections. **Infrastructure spending is likely to ramp up considerably over the pull to mid-decade.** To start, an \$11.2 million drinking water project is already under way in New Jersey. The company plans to replace more than 20,000 linear feet of water mains, as well as upgrade service lines. Moreover, through 2021, MSEX's Water for Tomorrow program sports a budget of nearly \$300 million, which ought to strengthen the company's distribution infrastructure. Beyond that, we think additional investment spending is probably in the cards. **We are not presently recommending Middlesex stock.** The water utility might be a conservative option amidst volatile market conditions, but the issue is just an Average selection for the year ahead. On top of that, the yield is rather unenticing, and capital appreciation potential three to five years hence is well below the Value Line median. Thus, we suggest investors take a pass, for now. *Nicholas P. Patrikis* April 10, 2020

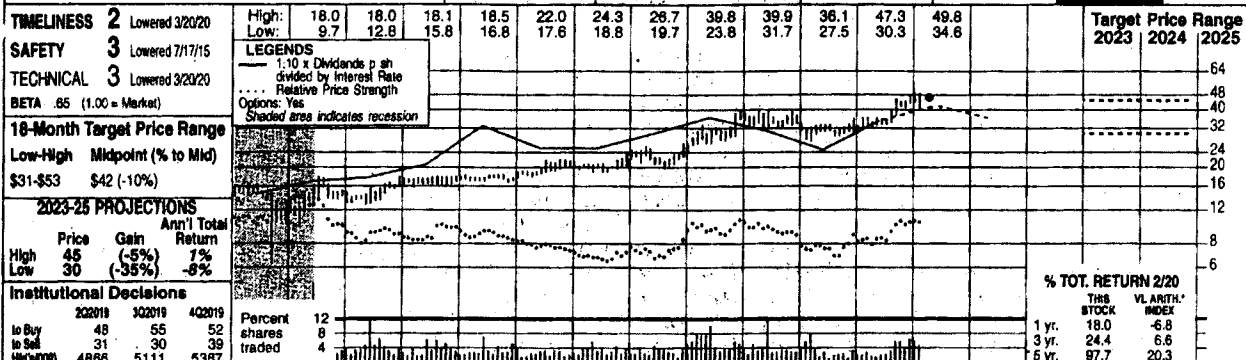
(A) Diluted earnings. Next earnings report due late April. (B) Dividends historically paid in mid-Feb., May, Aug., and November. Div'd reinvestment plan available. (C) In millions.

| Company's Financial Strength | B++ |
|------------------------------|-----|
| Stock's Price Stability | 65 |
| Price Growth Persistence | 55 |
| Earnings Predictability | 75 |

| SJW GROUP NYSE-SJW | | | RECENT PRICE | 59.78 | P/E RATIO | 28.6 (Trailing: 44.3 Median: 21.0) | RELATIVE P/E RATIO | 2.17 | DIV'D YLD | 2.1% | VALUE LINE | 1791 | | | | | | |
|--|---------------------|--|---|-------|-----------|------------------------------------|--------------------|------|-----------|------|------------|------|------|------|--------------------|------|------|------|
| TIMELINESS | E | | High: 30.4 | 28.2 | 26.8 | 26.9 | 30.1 | 33.7 | 35.7 | 56.9 | 69.3 | 68.4 | 74.5 | 75.0 | Target Price Range | 2023 | 2024 | 2025 |
| SAFETY | 3 New 4/22/11 | | Low: 18.2 | 21.6 | 20.9 | 22.6 | 24.5 | 25.5 | 27.5 | 28.6 | 45.4 | 51.3 | 53.9 | 45.6 | | | | |
| TECHNICAL | E | | LEGENDS 1.50 x Dividends p sh divided by Interest Rate Relative Price Strength Options: Yes Shaded area indicates recession | | | | | | | | | | | | | | | |
| BETA | .60 (1.00 = Market) | | 18-Month Target Price Range | | | | | | | | | | | | | | | |
| 2023-25 PROJECTIONS | | | Low-High | | | | | | | | | | | | | | | |
| Institutional Decisions | | | Percent shares traded | | | | | | | | | | | | | | | |
| CAPITAL STRUCTURE as of 12/31/19 | | | Total Debt \$1305.9 mill. Due in 5 Yrs \$0.0 mill. | | | | | | | | | | | | | | | |
| MARKET CAP: \$1.7 billion (Mid Cap) | | | CURRENT POSITION | | | | | | | | | | | | | | | |
| ANNUAL RATES | | | of change (per sh) | | | | | | | | | | | | | | | |
| QUARTERLY REVENUES (\$ MILL) | | | Full Year | | | | | | | | | | | | | | | |
| EARNINGS PER SHARE | | | Full Year | | | | | | | | | | | | | | | |
| QUARTERLY DIVIDENDS PAID | | | Full Year | | | | | | | | | | | | | | | |
| BUSINESS | | | with Connecticut Water (10/19) which provides service to approx. 138,000 connections with a total population of 450,000 people. | | | | | | | | | | | | | | | |
| We are lowering our current-year share-net estimate for SJW Group by a dime, to \$2.35. | | | This is largely to reflect management's recent guidance, as well as to factor in lingering integration costs from the CTWS merger (completed in October, 2019). Indeed, we look for a substantial bottom-line recovery this year, as SJW incurred an additional profit hit in 2019 in the form of a nonrecurring charge related to the denial of its subsidiary's Water Conservation Memorandum Account. Although the near-term economic outlook, especially in hard-hit California, is a bit dire, given recent health concerns, we think SJW is well positioned to operate on a fairly normal basis. In fact, a rise in household water consumption, due to increased hand washing and more people staying at home of late, may be a net positive for the company. | | | | | | | | | | | | | | | |
| Long-term, we like SJW Group's business prospects. | | | First, the recently combined company now serves more than 1.5 million people on both coasts, and the scale and scope of its operations, once the integration is in the rearview mirror, ought to support further growth. In addition, an expanding customer base and periodic rate hikes should help drive top-line results. Second, we think aggressive infrastructure investment spending is likely over the next several years. Alongside traditional upgrades, such as water main repairs and improvements to its filtration systems and treatment plants, SJW aims to roll out advanced metering technology (in an effort to achieve upcoming water standards) that can provide nearly real-time water consumption information. The stock price has declined notably since our previous review. Over the past three months, SJW stock has lost about 20% in value, largely a consequence of broader market turbulence stemming from weakening economic concerns. Over the past five years, shares of SJW have appreciated handsomely and, even with the recent selloff, total return potential three to five years out is still subpar when compared to the Value Line median. Adding it all up, given the equity's limited investment appeal, subscribers would be wise to look elsewhere at this juncture. | | | | | | | | | | | | | | | |
| Nicholas P. Patrikis | | | April 10, 2020 | | | | | | | | | | | | | | | |
| (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 May. | | | 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, adjusted for stock splits. | | | | | | | | | | | | | | | |
| (D) Paid special dividend of \$0.17 per share on 11/17. | | | (E) Suspended due to recent CTWS merger. | | | | | | | | | | | | | | | |
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| | | | Stock's Price Stability | | | | | | | | | | 70 | | | | | |
| | | | Price Growth Persistence | | | | | | | | | | 55 | | | | | |
| | | | Earnings Predictability | | | | | | | | | | 45 | | | | | |
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YORK WATER NDQ:YORW

RECENT PRICE **46.77** P/E RATIO **42.1** (Trailing: 42.1 Median: 26.0) RELATIVE P/E RATIO **3.19** DIV'D YLD **1.5%** VALUE LINE **1792**



| 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 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 | 4.05 | 4.20 | Revenues per sh | 5.10 |
| .85 | .79 | .77 | .86 | .88 | .95 | 1.07 | 1.09 | 1.12 | 1.19 | 1.36 | 1.45 | 1.42 | 1.53 | 1.58 | 1.71 | 1.75 | 1.80 | "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 | 1.15 | 1.20 | 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 | 2.00 | 2.00 | 2.00 | 1.95 | 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 | 10.32 | 11.20 | 11.65 | Book Value per sh | 12.50 |
| 10.33 | 10.40 | 11.20 | 11.27 | 11.37 | 12.56 | 12.89 | 12.79 | 12.92 | 12.98 | 12.83 | 12.81 | 12.85 | 12.87 | 12.94 | 13.01 | 12.85 | 12.90 | Common Sha Outst ^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 | 33.7 | 30.3 | 33.7 | Avg Ann'l P/E Ratio | 22.5 |
| 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 | 1.83 | 1.83 | Relative P/E Ratio | 1.25 |
| 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% | 2.1% | 1.9% | Avg Ann'l Div'd Yield | 2.5% |

| CAPITAL STRUCTURE as of 12/31/19 | | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 23-25 | |
|----------------------------------|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------------------|-------|
| Total Debt \$101.0 mill. | Due in 5 Yrs \$42.5 mill. | 39.0 | 40.6 | 41.4 | 42.4 | 45.9 | 47.1 | 47.6 | 48.6 | 48.4 | 51.5 | 52.5 | 54.0 | 55.0 | 54.0 | 55.0 | 55.0 | 55.0 | 55.0 | Revenues (\$mill) | 55.0 |
| LT Debt \$94.5 mill. | LT Interest \$5.5 mill. | 8.9 | 9.1 | 9.3 | 9.7 | 11.5 | 12.5 | 11.8 | 13.0 | 13.4 | 14.5 | 15.0 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | Net Profit (\$mill) | 20.5 |
| | | 38.5% | 35.3% | 37.6% | 37.6% | 29.8% | 27.5% | 31.3% | 25.9% | 15.7% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% | Income Tax Rate | 21.0% |
| | | 1.2% | 1.1% | 1.1% | 1.1% | 1.8% | 1.6% | 1.9% | 6.7% | 1.7% | 2.0% | 1.5% | 1.5% | 1.5% | 1.5% | 1.5% | 1.5% | 1.5% | 1.5% | AFUDC % to Net Profit | 1.5% |
| | | 48.3% | 47.1% | 46.0% | 45.1% | 44.8% | 44.4% | 42.6% | 43.0% | 42.5% | 41.3% | 38.5% | 37.5% | 36.0% | 35.5% | 35.5% | 35.5% | 35.5% | 35.5% | 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% | 61.5% | 62.5% | 64.0% | 64.5% | 64.5% | 64.5% | 64.5% | 64.5% | Common Equity Ratio | 64.0% |
| | | 176.4 | 180.2 | 184.8 | 188.4 | 196.3 | 198.7 | 209.5 | 218.5 | 228.7 | 235 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 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 | 320 | 320 | 320 | 320 | 320 | 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% | 7.5% | 7.5% | 7.5% | 7.5% | 7.5% | 7.5% | 7.5% | Return on Total Cap'l | 9.0% |
| | | 9.6% | 9.5% | 9.3% | 9.3% | 11.0% | 11.5% | 10.4% | 10.9% | 10.6% | 10.8% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | Return on Shr. Equity | 13.0% |
| | | 9.8% | 9.5% | 9.3% | 9.3% | 11.0% | 11.5% | 10.4% | 10.9% | 10.6% | 10.8% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% | Return on Com Equity | 13.0% |
| | | 2.7% | 2.5% | 2.4% | 2.4% | 3.9% | 4.4% | 3.4% | 4.0% | 3.8% | 4.0% | 4.0% | 4.0% | 4.0% | 4.0% | 4.0% | 4.0% | 4.0% | 4.0% | Returned to Com Eq | 5.0% |
| | | 72% | 73% | 74% | 74% | 64% | 62% | 67% | 63% | 64% | 63% | 63% | 63% | 63% | 63% | 63% | 63% | 63% | 63% | All Div'ds to Net Prof | 59% |

| CURRENT POSITION | 2017 | 2018 | 12/31/19 |
|-----------------------|------|------|----------|
| Cash Assets | | | |
| Accounts Receivable | 4.5 | 4.8 | 4.4 |
| Inventory (Avg. Cost) | .9 | .9 | 1.0 |
| Other | 3.2 | 3.3 | 4.0 |
| Current Assets | 8.6 | 9.0 | 9.4 |
| Accts Payable | 3.1 | 3.0 | 3.4 |
| Debt Due | - | 1.0 | 6.6 |
| Other | 6.0 | 6.8 | 5.5 |
| Current Liab. | 9.1 | 10.8 | 15.2 |

| ANNUAL RATES | Post 10 Yrs. | Post 5 Yrs. | Est'd '18-'18 |
|--------------|--------------|-------------|---------------|
| Revenues | 3.0% | 3.0% | 4.5% |
| "Cash Flow" | 6.0% | 6.0% | 7.0% |
| Earnings | 5.5% | 6.5% | 7.0% |
| Dividends | 3.5% | 4.0% | 5.5% |
| Book Value | 4.5% | 4.0% | 4.5% |

| Quarter | 2017 | 2018 | 2019 | 2020 | 2021 |
|-----------|------|------|------|------|------|
| Mar.31 | 11.3 | 12.3 | 12.7 | 12.3 | 12.3 |
| Jun.30 | 11.6 | 12.0 | 12.7 | 12.1 | 12.1 |
| Sep.30 | 11.8 | 13.0 | 13.7 | 13.0 | 13.0 |
| Dec.31 | 12.2 | 13.0 | 14.0 | 13.3 | 13.3 |
| Full Year | 12.5 | 13.3 | 14.5 | 13.7 | 13.7 |

| Quarter | 2017 | 2018 | 2019 | 2020 | 2021 |
|-----------|------|------|------|------|------|
| Mar.31 | .20 | .23 | .31 | .27 | 1.01 |
| Jun.30 | .20 | .26 | .29 | .29 | 1.04 |
| Sep.30 | .22 | .28 | .35 | .26 | 1.11 |
| Dec.31 | .22 | .28 | .35 | .30 | 1.15 |
| Full Year | .23 | .30 | .36 | .31 | 1.20 |

| Quarter | 2016 | 2017 | 2018 | 2019 | 2020 |
|-----------|-------|-------|-------|-------|------|
| Mar.31 | .1555 | .1555 | .1555 | .1602 | .627 |
| Jun.30 | .1602 | .1602 | .1602 | .1666 | .647 |
| Sep.30 | .1666 | .1666 | .1666 | .1733 | .673 |
| Dec.31 | .1733 | .1733 | .1733 | .1802 | .70 |
| Full Year | .1802 | | | | |

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 106 full-time employees at 12/31/19. President/CEO: Jeffrey R. Hines. Officers/directors own 1.2% of the common stock (3/19 proxy). Address: 130 East Market Street, York, Pennsylvania 17401. Telephone: (717) 845-3801. Internet: www.yorkwater.com.

York Water Company is apt to post modest top- and bottom-line gains this year and next. Although the current economic climate is far from ideal, York's operations are likely to move forward on a relatively normal basis. In fact, given an abundance of hand washing spurred by the recent health crisis, coupled with a growing number of residents urged to stay at home by government officials, the company may experience a near-term uptick in water consumption. All things considered, we continue to envision low single-digit revenue and share-net growth for 2020 and 2021.

The stock is a favorable selection for the coming six- to 12-month stretch. Based on our Timeliness Ranking scale, York is ranked 2 (Above Average) for relative year-ahead price performance. What's more, in comparison to the beaten-up broader market indices, shares of the regulated water utility have fared markedly better over the past six weeks of trading. Indeed, conservative investors may well continue to rebalance their portfolios, specifically by increasing exposure to companies with more stable year-ahead business

prospects. **Investment spending over the pull to mid-decade ought to continue as planned.** Leadership's recent commentary suggests capital investments of about \$30 million are on the table this year, which will likely be followed up by an additional \$27 million worth of spending in 2021. Funds will probably be allocated to dam construction and repair; waste water treatment plant expansion; and pipe, service line, and facility improvements. In our view, factoring in the company's aging infrastructure, as well as its expanding customer base, York is not likely to take its foot off the gas beyond 2021 in terms of investment spending. **At the recent quotation, long-term investment appeal is lacking.** York shares have been on a steady ascent for the better part of the last decade. And even with the moderate pullback of late, total return potential three to five years hence is well below average. All told, despite the stock's defensive qualities, we think buy-and-hold accounts can find more-attractive options elsewhere at this juncture. *Nicholas P. Patrikis April 10, 2020*

(A) Diluted earnings. Next earnings report due late April. (C) In millions, adjusted for split. Company's Financial Strength B+ Stock's Price Stability 65 Price Growth Persistence 65 Earnings Per Share 95 To subscribe call 1-800-VALUELINE

Pennsylvania American Water Company
Valley Township, Chester County, Pennsylvania

**Wastewater System
Appraisal Work Papers
As of December 17, 2019**

**Water/wastewater Industry
Financials and Operating Statistics**

**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**

Pennsylvania American Water Company
Valley Township, Pennsylvania

Wastewater Fund (08)

| Account | Description | 2015 | 2016 | 2017 | 2018 | 2019 | Projections | Forecast Parameters for Periods | | | | | | | | | | |
|--------------------------------------|---|---------------------|---------------------|---------------------|---------------------|---------------------|---|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--|
| | | | | | | | 1-5 | 6-15 | 6-15 | 16-20 | 21-26 | 27-33 | 34-40 | 40-46 | 47-53 | 54-60 | | |
| 08.341.0000 | Interest Earning | | | 8,918.48 | 8,346.27 | 3,191.70 | | | | | | | | | | | | |
| 08.350.0400 | PA DCED Grant Funding | | | | | | | | | | | | | | | | | |
| 08.364.1000 | Sewer Charges | 2,748,087.00 | 2,772,044.00 | 2,738,281.99 | 2,770,573.75 | 2,663,203.34 | See Rate Increase Schedule on tab: DCF Investor Owned Cells: L263:R5263 | | | | | | | | | | | |
| | Insurance Claim | 2,748,087.00 | 2,772,044.00 | 2,738,281.99 | 2,835,473.75 | 2,663,203.34 | | | | | | | | | | | | |
| 08.364.1209 | Connection Fees | | | 17,906.28 | 3,829.22 | 972.92 | | | | | | | | | | | | |
| 08.364.1240 | Conveyance Fees | | | 14,083.99 | 20,976.41 | 15,444.15 | | | | | | | | | | | | |
| 08.364.1900 | Miscellaneous Revenues | | | 2,790.71 | 0.10 | 64,336.75 | | | | | | | | | | | | |
| Total Revenues | | 2,748,087.00 | 2,772,044.00 | 2,781,921.41 | 2,869,625.75 | 2,747,148.86 | 2,747,148.86 | 4.0% | 3.6% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | |
| | | | 0.9% | 0.4% | 3.2% | 4.3% | 0.1% | | | | | | | | | | | |
| Total Reported Revenues | | | | | | | 3,119,464.49 | | | | | | | | | | | |
| Non-operating revenues | | | | | | | 372,315.63 | | | | | | | | | | | |
| Operating Revenues Check | | | | | | | 2,747,148.86 | | | | | | | | | | | |
| Expenses | | | | | | | | | | | | | | | | | | |
| 08.429.1100 | Salaries - Wages Secretaries | | | 61,991.71 | 56,809.41 | 63,225.89 | 14 Office Labor 14 | 63,225.89 | 1.0% | -3.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | |
| 08.429.1200 | Third Party Plumbing Inspector | | | | | | Office (Print, Telephone, Facil | | | | | | | | | | | |
| 08.429.2100 | Printing & Postage | | | 4,288.43 | 1,564.41 | 2,240.53 | ilities (2, 3, 4) | 5,422.85 | 1.0% | -3.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | |
| 08.429.2200 | Bank Charges | | | 15.00 | | | Contract Service 5,6, | | | | | | | | | | | |
| 08.429.2300 | Telephone | | | 3,514.22 | 3,138.64 | 3,182.32 | 3 | | | | | | | | | | | |
| 08.429.3109 | Engineering | | | 24,998.75 | 34,016.25 | 21,148.25 | 5 7, 13 | 27,303.17 | 1.0% | -3.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | |
| 08.429.3200 | Legal | | | | 92.50 | 342.25 | 6 | | | | | | | | | | | |
| 08.429.3300 | Audit | | | 4,800.00 | 32,817.24 | 5,812.67 | 7 | | | | | | | | | | | |
| 08.429.3400 | Facilities & Office Expense | | | 56.23 | | | 4 | | | | | | | | | | | |
| 08.429.3410 | Benefit Allocation | | | | | | | | | | | | | | | | | |
| 08.429.4300 | Sewage Treatment Costs | | | 2,147,130.01 | 3,183,866.04 | 2,966,228.92 | 1 Treatment (1) | 2,966,228.92 | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | |
| 08.429.4500 | Electricity | | | 15,927.38 | 17,198.06 | 16,932.16 | 10 | | | | | | | | | | | |
| 08.429.4600 | Maintenance & Repair | | | 49,168.65 | 72,992.61 | 68,700.47 | Operations (Maint 8, Road Crew 9, Electricity 10, | | | | | | | | | | | |
| 08.429.4610 | Road Crew Salaries | | | 63,405.47 | 37,568.12 | | 8 Supplies 11) | 87,280.43 | 1.0% | -3.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | |
| 08.429.4620 | I&I | | | | 625.00 | | 9 | | | | | | | | | | | |
| 08.429.4630 | Upgrade to System - PA DCED GRA | | | | | | 13 | | | | | | | | | | | |
| 08.429.4700 | Supplies & Equipment | | | 5,658.17 | 4,348.51 | 1,647.80 | 11 | | | | | | | | | | | |
| 08.429.4900 | Miscellaneous | | | 1,643.00 | | | | | | | | | | | | | | |
| 08.429.5000 | Theft Loss | | | 76,231.47 | | | | | | | | | | | | | | |
| 08.429.0100 | Interfund nTransfer to Gen Fund - Benefit A | | | 112,700.00 | | | | | | | | | | | | | | |
| Total Expenditures | | 2,282,897.00 | 2,531,858.00 | 2,571,528.48 | 3,445,036.79 | 3,149,461.26 | | 3,149,461.26 | | | | | | | | | | |
| | | | | | 3,445,036.79 | 3,425,258.77 | | | | | | | | | | | | |
| | | | | | 3,445,036.79 | 3,149,461.26 | | | | | | | | | | | | |
| Excess Revenues over Expenses | | 465,190.00 | 239,186.00 | 210,392.92 | (575,411.04) | (402,312.40) | | (402,312.40) | | | | | | | | | | |
| Working Capital | | | | | | | | | | | | | | | | | | |
| Current Assets | | | | | | | 28.0% | 28.0% | 28.0% | 28.0% | 28.0% | 28.0% | 28.0% | 28.0% | 28.0% | 28.0% | | |
| Current Liabilities | | | | | | | 22.6% | 22.6% | 22.6% | 22.6% | 22.6% | 22.6% | 22.6% | 22.6% | 22.6% | 22.6% | | |

2015 MUNICIPAL ANNUAL AUDIT AND FINANCIAL REPORT

151655 VALLEY TWP, CHESTER COUNTY



BALANCE SHEET

Valley Wastewater Financials

DCED-CLGS-30 (09-09)

VALLEY TWP, CHESTER County
BALANCE SHEET
 December 31, 2015

| | | Governmental Funds | | | | Proprietary Funds | | Fid. Fund | Account Groups | | Total |
|--------------------------------------|---------------------------------------|--------------------|--|------------------|--------------|-------------------|------------------|------------------|----------------------|------------------------|------------------|
| | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | General Fixed Assets | General Long Term Debt | Memorandum Only |
| Assets and Other Debits | | | | | | | | | | | |
| 100-120 | Cash and Investments | 2,770,431 | 90,400 | | | 876,274 | | | | | 3,737,105 |
| 140-144 | Tax Receivable | | | | | | | | | | |
| 121-129, 145-149 | Accounts Receivable (excluding taxes) | | | | | | | | | | |
| 130.00 | Due From Other Funds | | | | | | | | | | |
| 131-139, 150-159 | Other Current Assets | 289,913 | | | | | | | | | 289,913 |
| 160-169 | Fixed Assets | | | | | | | | | | |
| 180-189 | Other Debits | | | | | | | | | 994,581 | 994,581 |
| Total Assets and Other Debits | | 3,060,344 | 90,400 | | | 876,274 | | | | 994,581 | 5,021,599 |

| Liabilities and Other Credits | | | | | | | | | | | |
|--------------------------------------|--|---------|--|--|--|--|--|--|--|--|---------|
| 210-229 | Payroll Taxes and Other Payroll Withholdings | | | | | | | | | | |
| 200-209, 231-239 | All Other Current Liabilities | 289,913 | | | | | | | | | 289,913 |
| 230.00 | Due to Other Funds | | | | | | | | | | |

VALLEY TWP, CHERK County
BALANCE SHEET
 December 31, 2015

Valley Wastewater Financials

| | | Governmental Funds | | | | Proprietary Funds | | Fid. Fund | Account Groups | | Total |
|--|---|--------------------|--|------------------|--------------|-------------------|------------------|------------------|----------------------|------------------------|-----------------|
| | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | General Fixed Assets | General Long Term Debt | Memorandum Only |
| Liabilities and Other Credits | | | | | | | | | | | |
| 260-269 | Long-Term-Liabilities | | | | | | | | | 913,499 | 913,499 |
| 240-259 | Current Portion of Long-Term Debt and Other Credits | | | | | | | | | 81,082 | 81,082 |
| Total Liabilities and Other Credits | | 289,913 | | | | | | | | 994,581 | 1,284,494 |

| Fund and Account Group Equity | | | | | | | | | | | |
|--|---|-----------|--------|--|--|---------|--|--|--|--|-----------|
| 281-284 | Contributed Capital | | | | | | | | | | |
| 290.00 | Investment in General Fixed Assets | | | | | | | | | | |
| 270-289 | Fund Balance / Retained Earnings on 12/31 | 2,770,431 | 90,400 | | | 876,274 | | | | | 3,737,105 |
| 291-299 | Other Equity | | | | | | | | | | |
| Total Fund and Account Group Equity | | 2,770,431 | 90,400 | | | 876,274 | | | | | 3,737,105 |

| | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|-----------|
| TOTAL LIABILITIES AND FUND AND ACCOUNT GROUP EQUITY | | | | | | | | | | | 5,021,599 |
|--|--|--|--|--|--|--|--|--|--|--|-----------|

VALLEY TWP, CHESTER County
STATEMENT OF REVENUES AND EXPENDITURES
 December 31, 2015

Valley Wastewater Financials

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|---|------------------|--------------|-------------------|-------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Services | Trust and Agency | Memorandum Only |

REVENUES

| Taxes | | | | | | | |
|--------------------|--|------------------|--|--|--|--|------------------|
| 301.00 | Real Estate Taxes | 591,514 | | | | | 591,514 |
| 305.00 | Occupation Taxes (levied under municipal code) | | | | | | |
| 308.00 | Residence Taxes (levied by cities of the 3rd Class) | | | | | | |
| 309.00 | Regional Asset District Sales Tax (Allegheny County municipalities only) | | | | | | |
| 310.00 | Per Capita Taxes | | | | | | |
| 310.10 | Real Estate Transfer Taxes | 195,677 | | | | | 195,677 |
| 310.20 | Earned Income Taxes / Wage Taxes | 949,065 | | | | | 949,065 |
| 310.30 | Business Gross Receipts Taxes | | | | | | |
| 310.40 | Occupation Taxes (levied under Act 511) | | | | | | |
| 310.50 | Local Services Tax ** | 75,376 | | | | | 75,376 |
| 310.60 | Amusement / Admission Taxes | | | | | | |
| 310.70 | Mechanical Device Taxes | | | | | | |
| 310.90 | Other Local Tax Enabling Act / Act 511 / Taxes | | | | | | |
| | Other: _____ | | | | | | |
| Total Taxes | | 1,811,632 | | | | | 1,811,632 |

| Licenses and Permits | | | | | | | |
|-----------------------------------|---------------------------------|----------------|--|--|--|--|----------------|
| 320-322 | All Other Licenses and Permits | 196,477 | | | | | 196,477 |
| 321.80 | Cable Television Franchise Fees | 186,327 | | | | | 186,327 |
| Total Licenses and Permits | | 382,804 | | | | | 382,804 |

| Fines and Forfeits | | | | | | | |
|---------------------------------|--------------------|---------------|--|--|--|--|---------------|
| 330-332 | Fines and Forfeits | 31,535 | | | | | 31,535 |
| Total Fines and Forfeits | | 31,535 | | | | | 31,535 |

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VALLEY TWP, DEER County
STATEMENT OF REVENUES AND EXPENDITURES
 December 31, 2015

Valley Wastewater Financials

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|--|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

REVENUES

| Interest, Rents and Royalties | | | | | | | |
|--|---------------------|---------------|-----------|--|--|--------------|---------------|
| 341.00 | Interest Earnings | 526 | 67 | | | 1,194 | 1,787 |
| 342.00 | Rents and Royalties | 36,118 | | | | | 36,118 |
| Total Interest, Rents and Royalties | | 36,644 | 67 | | | 1,194 | 37,905 |

| Federal | | | | | | | |
|----------------------|---|--|--|--|--|--|--|
| 351.03 | Highways and Streets | | | | | | |
| 351.09 | Community Development | | | | | | |
| 351.00 | All Other Federal Capital and Operating Grants | | | | | | |
| 352.01 | National Forest | | | | | | |
| 352.00 | All Other Federal Shared Revenue and Entitlements | | | | | | |
| 353.00 | Federal Payments in Lieu of Taxes | | | | | | |
| Total Federal | | | | | | | |

| State | | | | | | | |
|---------------|---|--------|---------|--|--|--|---------|
| 354.03 | Highways and Streets | | | | | | |
| 354.09 | Community Development | | | | | | |
| 354.15 | Recycling / Act 101 | 50,363 | | | | | 50,363 |
| 354.00 | All Other State Capital and Operating Grants | | | | | | |
| 355.01 | Public Utility Realty Tax (PURTA) | | | | | | |
| 355.02-355.03 | Motor Vehicle Fuel Tax (Liquid Fuels Tax) and State Road Turnback | | 174,552 | | | | 174,552 |
| 355.04 | Alcoholic Beverage Licenses | 600 | | | | | 600 |
| 355.05 | General Municipal Pension System State Aid | 86,258 | | | | | 86,258 |
| 355.07 | Foreign Fire Insurance Tax Distribution | 47,972 | | | | | 47,972 |
| 355.08 | Local Share Assessment/Gaming Proceeds | | | | | | |
| 355.09 | Memorial Share Impact Fee Distribution | | | | | | |

VALLEY TWP, CHESTER County
STATEMENT OF REVENUES AND EXPENDITURES
 December 31, 2015

Valley Wastewater Financials

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|--|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

REVENUES

| State | | | | | | | | |
|--------------------|--|---------|---------|--|--|--|--|---------|
| 355.00 | All Other State Shared Revenues and Entitlements | | | | | | | |
| 356.00 | State Payments in Lieu of Taxes | | | | | | | |
| Total State | | 185,193 | 174,552 | | | | | 359,745 |

| Local Government Units | | | | | | | | |
|-------------------------------------|---|--|--|--|--|--|--|--|
| 357.03 | Highways and Streets | | | | | | | |
| 357.00 | All Other Local Governmental Units Capital and Operating Grants | | | | | | | |
| 358.00 | Local Government Unit Shared Payments for Contracted Intergovernmental Services | | | | | | | |
| 359.00 | Local Governmental Units and Authorities Payments in Lieu of Taxes | | | | | | | |
| Total Local Government Units | | | | | | | | |

| Charges for Service | | | | | | | | |
|---------------------|--|---------|--|--|-----------|--|--|-----------|
| 361.00 | General Government | | | | | | | |
| 362.00 | Public Safety | | | | | | | |
| 363.20 | Parking | | | | | | | |
| 363.00 | All Other Charges for Highway & Street Services | | | | | | | |
| 364.10 | Wastewater / Sewage (including connection / tapping fees, sewer usage charges, reserve capacity fee, etc.) | | | | 2,748,087 | | | 2,748,087 |
| 364.30 | Solid Waste Collection and Disposal Charge (trash) | 582,298 | | | | | | 582,298 |
| 364.60 | Host Municipality Benefit Fee for Solid Waste Facility | | | | | | | |
| 364.00 | All Other Charges for Sanitation Services | | | | | | | |
| 365.00 | Health | | | | | | | |
| 366.00 | Human Services | | | | | | | |
| 367.00 | Culture and Recreation | | | | | | | |
| 368.00 | Air | | | | | | | |

Page 8 of 96

VALLEY TWP STEK County
STATEMENT OF REVENUES AND EXPENDITURES
 December 31, 2015

Valley Wastewater Financials

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|---|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

REVENUES

| Charges for Service | | | | | | | |
|----------------------------------|-------------------------------|---------|--|--|-----------|--|-----------|
| 369.00 | Bars | | | | | | |
| 370.00 | Cemeteries | | | | | | |
| 372.00 | Electric System | | | | | | |
| 373.00 | Gas System | | | | | | |
| 374.00 | Housing System | | | | | | |
| 375.00 | Markets | | | | | | |
| 377.00 | Transit Systems | | | | | | |
| 378.00 | Water System | | | | 665,371 | | 665,371 |
| 379.00 | All Other Charges for Service | 7,793 | | | | | 7,793 |
| Total Charges for Service | | 590,091 | | | 3,413,458 | | 4,003,549 |

| Unclassified Operating Revenues | | | | | | | |
|--|--|--------|--|--|--|--|--------|
| 383.00 | Special Assessments | | | | | | |
| 386.00 | Escheats (sale of personal property) | | | | | | |
| 387.00 | Contributions and Donations from Private Sectors | 31,077 | | | | | 31,077 |
| 388.00 | Fiduciary Fund Pension Contributions | | | | | | |
| 389.00 | All Other Unclassified Operating Revenues | | | | | | |
| Total Unclassified Operating Revenues | | 31,077 | | | | | 31,077 |

| Other Financing Sources | | | | | | | |
|-------------------------|---|---------|--|--|--|--|---------|
| 391.00 | Proceeds of General Fixed Asset Disposition | 1,700 | | | | | 1,700 |
| 392.00 | Interfund Operating Transfers | 162,557 | | | | | 162,557 |
| 393.00 | Proceeds of General Long-Term Debt | | | | | | |
| 394.00 | Proceeds of Short Term-Debt | | | | | | |

VALLEY TWP, CHESTER County
STATEMENT OF REVENUES AND EXPENDITURES

December 31, 2015

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|--|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

REVENUES

| Other Financing Sources | | | | | | | | |
|--------------------------------------|------------------------------------|----------------|--|--|--|--|--|----------------|
| 395.00 | Refunds of Prior Year Expenditures | 74,453 | | | | | | 74,453 |
| Total Other Financing Sources | | 238,710 | | | | | | 238,710 |

| | | | | | | | | |
|-----------------------|-----------|---------|--|--|-----------|--|--|-----------|
| TOTAL REVENUES | 3,307,686 | 174,619 | | | 3,414,652 | | | 6,896,957 |
|-----------------------|-----------|---------|--|--|-----------|--|--|-----------|

EXPENDITURES

| General Government | | | | | | | | |
|---------------------------------|--|----------------|--|--|--|--|--|----------------|
| 400.00 | Legislative (Governing) Body | 12,500 | | | | | | 12,500 |
| 401.00 | Executive (Manager or Mayor) | | | | | | | |
| 402.00 | Auditing Services / Financial Administration | 6,491 | | | | | | 6,491 |
| 403.00 | Tax Collection | 12,462 | | | | | | 12,462 |
| 404.00 | Solicitor / Legal Services | 179,679 | | | | | | 179,679 |
| 405.00 | Secretary / Clerk | 101,185 | | | | | | 101,185 |
| 406.00 | Other General Government Administration | 127,763 | | | | | | 127,763 |
| 407.00 | IT-Networking Services-Data Processing | | | | | | | |
| 408.00 | Engineering Services | 123,581 | | | | | | 123,581 |
| 409.00 | General Government Buildings and Plant | 60,742 | | | | | | 60,742 |
| Total General Government | | 624,403 | | | | | | 624,403 |

| Public Safety | | | | | | | | |
|---------------|--------------------------|---------|--|--|--|--|--|---------|
| 410.00 | Police | 511,721 | | | | | | 511,721 |
| 411.00 | Fire | 164,492 | | | | | | 164,492 |
| 412.00 | Ambulance / Rescue | | | | | | | |
| 413.00 | UCC and Code Enforcement | 116,137 | | | | | | 116,137 |

VALLEY IWP, TEK County
STATEMENT OF REVENUES AND EXPENDITURES
 December 31, 2015

Valley Wastewater Financials

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|--|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

EXPENDITURES

| Public Safety | | | | | | | |
|----------------------------|---|---------|--|--|--|--|---------|
| 414.00 | Planning and Zoning | 43,660 | | | | | 43,660 |
| 415.00 | Emergency Management and Communications | | | | | | |
| 416.00 | Militia and Armories | | | | | | |
| 417.00 | Examination of Licensed Occupations | | | | | | |
| 418.00 | Public Scales (weights and measures) | | | | | | |
| 419.00 | Other Public Safety | | | | | | |
| Total Public Safety | | 836,010 | | | | | 836,010 |

| Health and Human Services | | | | | | | |
|--|---------------------------|--------|--|--|--|--|--------|
| 420.00-425.00 | Health and Human Services | 10,570 | | | | | 10,570 |
| Total Health and Human Services | | 10,570 | | | | | 10,570 |

| Public Works - Sanitation | | | | | | | |
|--|---|---------|--|--|-----------|--|-----------|
| 426.00 | Recycling Collection and Disposal | 35,566 | | | | | 35,566 |
| 427.00 | Solid Waste Collection and Disposal (garbage) | 426,480 | | | | | 426,480 |
| 428.00 | Weed Control | 915 | | | | | 915 |
| 429.00 | Wastewater / Sewage Treatment and Collection | | | | 2,282,897 | | 2,282,897 |
| Total Public Works - Sanitation | | 462,961 | | | 2,282,897 | | 2,745,858 |

| Public Works - Highways and Streets | | | | | | | |
|-------------------------------------|-----------------------------------|--------|--------|--|--|--|---------|
| 430.00 | General Services - Administration | 65,028 | 38,575 | | | | 103,603 |
| 431.00 | Cleaning of Streets and Gutters | | | | | | |
| 432.00 | Winter Maintenance - Snow Removal | 19,665 | 57,020 | | | | 76,685 |
| 433.00 | Traffic Control Devices | 945 | 4,976 | | | | 5,921 |
| 434.00 | Street Lighting | | 17,141 | | | | 17,141 |

VALLEY TWP, CHESTER County
STATEMENT OF REVENUES AND EXPENDITURES
 December 31, 2015

Valley Wastewater Financials

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|--|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

EXPENDITURES

| Public Works - Highways and Streets | | | | | | | |
|--|--|----------------|----------------|--|---------------|--|----------------|
| 435.00 | Sidewalks and Crosswalks | | | | | | |
| 436.00 | Storm Sewers and Drains | | | | | | |
| 437.00 | Repairs of Tools and Machinery | | | | | | |
| 438.00 | Maintenance and Repairs of Roads and Bridges | 90,014 | 4,752 | | | | 94,766 |
| 439.00 | Highway Construction and Rebuilding Projects | 27,300 | 248,799 | | 32,776 | | 308,875 |
| Total Public Works - Highways and Streets | | 202,952 | 371,263 | | 32,776 | | 606,991 |

| Other Public Works Enterprises | | | | | | | |
|---|-------------------------------|--|--|--|----------------|--|----------------|
| 440.00 | Airports | | | | | | |
| 441.00 | Cemeteries | | | | | | |
| 442.00 | Electric System | | | | | | |
| 443.00 | Gas System | | | | | | |
| 444.00 | Markets | | | | | | |
| 445.00 | Parking | | | | | | |
| 446.00 | Storm Water and Flood Control | | | | | | |
| 447.00 | Transit System | | | | | | |
| 448.00 | Water System | | | | 598,205 | | 598,205 |
| 449.00 | Water Transport and Terminals | | | | | | |
| Total Other Public Works Enterprises | | | | | 598,205 | | 598,205 |

| Culture and Recreation | | | | | | | |
|------------------------|-----------------------------------|--------|--|--|--|--|--------|
| 451.00 | Culture-Recreation Administration | 51,360 | | | | | 51,360 |
| 452.00 | Participant Recreation | | | | | | |
| 453.00 | Spectator Recreation | | | | | | |
| 454.00 | Pe | | | | | | |

VALLEY TWP, BERK COUNTY
STATEMENT OF REVENUES AND EXPENDITURES
 December 31, 2015

Valley Wastewater Financials

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|--|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

EXPENDITURES

| Culture and Recreation | | | | | | | | |
|-------------------------------------|----------------------------------|--------|--|--|--|--|--|--------|
| 455.00 | Shade Trees | | | | | | | |
| 456.00 | Libraries | 6,794 | | | | | | 6,794 |
| 457.00 | Civil and Military Celebrations | | | | | | | |
| 458.00 | Senior Citizens' Centers | | | | | | | |
| 459.00 | All Other Culture and Recreation | | | | | | | |
| Total Culture and Recreation | | 58,154 | | | | | | 58,154 |

| Community Development | | | | | | | | |
|------------------------------------|-----------------------------------|--|--|--|--|--|--|--|
| 461.00 | Conservation of Natural Resources | | | | | | | |
| 462.00 | Community Development and Housing | | | | | | | |
| 463.00 | Economic Development | | | | | | | |
| 464.00 | Economic Opportunity | | | | | | | |
| 465-469 | All Other Community Development | | | | | | | |
| Total Community Development | | | | | | | | |

| Debt Service | | | | | | | | |
|---------------------------|---|---------|--|--|--|--|--|---------|
| 471.00 | Debt Principal (short-term and long-term) | 117,103 | | | | | | 117,103 |
| 472.00 | Debt Interest (short-term and long-term) | 38,598 | | | | | | 38,598 |
| 475.00 | Fiscal Agent Fees | | | | | | | |
| Total Debt Service | | 155,701 | | | | | | 155,701 |

| Employer Paid Benefits and Withholding Items | | | | | | | | |
|--|---|---------|--|--|--|--|--|---------|
| 481.00 | Employer Paid Withholding Taxes and Unemployment Compensation | 63,425 | | | | | | 63,425 |
| 482.00 | Judgments and Losses | | | | | | | |
| 483.00 | Pension / Retirement Fund Contributions | 119,052 | | | | | | 119,052 |

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VALLEY TWP, CHESTER County
STATEMENT OF REVENUES AND EXPENDITURES
 December 31, 2015

Valley Wastewater Plant

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|--|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

EXPENDITURES

Employer Paid Benefits and Withholding Items

| | | | | | | | | |
|---|--------------------------------|---------|--|--|--|--|--|---------|
| 484.00 | Worker Compensation Insurance | 71,976 | | | | | | 71,976 |
| 487.00 | Other Group Insurance Benefits | 382,363 | | | | | | 382,363 |
| Total Employer Paid Benefits and Withholding Items | | 636,816 | | | | | | 636,816 |

Insurance

| | | | | | | | | |
|------------------------|---------------------------------|--------|--|--|--|--|--|--------|
| 486.00 | Insurance, Casualty, and Surety | 93,493 | | | | | | 93,493 |
| Total Insurance | | 93,493 | | | | | | 93,493 |

Unclassified Operating Expenditures

| | | | | | | | | |
|--|--|----|--|--|--|--|--|----|
| 488.00 | Fiduciary Fund Benefits and Refunds Paid | | | | | | | |
| 489.00 | All Other Unclassified Expenditures | 34 | | | | | | 34 |
| Total Unclassified Operating Expenditures | | 34 | | | | | | 34 |

Other Financing Uses

| | | | | | | | | |
|-----------------------------------|-------------------------------|--------|--|--|---------|--|--|---------|
| 491.00 | Refund of Prior Year Revenues | 29,481 | | | | | | 29,481 |
| 492.00 | Interfund Operating Transfers | | | | 162,557 | | | 162,557 |
| 493.00 | All Other Financing Uses | | | | | | | |
| Total Other Financing Uses | | 29,481 | | | 162,557 | | | 192,038 |

TOTAL EXPENDITURES

| | | | | | | | |
|-----------|---------|--|--|-----------|--|--|-----------|
| 3,110,575 | 371,263 | | | 3,076,435 | | | 6,558,273 |
|-----------|---------|--|--|-----------|--|--|-----------|

EXCESS/DEFICIT OF REVENUES OVER EXPENDITURES

| | | | | | | | |
|---------|----------|--|--|---------|--|--|---------|
| 197,111 | -196,644 | | | 338,217 | | | 338,684 |
|---------|----------|--|--|---------|--|--|---------|

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VAL 'WP
Decem. 31, 2015

DEBT STATEMENT

OUTSTANDING BONDS AND NOTES

Listed below are all currently outstanding bond and note issues according to our files, excluding bond issues redeemed or refunded and defeased. Please show the principal payments and make any other necessary corrections and additions.

| Purpose | Bond (B) Capital Lease (C) Lease Rental (L) Note (N) | Issue Year (yyyy) | Maturity Year (yyyy) | Original Amount of Issue | Outstanding Beginning of Year (1) | Principal Incurred This Year | Principal Paid This Year | Current Year Accretion on Compound Interest Bonds | Outstanding at Year End (1) | Plus (less) Unamortized Premium (Discount) | Total Balance |
|---|---|----------------------|----------------------------|--------------------------------|---|------------------------------------|--------------------------------|--|--------------------------------|---|------------------|
| General Obligation Bonds and Notes | | | | | | | | | | | |
| General Obligation Note Series 2011 | Note | 2011 | 2031 | 999,967 | 870,887 | | 40,007 | | 830,880 | | 830,880 |
| Revenue Bonds and Notes | | | | | | | | | | | |
| Lease Rental Debt | | | | | | | | | | | |
| Ford Motor Credit Company Lease Police Car 3 | Capital Leases | 2013 | 2016 | 25,883 | 9,850 | | 9,068 | | 782 | | 782 |
| Municipal Capital Finance Truck Lease | Capital Leases | 2012 | 2015 | 133,646 | 34,021 | | 34,021 | | 0 | | 0 |
| Ford Motor Credit Company Lease Police Car 4 | Capital Leases | 2015 | 2019 | 42,268 | 42,268 | 1,057 | 10,042 | | 33,283 | | 33,283 |
| Ford Motor Credit Company Lease Road Dept. Trucks (2) | Capital Leases | 2015 | 2020 | 150,918 | 150,918 | 2,683 | 23,965 | | 129,636 | | 129,636 |
| Other | | | | | | | | | | | |
| | | | | | | | | | | | |

(1) - excludes unamortized premium/discount

| | |
|--|---------|
| Total bonds and notes outstanding | 994,581 |
| Capitalized lease obligations | 0 |
| Net debt | 994,581 |

VALLEY TWP, CHESTER County
STATEMENT OF CAPITAL EXPENDITURES
 December 31, 2015

| Category | Capital Purchases | Capital Construction | Total |
|-----------------------------------|-------------------|----------------------|----------------|
| Community Development | | | |
| Electric | | | |
| Fire | | | |
| Gas System | | | |
| General Government | | | |
| Health | | | |
| Housing | | | |
| Libraries | | | |
| Mass Transit | | | |
| Parks | | | |
| Police | 21,263 | | 21,263 |
| Recreation | | | |
| Sewer | | | |
| Solid Waste | | | |
| Streets / Highways | 62,876 | 287,374 | 350,250 |
| Water | | | |
| Other: _____ | | | |
| TOTAL CAPITAL EXPENDITURES | 84,139 | 287,374 | 371,513 |

EMPLOYEE COMPENSATION

Total salaries, wages, commissions, etc. paid this year (including all employees and elected officials)

1,076,146

Independent Public Accountant/Certified Public Accountant Submission Page
Opinion page was provided in lieu of signature page.

Valley Wastewater Financials

SIGNATURE AND VERIFICATION

Signed: Mingis Gutowski & Company, LLP Appointed Auditor/CPA

DCED-CLGS-30 (9-09)

December 31, 2015

NOTES / COMMENTS

Note 1 - Pension Information has been omitted from the Fiduciary Fund because the independent auditor was not engaged to audit the Pension Fund.

Note 2 - Other Current Assets and Other Current Liabilities recorded in the General Fund represent escrow deposits maintained on behalf of developers.

MINGIS, GUTOWSKI & COMPANY, LLP

Certified Public Accountants

100 Granite Drive, Suite 7 • Media, PA 19063

**610-544-5100
FAX: 610-544-9767**

INDEPENDENT AUDITORS' REPORT

**Board of Supervisors
Valley Township
Coatesville, PA 19280**

We have audited the accompanying financial statements included in the Municipal Annual Audit and Financial Report (DCED-CLGS-30), a prescribed form, of Valley Township (the Township) as of December 31, 2016 and for the year then ended.

Management's Responsibility for the Financial Report

Management is responsible for the preparation and fair presentation of these financial statements in accordance with the financial reporting provisions of the Pennsylvania Department of Community and Economic Development and with the basis of accounting described below; this includes determining that the presentation and the use of the modified cash basis of accounting is an acceptable basis for the preparation of the financial statements in the circumstances. Management is also responsible for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to error or fraud.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Township's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Township's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

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We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Valley Township as of December 31, 2016 and the revenue it received and expenditures it paid on the modified cash basis for the year then ended on the prescribed form in conformity with the basis of accounting described below.

Basis of Accounting

The Township's policy is to prepare its financial statements for inclusion in the Municipal Annual Audit and Financial Report (DCED-CLGS-30), a prescribed form, on a prescribed basis of accounting that demonstrates compliance with the modified cash basis and budget laws of the Department of Community and Economic Development, which is a special purpose framework other than accounting principles generally accepted in the United States of America. As permitted by DCED, Valley Township prepares its annual audit and financial report on the modified cash basis of accounting; consequently, certain revenue and related assets are recognized when received rather than when earned and certain expenditures are recognized when paid rather than when the liability is incurred. Additionally, in accordance with the prescribed accounting practices permitted by DCED, the Township does not include footnote disclosures. Our opinion is not modified with respect to this matter.

Restriction on Use

This report is intended solely for the information and use of management and the Board of Supervisors of Valley Township and for filing with the Department of Community and Economic Development and the Office of the Prothonotary and should not be used by anyone other than these specified parties.

Mingis, Gutowski & Company, LLP

Media, Pennsylvania
June 20, 2017

MINGIS, GUTOWSKI & COMPANY, LLP

DCED-CL (9-09)

Received by DCED: 06/23/2017
Approved by DCED:

Department of Community & Economic Development
Governor's Center for Local Government Services
Commonwealth Keystone Building
400 North Street, 4th Floor
Harrisburg, PA 17120-0225
Ph: 888-223-6837 | fax: 717-783-1402

Valley Wastewater Financials

2016 MUNICIPAL ANNUAL AUDIT AND FINANCIAL REPORT

151655 VALLEY TWP, CHESTER COUNTY

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BALANCE SHEET

Valley Wastewater Financials

DCED-CLGS-30 (9-09)

VALLEY TWP, CHESTER County
BALANCE SHEET
 December 31, 2018

| | | Governmental Funds | | | | Proprietary Funds | | Fid. Fund | Account Groups | | Total |
|--------------------------------------|---------------------------------------|--------------------|--|------------------|--------------|-------------------|------------------|------------------|----------------------|------------------------|------------------|
| | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | General Fixed Assets | General Long Term Debt | Memorandum Only |
| Assets and Other Debits | | | | | | | | | | | |
| 100-120 | Cash and Investments | 3,030,106 | 45,799 | | | 945,017 | | | | | 4,020,922 |
| 140-144 | Tax Receivable | | | | | | | | | | |
| 121-129, 145-149 | Accounts Receivable (excluding taxes) | | | | | | | | | | |
| 130.00 | Due From Other Funds | | | | | | | | | | |
| 131-139, 150-159 | Other Current Assets | 289,933 | | | | | | | | | 289,933 |
| 160-169 | Fixed Assets | | | | | | | | | | |
| 180-189 | Other Debits | | | | | | | | | 937,278 | 937,278 |
| Total Assets and Other Debits | | 3,320,039 | 45,799 | | | 945,017 | | | | 937,278 | 5,248,133 |

| Liabilities and Other Credits | | | | | | | | | | | |
|--------------------------------------|--|---------|--|--|--|--|--|--|--|--|---------|
| 210-229 | Payroll Taxes and Other Payroll Withholdings | | | | | | | | | | |
| 200-209, 231-239 | All Other Current Liabilities | 289,933 | | | | | | | | | 289,933 |
| 230.00 | Due To Other Funds | | | | | | | | | | |

VALLEY TWP, CHESTER County
BALANCE SHEET
 December 31, 2016

Valley Wastewater Financials

| | | Governmental Funds | | | | Proprietary Funds | | Fid. Fund | Account Groups | | Total |
|--|---|--------------------|--|------------------|--------------|-------------------|------------------|------------------|----------------------|------------------------|-----------------|
| | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | General Fixed Assets | General Long Term Debt | Memorandum Only |
| Liabilities and Other Credits | | | | | | | | | | | |
| 260-269 | Long-Term-Liabilities | | | | | | | | | 844,648 | 844,648 |
| 240-259 | Current Portion of Long-Term Debt and Other Credits | | | | | | | | | 92,630 | 92,630 |
| Total Liabilities and Other Credits | | 289,933 | | | | | | | | 937,278 | 1,227,211 |

| Fund and Account Group Equity | | | | | | | | | | | |
|--|---|-----------|--------|--|--|---------|--|--|--|--|-----------|
| 281-284 | Contributed Capital | | | | | | | | | | |
| 290.00 | Investment in General Fixed Assets | | | | | | | | | | |
| 270-289 | Fund Balance / Retained Earnings on 12/31 | 3,030,106 | 45,799 | | | 945,017 | | | | | 4,020,922 |
| 291-299 | Other Equity | | | | | | | | | | |
| Total Fund and Account Group Equity | | 3,030,106 | 45,799 | | | 945,017 | | | | | 4,020,922 |

| | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|-----------|
| TOTAL LIABILITIES AND FUND AND ACCOUNT GROUP EQUITY | | | | | | | | | | | 5,248,133 |
|--|--|--|--|--|--|--|--|--|--|--|-----------|

VALLEY TWP, CHESTER County
STATEMENT OF REVENUES AND EXPENDITURES

December 31, 2016

| General Fund | Governmental Funds | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------|--|------------------|--------------|-------------------|------------------|------------------|-----------------|
| | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

REVENUES

| Taxes | | | | | | | | |
|--------------------|---|------------------|--|--|--|--|--|------------------|
| 301.00 | Real Estate Taxes | 596,476 | | | | | | 596,476 |
| 305.00 | Occupation Taxes (levied under municipal code) | | | | | | | |
| 308.00 | Residence Taxes (levied by cities of the 3rd Class) | | | | | | | |
| 309.00 | Regional Asses Disinct Sales Tax (Allegheny County municipalities only) | | | | | | | |
| 310.00 | Per Capita Taxes | | | | | | | |
| 310.10 | Real Estate Transfer Taxes | 207,028 | | | | | | 207,028 |
| 310.20 | Earned Income Taxes / Wage Taxes | 1,002,620 | | | | | | 1,002,620 |
| 310.30 | Business Gross Receipts Taxes | | | | | | | |
| 310.40 | Occupation Taxes (levied under Act 511) | | | | | | | |
| 310.60 | Local Services Tax ** | 60,673 | | | | | | 60,673 |
| 310.60 | Amusement / Admission Taxes | | | | | | | |
| 310.70 | Mechanical Device Taxes | | | | | | | |
| 310.90 | Other Local Tax Enabling Act / Act 511 / Taxes | | | | | | | |
| | Other: _____ | | | | | | | |
| Total Taxes | | 1,866,797 | | | | | | 1,866,797 |

| Licenses and Permits | | | | | | | | |
|-----------------------------------|---------------------------------|----------------|--|--|--|--|--|----------------|
| 320-322 | All Other Licenses and Permits | 177,155 | | | | | | 177,155 |
| 321.80 | Cable Television Franchise Fees | 188,943 | | | | | | 188,943 |
| Total Licenses and Permits | | 366,098 | | | | | | 366,098 |

| Fines and Forfeits | | | | | | | | |
|---------------------------------|--------------------|---------------|--|--|--|--|--|---------------|
| 330-332 | Fines and Forfeits | 27,704 | | | | | | 27,704 |
| Total Fines and Forfeits | | 27,704 | | | | | | 27,704 |

VALLEY TWP, CHESTER County
STATEMENT OF REVENUES AND EXPENDITURES
 December 31, 2018

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|---|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

REVENUES

| Interest, Rents and Royalties | | | | | | | | | |
|--|---------------------|---------------|------------|--|--|--------------|--|--|---------------|
| 341.00 | Interest Earnings | 4,217 | 615 | | | 2,014 | | | 6,846 |
| 342.00 | Rents and Royalties | 35,430 | | | | | | | 35,430 |
| Total Interest, Rents and Royalties | | 39,647 | 615 | | | 2,014 | | | 42,276 |

| Federal | | | | | | | | | |
|----------------------|---|--|--|--|--|--|--|--|--|
| 351.03 | Highways and Streets | | | | | | | | |
| 351.09 | Community Development | | | | | | | | |
| 351.00 | All Other Federal Capital and Operating Grants | | | | | | | | |
| 352.01 | National Forest | | | | | | | | |
| 352.00 | All Other Federal Shared Revenue and Entitlements | | | | | | | | |
| 353.00 | Federal Payments in Lieu of Taxes | | | | | | | | |
| Total Federal | | | | | | | | | |

| State | | | | | | | | | |
|-------------------|---|--------|---------|--|--|--|--|--|---------|
| 354.03 | Highways and Streets | | | | | | | | |
| 354.09 | Community Development | | | | | | | | |
| 354.15 | Recycling / Act 101 | 10,749 | | | | | | | 10,749 |
| 354.00 | All Other State Capital and Operating Grants | | | | | | | | |
| 355.01 | Public Utility Realty Tax (PURTA) | 2,011 | | | | | | | 2,011 |
| 355.02- 355.03 | Motor Vehicle Fuel Tax (Liquid Fuels Tax) and State Road Turnback | | 203,445 | | | | | | 203,445 |
| 355.04 | Alcoholic Beverage Licenses | 600 | | | | | | | 600 |
| 355.05 | General Municipal Pension System State Aid | 91,868 | | | | | | | 91,868 |
| 355.07 | Foreign Fire Insurance Tax Distribution | 48,380 | | | | | | | 48,380 |
| 355.08 | Local Share Assessment/Gaming Proceeds | | | | | | | | |
| 355.09 | Marcellus Shale Impact Fee Distribution | | | | | | | | |

VALLEY TWP, CHESTER County
STATEMENT OF REVENUES AND EXPENDITURES
 December 31, 2016

Valley Wastewater Financials

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|--|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

REVENUES

| State | | | | | | | | |
|--------------------|--|---------|---------|--|--|--|--|---------|
| 355.00 | All Other State Shared Revenues and Entitlements | | | | | | | |
| 356.00 | State Payments in Lieu of Taxes | | | | | | | |
| Total State | | 153,608 | 203,445 | | | | | 357,053 |

| Local Government Units | | | | | | | | |
|-------------------------------------|---|---------|--|--|--|--|--|---------|
| 357.03 | Highways and Streets | | | | | | | |
| 357.00 | All Other Local Governmental Units Capital and Operating Grants | 222,941 | | | | | | 222,941 |
| 358.00 | Local Government Unit Shared Payments for Contracted Intergovernmental Services | | | | | | | |
| 359.00 | Local Governmental Units and Authorities Payments in Lieu of Taxes | | | | | | | |
| Total Local Government Units | | 222,941 | | | | | | 222,941 |

| Charges for Service | | | | | | | | |
|---------------------|--|---------|--|--|-----------|--|--|-----------|
| 361.00 | General Government | 9,503 | | | | | | 9,503 |
| 362.00 | Public Safety | 11,784 | | | | | | 11,784 |
| 363.20 | Parking | | | | | | | |
| 363.00 | All Other Charges for Highway & Street Services | | | | | | | |
| 364.10 | Wastewater / Sewage (including connection / tapping fees, sewer usage charges, reserve capacity fee, etc.) | | | | 2,772,044 | | | 2,772,044 |
| 364.30 | Solid Waste Collection and Disposal Charge (trash) | 591,125 | | | | | | 591,125 |
| 364.60 | Host Municipality Benefit Fee for Solid Waste Facility | | | | | | | |
| 364.00 | All Other Charges for Sanitation Services | | | | | | | |
| 365.00 | Health | | | | | | | |
| 366.00 | Human Services | | | | | | | |
| 367.00 | Culture and Recreation | | | | | | | |
| 368.00 | Airports | | | | | | | |

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VALLEY TWP, CHESTER County
STATEMENT OF REVENUES AND EXPENDITURES

December 31, 2016

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|--|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

REVENUES

| Charges for Service | | | | | | | | |
|----------------------------------|-------------------------------|----------------|--|--|------------------|--|--|------------------|
| 369.00 | Bars | | | | | | | |
| 370.00 | Cemeteries | | | | | | | |
| 372.00 | Electric System | | | | | | | |
| 373.00 | Gas System | | | | | | | |
| 374.00 | Housing System | | | | | | | |
| 375.00 | Markets | | | | | | | |
| 377.00 | Transit Systems | | | | | | | |
| 378.00 | Water System | | | | 682,994 | | | 682,994 |
| 379.00 | All Other Charges for Service | 11,804 | | | | | | 11,804 |
| Total Charges for Service | | 624,216 | | | 3,455,038 | | | 4,079,254 |

| Unclassified Operating Revenues | | | | | | | | |
|--|--|---------------|--|--|--|--|--|---------------|
| 383.00 | Special Assessments | | | | | | | |
| 386.00 | Escheats (sale of personal property) | | | | | | | |
| 387.00 | Contributions and Donations from Private Sectors | 26,025 | | | | | | 26,025 |
| 388.00 | Fiduciary Fund Pension Contributions | | | | | | | |
| 389.00 | All Other Unclassified Operating Revenues | 1,228 | | | | | | 1,228 |
| Total Unclassified Operating Revenues | | 27,253 | | | | | | 27,253 |

| Other Financing Sources | | | | | | | | |
|-------------------------|---|---------|--|--|--|--|--|---------|
| 391.00 | Proceeds of General Fixed Asset Disposition | | | | | | | |
| 392.00 | Interfund Operating Transfers | 112,695 | | | | | | 112,695 |
| 393.00 | Proceeds of General Long-Term Debt | | | | | | | |
| 394.00 | Proceeds of Short Term-Debt | | | | | | | |

VALLEY TWP, CHESTER County
STATEMENT OF REVENUES AND EXPENDITURES
 December 31, 2016

Valley Wastewater Financials

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|--|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

REVENUES

| Other Financing Sources | | | | | | | |
|--------------------------------------|------------------------------------|----------------|--|--|--|--|----------------|
| 395.00 | Refunds of Prior Year Expenditures | 70,711 | | | | | 70,711 |
| Total Other Financing Sources | | 183,406 | | | | | 183,406 |

TOTAL REVENUES

| | | | | | | | |
|-----------|---------|--|--|-----------|--|--|-----------|
| 3,511,670 | 204,060 | | | 3,457,052 | | | 7,172,782 |
|-----------|---------|--|--|-----------|--|--|-----------|

EXPENDITURES

| General Government | | | | | | | |
|---------------------------------|--|----------------|--|--|--|--|----------------|
| 400.00 | Legislative (Governing) Body | 12,500 | | | | | 12,500 |
| 401.00 | Executive (Manager or Mayor) | | | | | | |
| 402.00 | Auditing Services / Financial Administration | 11,957 | | | | | 11,957 |
| 403.00 | Tax Collection | 14,988 | | | | | 14,988 |
| 404.00 | Solicitor / Legal Services | 90,645 | | | | | 90,645 |
| 405.00 | Secretary / Clerk | 141,268 | | | | | 141,268 |
| 406.00 | Other General Government Administration | 110,092 | | | | | 110,092 |
| 407.00 | IT-Networking Services-Data Processing | | | | | | |
| 408.00 | Engineering Services | 74,258 | | | | | 74,258 |
| 409.00 | General Government Buildings and Plant | 209,427 | | | | | 209,427 |
| Total General Government | | 665,135 | | | | | 665,135 |

Public Safety

| | | | | | | | |
|--------|--------------------------|---------|--|--|--|--|---------|
| 410.00 | Police | 548,052 | | | | | 548,052 |
| 411.00 | Fire | 180,333 | | | | | 180,333 |
| 412.00 | Ambulance / Rescue | | | | | | |
| 413.00 | UCC and Code Enforcement | 133,384 | | | | | 133,384 |

VALLEY TWP, CHESTER County
STATEMENT OF REVENUES AND EXPENDITURES

December 31, 2016

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|--|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

EXPENDITURES

Public Safety

| | | | | | | | |
|----------------------------|---|----------------|--|--|--|--|----------------|
| 414.00 | Planning and Zoning | 26,603 | | | | | 26,603 |
| 415.00 | Emergency Management and Communications | 3,570 | | | | | 3,570 |
| 416.00 | Militia and Armories | | | | | | |
| 417.00 | Examination of Licensed Occupations | | | | | | |
| 418.00 | Public Scales (weights and measures) | | | | | | |
| 419.00 | Other Public Safety | | | | | | |
| Total Public Safety | | 891,942 | | | | | 891,942 |

Health and Human Services

| | | | | | | | |
|--|---------------------------|--------------|--|--|--|--|--------------|
| 420.00 | Health and Human Services | 5,700 | | | | | 5,700 |
| 425.00 | | | | | | | |
| Total Health and Human Services | | 5,700 | | | | | 5,700 |

Public Works - Sanitation

| | | | | | | | |
|--|---|----------------|--|--|------------------|--|------------------|
| 426.00 | Recycling Collection and Disposal | 37,060 | | | | | 37,060 |
| 427.00 | Solid Waste Collection and Disposal (garbage) | 369,032 | | | | | 369,032 |
| 428.00 | Weed Control | 300 | | | | | 300 |
| 429.00 | Wastewater / Sewage Treatment and Collection | | | | 2,532,858 | | 2,532,858 |
| Total Public Works - Sanitation | | 406,392 | | | 2,532,858 | | 2,939,250 |

Public Works - Highways and Streets

| | | | | | | | |
|--------|-----------------------------------|--------|--------|--|--|--|--------|
| 430.00 | General Services - Administration | 55,007 | | | | | 55,007 |
| 431.00 | Cleaning of Streets and Gutters | | | | | | |
| 432.00 | Winter Maintenance - Snow Removal | 26,836 | 24,900 | | | | 51,736 |
| 433.00 | Traffic Control Devices | 1,252 | 4,196 | | | | 5,448 |
| 434.00 | Street Lighting | | 18,386 | | | | 18,386 |

VALLEY TWP, CHESTER County
STATEMENT OF REVENUES AND EXPENDITURES
 December 31, 2016

Valley Wastewater Financials

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|---|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

EXPENDITURES

| Public Works - Highways and Streets | | | | | | | |
|--|--|----------------|----------------|--|---------------|--|----------------|
| 435.00 | Sidewalks and Crosswalks | | | | | | |
| 436.00 | Storm Sewers and Drains | | | | | | |
| 437.00 | Repairs of Tools and Machinery | 463 | | | | | 463 |
| 438.00 | Maintenance and Repairs of Roads and Bridges | 96,533 | 3,850 | | | | 100,383 |
| 438.00 | Highway Construction and Rebuilding Projects | 203,511 | 197,329 | | 77,727 | | 478,567 |
| Total Public Works - Highways and Streets | | 383,602 | 248,661 | | 77,727 | | 709,990 |

| Other Public Works Enterprises | | | | | | | |
|---|-------------------------------|--|--|--|----------------|--|----------------|
| 440.00 | Airports | | | | | | |
| 441.00 | Cemeteries | | | | | | |
| 442.00 | Electric System | | | | | | |
| 443.00 | Gas System | | | | | | |
| 444.00 | Markets | | | | | | |
| 445.00 | Parking | | | | | | |
| 446.00 | Storm Water and Flood Control | | | | | | |
| 447.00 | Transit System | | | | | | |
| 448.00 | Water System | | | | 665,030 | | 665,030 |
| 449.00 | Water Transport and Terminals | | | | | | |
| Total Other Public Works Enterprises | | | | | 665,030 | | 665,030 |

| Culture and Recreation | | | | | | | |
|------------------------|-----------------------------------|--------|--|--|--|--|--------|
| 451.00 | Culture-Recreation Administration | 46,633 | | | | | 46,633 |
| 452.00 | Participant Recreation | | | | | | |
| 453.00 | Spectator Recreation | | | | | | |
| 454.00 | Parks | | | | | | |

VALLEY TWP, CHESTER County
STATEMENT OF REVENUES AND EXPENDITURES
 December 31, 2016

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|---|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

EXPENDITURES

| Culture and Recreation | | | | | | | | |
|-------------------------------------|----------------------------------|---------------|--|--|--|--|--|---------------|
| 455.00 | Shade Trees | | | | | | | |
| 456.00 | Libraries | 6,794 | | | | | | 6,794 |
| 457.00 | Civil and Military Celebrations | | | | | | | |
| 458.00 | Senior Citizens' Centers | | | | | | | |
| 459.00 | All Other Culture and Recreation | | | | | | | |
| Total Culture and Recreation | | 53,427 | | | | | | 53,427 |

| Community Development | | | | | | | | |
|------------------------------------|-----------------------------------|--|--|--|--|--|--|--|
| 461.00 | Conservation of Natural Resources | | | | | | | |
| 462.00 | Community Development and Housing | | | | | | | |
| 463.00 | Economic Development | | | | | | | |
| 464.00 | Economic Opportunity | | | | | | | |
| 465-469 | All Other Community Development | | | | | | | |
| Total Community Development | | | | | | | | |

| Debt Service | | | | | | | | |
|---------------------------|---|----------------|--|--|--|--|--|----------------|
| 471.00 | Debt Principal (short-term and long-term) | 85,560 | | | | | | 85,560 |
| 472.00 | Debt Interest (short-term and long-term) | 36,966 | | | | | | 36,966 |
| 475.00 | Fiscal Agent Fees | | | | | | | |
| Total Debt Service | | 122,526 | | | | | | 122,526 |

| Employer Paid Benefits and Withholding Items | | | | | | | | |
|--|---|---------|--|--|--|--|--|---------|
| 481.00 | Employer Paid Withholding Taxes and Unemployment Compensation | 69,379 | | | | | | 69,379 |
| 482.00 | Judgments and Losses | | | | | | | |
| 483.00 | Pension / Retirement Fund Contributions | 110,107 | | | | | | 110,107 |

VALLEY TWP, CHESTER County
STATEMENT OF REVENUES AND EXPENDITURES
 December 31, 2016

Valley Wastewater Financials

| Governmental Funds | | | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|---|------------------|--------------|-------------------|------------------|------------------|-----------------|
| General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service | Enterprise | Internal Service | Trust and Agency | Memorandum Only |

EXPENDITURES

| Employer Paid Benefits and Withholding Items | | | | | | | |
|---|--------------------------------|----------------|--|--|--|--|----------------|
| 484.00 | Worker Compensation Insurance | 69,535 | | | | | 69,535 |
| 487.00 | Other Group Insurance Benefits | 366,042 | | | | | 366,042 |
| Total Employer Paid Benefits and Withholding Items | | 615,063 | | | | | 615,063 |

| Insurance | | | | | | | |
|------------------------|---------------------------------|---------------|--|--|--|--|---------------|
| 486.00 | Insurance, Casualty, and Surety | 91,305 | | | | | 91,305 |
| Total Insurance | | 91,305 | | | | | 91,305 |

| Unclassified Operating Expenditures | | | | | | | |
|--|--|------------|--|--|--|--|------------|
| 488.00 | Fiduciary Fund Benefits and Refunds Paid | | | | | | |
| 489.00 | All Other Unclassified Expenditures | 546 | | | | | 546 |
| Total Unclassified Operating Expenditures | | 546 | | | | | 546 |

| Other Financing Uses | | | | | | | |
|-----------------------------------|-------------------------------|---------------|--|----------------|--|--|----------------|
| 491.00 | Refund of Prior Year Revenues | 16,357 | | | | | 16,357 |
| 492.00 | Interfund Operating Transfers | | | 112,695 | | | 112,695 |
| 493.00 | All Other Financing Uses | | | | | | |
| Total Other Financing Uses | | 16,357 | | 112,695 | | | 129,052 |

| | | | | | | | |
|---------------------------|------------------|----------------|--|--|------------------|--|------------------|
| TOTAL EXPENDITURES | 3,251,995 | 248,661 | | | 3,388,310 | | 6,888,966 |
|---------------------------|------------------|----------------|--|--|------------------|--|------------------|

| | | | | | | | |
|---|----------------|----------------|--|--|---------------|--|----------------|
| EXCESS/DEFICIT OF REVENUES OVER EXPENDITURES | 259,875 | -44,601 | | | 68,742 | | 283,816 |
|---|----------------|----------------|--|--|---------------|--|----------------|

VALLEY TWP
December 31, 2016

DEBT STATEMENT

OUTSTANDING BONDS AND NOTES

Listed below are all currently outstanding bond and note issues according to our files, excluding bond issues redeemed or refunded and defeased. Please show the principal payments and make any other necessary corrections and additions.

| Purpose | Bond (B) Capital Lease (C) Lease Rental (L) Note (N) | Issue Year (yyyy) | Maturity Year (yyyy) | Original Amount of Issue | Outstanding Beginning of Year (1) | Principal Incurred This Year | Principal Paid This Year | Current Year Accrual on Compound Interest Bonds | Outstanding at Year End (1) | Plus (less) Unamortized Premium (Discount) | Total Balance |
|---|---|----------------------|----------------------------|--------------------------------|---|------------------------------------|--------------------------------|--|--------------------------------|---|------------------|
| General Obligation Bonds and Notes | | | | | | | | | | | |
| General Obligation Note Series 2011 | Note | 2011 | 2031 | 999,967 | 830,880 | | 41,492 | | 789,388 | | 789,388 |
| Revenue Bonds and Notes | | | | | | | | | | | |
| Lease Rental Debt | | | | | | | | | | | |
| Ford Motor Credit Company Lease Police Car 3 | Capital Leases | 2013 | 2016 | 25,883 | 782 | | 782 | | 0 | | 0 |
| Ford Motor Credit Company Lease Police Car 4 | Capital Leases | 2015 | 2019 | 42,268 | 33,283 | | 10,135 | | 23,148 | | 23,148 |
| Ford Motor Credit Company Lease Road Dept. Trucks (2) | Capital Leases | 2015 | 2020 | 150,918 | 129,636 | | 28,674 | | 100,962 | | 100,962 |
| Interceptor Utility Vehicle Lease | Capital Leases | 2016 | 2019 | 28,257 | 0 | 28,257 | 4,477 | | 23,780 | | 23,780 |
| Other | | | | | | | | | | | |
| | | | | | | | | | | | |

(1) - excludes unamortized premium/discount

| | |
|--|----------------|
| Total bonds and notes outstanding | 937,278 |
| Capitalized lease obligations | 0 |
| Net debt | 937,278 |

VALLEY TWP, CHESTER County
STATEMENT OF CAPITAL EXPENDITURES

December 31, 2016

| Category | Capital Purchases | Capital Construction | Total |
|-----------------------------------|-------------------|----------------------|----------------|
| Community Development | | | |
| Electric | | | |
| Fire | | | |
| Gas System | | | |
| General Government | | | |
| Health | | | |
| Housing | | | |
| Libraries | | | |
| Mass Transit | | | |
| Parks | | | |
| Police | 17,769 | | 17,769 |
| Recreation | | | |
| Sewer | | | |
| Solid Waste | | | |
| Streets / Highways | 33,903 | 197,329 | 231,232 |
| Water | | | |
| Other: _____ | | | |
| TOTAL CAPITAL EXPENDITURES | 51,672 | 197,329 | 249,001 |

EMPLOYEE COMPENSATION

Total salaries, wages, commissions, etc. paid this year (including all employees and elected officials)

1,172,967

ELECTED CONTROLLER'S/AUDITOR'S CERTIFIED OPINION

Valley Wastewater Financials

To the: **Governing Body of the Municipality**
President Judge of the Court of Common Pleas
Secretary of the Department of Community & Economic Development

I/We, the undersigned, the duly elected (or appointed replacement), qualified, and Acting Controller/Auditors of the VALLEY TWP have audited, adjusted and settled the various funds and account groups of the VALLEY TWP for the year ended December 31, 2016. My/Our audit, adjustment and settlement was made in accordance with law rather than with generally accepted auditing standards

(PLEASE CROSS OUT ONLY IF ON MODIFIED ACCRUAL/ACCRUAL BASIS)

This municipality's policy is to prepare its financial statements on the basis of cash receipts and disbursements; consequently, certain revenues and the related assets are recognized when received rather than when earned, and certain expenditures or expenses are recognized when paid rather than when a liability is incurred. Accordingly, the accompanying financial statements are not intended to present the financial position and results of operations of this municipality in conformity with generally accepted accounting principles.

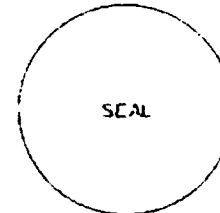
These financial statements do not include all of the disclosures required by generally accepted accounting principles.

In my/our opinion, the aforementioned financial statements present the financial position of the various funds and account groups of the municipality of VALLEY TWP for the year ended December 31, 2016, and the results of operations of such funds in accordance with the law.

SIGNATURE AND VERIFICATION

Signed: **Mingis, Gutowski & Company, LLP** Appointed Auditor/CPA

Subscribed and sworn to before me this 23 day of June, 2017.



Signed: _____
Witness (Controller)/Auditor (Auditors)

December 31, 2016

NOTES / COMMENTS

Note 1 - Pension information has been omitted from the Fiduciary Fund because the independent auditor was not engaged to audit the Pension Fund.

Note 2 - Other Current Assets and Other Current Liabilities reported in the General Fund represent escrow deposits maintained on behalf of developers.

DCED-CLGS-30

Department of Community & Economic Development
Governor's Center for Local Government Services
Commonwealth Keystone Building
400 North Street, 4th Floor
Harrisburg, PA 17120-0225
Ph: 888-223-6837 | fax: 717-783-1402

2017 MUNICIPAL ANNUAL AUDIT AND FINANCIAL REPORT

Township of: VALLEY County: CHESTER

VALLEY TOWNSHIP
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**Balance Sheet
December 31, 2017**

| Assets and Other Debits | | GOVERNMENTAL FUNDS | | | |
|--------------------------------------|--------------------------------------|---------------------|------------------|---------------------|--------------|
| | | General Fund | Special Revenue | Capital Projects | Debt Service |
| 100-120 | Cash and Investments | \$ 2,659,264 | \$ 88,948 | \$ 6,824,208 | \$ - |
| 140-144 | Tax Receivable | | | | |
| 121-129 | | | | | |
| 145-149 | Account Receivable (excluding taxes) | | | | |
| 130 | Due From Other Funds | 112,700 | | | |
| 131-139 | | | | | |
| 150-159 | Other Current Assets | 589,306 | | | |
| 160-169 | Fixed Assets | | | | |
| 180-189 | Other Debits | | | | |
| Total Assets and Other Debits | | \$ 3,361,270 | \$ 86,948 | \$ 6,824,208 | \$ - |

| Liabilities and Other Credits | | | | | |
|--|---|-------------------|-------------|-------------|-------------|
| 210-229 | Payroll Taxes and Other Payroll Withholdings | \$ - | \$ - | \$ - | \$ - |
| 200-209 | | | | | |
| 231-239 | All Other Current Liabilities | 307,412 | | | |
| 230 | Due To Other Funds | | | | |
| 260-269 | Long Term Liabilities | | | | |
| 240-259 | Current Portion of Long-Term Debt & Other Credits | | | | |
| Total Liabilities and Other Credits | | \$ 307,412 | \$ - | \$ - | \$ - |

| Fund and Account Group Equity | | | | | |
|--|---|---------------------|------------------|---------------------|-------------|
| 281-284 | Contributed Capital | \$ 31,600 | \$ - | \$ - | \$ - |
| 290 | Investment in General Fixed Assets | | | | |
| 270-289 | Fund Balance / Retained Earnings on 12/31 | 3,022,258 | 86,948 | 6,824,208 | |
| 291-299 | Other Equity | | | | |
| Total Fund and Account Group Equity | | \$ 3,053,858 | \$ 86,948 | \$ 6,824,208 | \$ - |

| Assets and Other Debits | | PROPRIETARY FUNDS | | FIDUCIARY FUND | ACCOUNT GROUPS | | TOTAL |
|--------------------------------------|--------------------------------------|---------------------|------------------|----------------|----------------------|------------------------|----------------------|
| | | Enterprise | Internal Service | Trust & Agency | General Fixed Assets | General Long Term Debt | Memorandum Only |
| 100-120 | Cash and Investments | \$ 1,321,013 | | | \$ - | \$ - | \$ 10,891,433 |
| 140-144 | Tax Receivable | | | | | | - |
| 121-129 | | | | | | | |
| 145-149 | Account Receivable (excluding taxes) | | | | | | - |
| 130 | Due From Other Funds | | | | | | 112,700 |
| 131-139 | | | | | | | |
| 150-159 | Other Current Assets | | | | | | 589,306 |
| 160-169 | Fixed Assets | | | | | | - |
| 180-189 | Other Debits | | | | | 7,810,344 | 7,810,344 |
| Total Assets and Other Debits | | \$ 1,321,013 | \$ - | \$ - | \$ - | \$ 7,810,344 | \$ 19,403,783 |

| Liabilities and Other Credits | | PROPRIETARY FUNDS | | FIDUCIARY FUND | ACCOUNT GROUPS | | TOTAL |
|--|---|-------------------|------------------|----------------|----------------------|------------------------|---------------------|
| | | Enterprise | Internal Service | Trust & Agency | General Fixed Assets | General Long Term Debt | Memorandum Only |
| 210-229 | Payroll Taxes and Other Payroll Withholdings | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 200-209 | | | | | | | |
| 231-239 | All Other Current Liabilities | | | | | | 307,412 |
| 230 | Due To Other Funds | 112,700 | | | | | 112,700 |
| 260-269 | Long Term Liabilities | | | | | 7,693,333 | 7,693,333 |
| 240-259 | Current Portion of Long-Term Debt & Other Credits | | | | | 117,011 | 117,011 |
| Total Liabilities and Other Credits | | \$ 112,700 | \$ - | \$ - | \$ - | \$ 7,810,344 | \$ 8,230,456 |

| Fund and Account Group Equity | | PROPRIETARY FUNDS | | FIDUCIARY FUND | ACCOUNT GROUPS | | TOTAL |
|--|---|---------------------|------------------|----------------|----------------------|------------------------|----------------------|
| | | Enterprise | Internal Service | Trust & Agency | General Fixed Assets | General Long Term Debt | Memorandum Only |
| 281-284 | Contributed Capital | | \$ - | \$ - | \$ - | \$ - | \$ 31,600 |
| 290 | Investment in General Fixed Assets | | | | | | - |
| 270-289 | Fund Balance / Retained Earnings on 12/31 | 1,208,313 | | | | | 11,141,727 |
| 291-299 | Other Equity | | | | | | - |
| Total Fund and Account Group Equity | | \$ 1,208,313 | \$ - | \$ - | \$ - | \$ - | \$ 11,173,327 |

| | |
|--|----------------------|
| TOTAL LIABILITIES AND FUND AND ACCOUNT GROUP EQUITY | \$ 19,403,783 |
|--|----------------------|

| Intergovernmental Revenues | | Governmental Funds | | | |
|----------------------------|---|--------------------|--|---------------------|--------------|
| Federal | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service |
| 351.03 | Highways and Streets | \$ - | \$ - | \$ - | \$ - |
| 351.09 | Community Development | | | | |
| 351.00 | All Other Federal Capital and Operating Grants | 26,862 | | | |
| 352.01 | National Forest | | | | |
| 352.00 | All Other Federal Shared Revenue & Entitlements | | | | |
| 353.00 | Federal Payments in Lieu of Taxes | | | | |
| Total Federal | | \$ 26,862 | \$ - | \$ - | \$ - |

| State | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service |
|--------------------|---|-------------------|--|---------------------|--------------|
| 354.03 | Highway and Streets | \$ - | \$ - | \$ - | \$ - |
| 354.09 | Community Development | | | | |
| 354.15 | Recycling/Act 101 | 10,914 | | | |
| 354.00 | All Other State Capital and Operating Grants | | | | |
| 355.01 | Public Utility Realty Tax | 1,903 | | | |
| 355.02- | Motor Vehicle Fuel Tax | | | | |
| 355.03 | (Liquid Fuels Tax) and State Road Turnback | | 216,436 | | |
| 355.04 | Alcoholic Beverage Licenses | 400 | | | |
| 355.05 | General Municipal Pension System State Aid | 114,706 | | | |
| 355.07 | Foreign Fire Insurance Tax Distribution | 43,894 | | | |
| 355.08 | Local Share Assessment/Gaming Proceeds | | | | |
| 355.09 | Marcellus Shale Impact Fee Distribution | | | | |
| 355.00 | All Other State Shared Revenue and Entitlements | | | | |
| 356.00 | State Payment in Lieu of Taxes | | | | |
| Total State | | \$ 171,817 | \$ 216,436 | \$ - | \$ - |

| Local Governmental Units | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service |
|---------------------------------------|---|------------------|--|---------------------|--------------|
| 357.03 | Highways and Streets | \$ - | \$ - | \$ - | \$ - |
| 357.00 | All Other Local Governmental Units Capital and Operating Grants | 64,636 | | | |
| 358.00 | Local Government Unit Shared Payments for Contracted Intergovernmental Services | | | | |
| 359.00 | Local Governmental Units and Authorities Payments in Lieu of Taxes | | | | |
| Total Local Governmental Units | | \$ 64,636 | \$ - | \$ - | \$ - |

| Intergovernmental Revenues | | Proprietary Funds | | Fiduciary Fund | Total |
|----------------------------|---|-------------------|------------------|------------------|-----------------|
| Federal | | Enterprise | Internal Service | Trust and Agency | Memorandum Only |
| 351.03 | Highways and Streets | \$ - | \$ - | \$ - | \$ - |
| 351.09 | Community Development | | | | - |
| 351.00 | All Other Federal Capital and Operating Grants | | | | 26,862 |
| 352.01 | National Forest | | | | - |
| 352.00 | All Other Federal Shared Revenue & Entitlements | | | | - |
| 353.00 | Federal Payments In Lieu of Taxes | | | | - |
| Total Federal | | \$ - | \$ - | \$ - | \$ 26,862 |

| State | | Enterprise | Internal Service | Fiduciary Fund | Total |
|--------------------|--|------------|------------------|----------------|------------|
| 354.03 | Highway and Streets | \$ - | \$ - | \$ - | \$ - |
| 354.09 | Community Development | | | | - |
| 354.15 | Recycling/Act 101 | | | | 10,914 |
| 354.00 | All Other State Capital and Operating Grants | | | | - |
| 355.01 | Public Utility Realty Tax | | | | 1,903 |
| 355.02- | Motor Vehicle Fuel Tax | | | | - |
| 355.03 | (Liquid Fuels Tax) and State Road Turnback | | | | 216,436 |
| 355.04 | Alcoholic Beverage Licenses | | | | 400 |
| 355.05 | General Municipal Pension System State Aid | | | | 114,706 |
| 355.07 | Foreign Fire Insurance Tax Distribution | | | | 43,894 |
| 355.08 | Local Share Assessment/Gaming Proceeds | | | | - |
| 355.09 | Marcellus Shale Impact Fee Distribution | | | | - |
| 355.00 | All Other State Shared Revenues and Entitlements | | | | - |
| 356.00 | State Payment in Lieu of Taxes | | | | - |
| Total State | | \$ - | \$ - | \$ - | \$ 388,263 |

| Local Governmental Units | | Enterprise | Internal Service | Fiduciary Fund | Total |
|---------------------------------------|---|------------|------------------|----------------|-----------|
| 357.03 | Highways and Streets | \$ - | \$ - | \$ - | \$ - |
| 357.00 | All Other Local Governmental Units Capital and Operating Grants | | | | 64,636 |
| 358.00 | Local Government Unit Shared Payments for Contracted Intergovernmental Services | | | | - |
| 359.00 | Local Governmental Units and Authorities Payments in Lieu of Taxes | | | | - |
| Total Local Governmental Units | | \$ - | \$ - | \$ - | \$ 64,636 |

| | |
|---|------------|
| TOTAL INTERGOVERNMENTAL REVENUES | \$ 479,751 |
|---|------------|

| | |
|-----------------|---------------------------|
| Revenues | Governmental Funds |
|-----------------|---------------------------|

| Charges for Service | | General Fund | Special Revenue (including State Liquid Fuels) | Capital Projects | Debt Service |
|-----------------------------------|--|-------------------|--|---------------------|--------------|
| 361.00 | General Government | \$ 20,009 | \$ - | \$ - | \$ - |
| 362.00 | Public Safety | 154,683 | | | |
| 363.20 | Parking | | | | |
| 363.00 | All Other Charges for Highway & Streets Services | | | | |
| 364.10 | Wastewater/Sewage Charges | | | | |
| 364.30 | Solid Waste Collection & Disposal Charge (trash) | 703,236 | | | |
| 364.60 | Host Municipality Benefit Fee for Solid Waste Facility | | | | |
| 364.00 | All Other Charges for Sanitation Services | | | | |
| 365.00 | Health | | | | |
| 366.00 | Human Services | | | | |
| 367.00 | Culture and Recreation | | | | |
| 368.00 | Airports | | | | |
| 369.00 | Bars | | | | |
| 370.00 | Cemeteries | | | | |
| 372.00 | Electric System | | | | |
| 373.00 | Gas System | | | | |
| 374.00 | Housing System | | | | |
| 375.00 | Markets | | | | |
| 377.00 | Transit Systems | | | | |
| 378.00 | Water System | | | | |
| 379.00 | All Other Charges for Services | 9,059 | | | |
| Total Charges for Services | | \$ 886,987 | \$ - | \$ - | \$ - |

| Unclassified Operating Revenues | | | | | |
|--|--|------------------|-------------|-------------|-------------|
| 383.00 | Assessments | \$ - | | \$ - | \$ - |
| 386.00 | Escheats (sale of personal property) | | | | |
| 387.00 | Contributions & Donations from Private Sectors | 17,156 | | | |
| 388.00 | Fiduciary Fund Pension Contributions | | | | |
| 389.00 | All Other Unclassified Operating Revenues | 17,471 | | | |
| Total Unclassified Operating Revenues | | \$ 34,627 | \$ - | \$ - | \$ - |

| Other Financing Sources | | | | | |
|--------------------------------------|---|-------------------|-------------|---------------------|-------------|
| 391.00 | Proceeds of General Fixed Asset Disposition | \$ 4,267 | \$ - | \$ - | \$ - |
| 392.00 | Interfund Operating Transfers | 112,700 | | | |
| 393.00 | Proceeds of General Long-Term Debt | | | 7,623,020 | |
| 394.00 | Proceeds of Short-Term Debt | | | | |
| 395.00 | Refunds of Prior Year Expenditures | 68,293 | | | |
| Total Other Financing Sources | | \$ 185,260 | \$ - | \$ 7,623,020 | \$ - |

| | | | | |
|-----------------------|---------------------|-------------------|---------------------|-------------|
| TOTAL REVENUES | \$ 3,761,593 | \$ 217,721 | \$ 7,655,417 | \$ - |
|-----------------------|---------------------|-------------------|---------------------|-------------|

| Revenues | Proprietary Funds | Fiduciary Fund | Total |
|----------|-------------------|----------------|-------|
|----------|-------------------|----------------|-------|

| Charges for Service | | Enterprise | Internal Service | Trust and Agency | Memorandum Only |
|-----------------------------------|--|---------------------|------------------|------------------|---------------------|
| 361.00 | General Government | \$ - | \$ - | \$ - | \$ 20,009 |
| 362.00 | Public Safety | | | | 154,683 |
| 363.20 | Parking | | | | - |
| 363.00 | All Other Charges for Highway & Streets Services | | | | - |
| 364.10 | Wastewater/Sewage Charges | 2,773,003 | | | 2,773,003 |
| 364.30 | Solid Waste Collection & Disposal Charge (trash) | | | | 703,236 |
| 364.60 | Host Municipality Benefit Fee for Solid Waste Facility | | | | - |
| 364.00 | All Other Charges for Sanitation Services | | | | - |
| 365.00 | Health | | | | - |
| 366.00 | Human Services | | | | - |
| 367.00 | Culture and Recreation | | | | - |
| 368.00 | Airports | | | | - |
| 369.00 | Bars | | | | - |
| 370.00 | Cemeteries | | | | - |
| 372.00 | Electric System | | | | - |
| 373.00 | Gas System | | | | - |
| 374.00 | Housing System | | | | - |
| 375.00 | Markets | | | | - |
| 377.00 | Transit Systems | | | | - |
| 378.00 | Water System | 689,445 | | | 689,445 |
| 379.00 | All Other Charges for Services | | | | 9,059 |
| Total Charges for Services | | \$ 3,462,448 | \$ - | \$ - | \$ 4,349,435 |

| Unclassified Operating Revenues | | | | | |
|--|--|-------------|-------------|-------------|------------------|
| 383.00 | Assessments | \$ - | \$ - | \$ - | \$ - |
| 386.00 | Escheats (sale of personal property) | | | | \$ - |
| 387.00 | Contributions & Donations from Private Sectors | | | | 17,156 |
| 388.00 | Fiduciary Fund Pension Contributions | | | | \$ - |
| 389.00 | All Other Unclassified Operating Revenues | | | | 17,471 |
| Total Unclassified Operating Revenues | | \$ - | \$ - | \$ - | \$ 34,627 |

| Other Financing Sources | | | | | |
|--------------------------------------|---|-------------|-------------|-------------|---------------------|
| 391.00 | Proceeds of General Fixed Asset Disposition | \$ - | \$ - | \$ - | \$ 4,257 |
| 392.00 | Interfund Operating Transfers | | | | 112,700 |
| 393.00 | Proceeds of General Long-Term Debt | | | | 7,623,020 |
| 394.00 | Proceeds of Short-Term Debt | | | | - |
| 395.00 | Refunds of Prior Year Expenditures | | | | 68,293 |
| Total Other Financing Sources | | \$ - | \$ - | \$ - | \$ 7,808,270 |

| | | | | |
|-----------------------|---------------------|-------------|-------------|----------------------|
| TOTAL REVENUES | \$ 3,472,692 | \$ - | \$ - | \$ 15,107,423 |
|-----------------------|---------------------|-------------|-------------|----------------------|

| EXPENDITURES | | Governmental Funds | | | |
|---------------------------------|--|--------------------|--|---------------------|--------------|
| General Government | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service |
| 400.00 | Legislative (Governing) Body | \$ 10,833 | \$ - | \$ - | \$ - |
| 401.00 | Executive (Manager or Mayor) | | | | |
| 402.00 | Auditing Services/Financial Administration | 7,130 | | | |
| 403.00 | Tax Collection | 23,043 | | | |
| 404.00 | Solicitor/Legal Services | 158,364 | | | |
| 405.00 | Secretary/Clerk | 177,308 | | | |
| 406.00 | Other General Government Administration | 46,975 | | | |
| 407.00 | IT-Networking Services-Data Processing | | | | |
| 408.00 | Engineering Services | 152,885 | | | |
| 409.00 | General Government Buildings and Plant | 314,825 | | | |
| Total General Government | | \$ 891,463 | \$ - | \$ - | \$ - |

| Public Safety | | | | | |
|----------------------------|---------------------------------------|-------------------|-------------|-------------|-------------|
| 410.00 | Police | \$ 577,591 | \$ - | \$ - | \$ - |
| 411.00 | Fire | 165,149 | | | |
| 412.00 | Ambulance/Rescue | | | | |
| 413.00 | UCC and Code Enforcement | 152,781 | | | |
| 414.00 | Planning and Zoning | 51,842 | | | |
| 415.00 | Emergency Management & Communications | | | | |
| 416.00 | Militia and Armories | | | | |
| 417.00 | Examination of Licensed Occupations | | | | |
| 418.00 | Public Scales (weights and measures) | | | | |
| 419.00 | Other Public Safety | | | | |
| Total Public Safety | | \$ 947,363 | \$ - | \$ - | \$ - |

| Health and Human Services | | | | | |
|---------------------------|---------------------------|----------|------|------|------|
| 420.00- | | | | | |
| 425.00 | Health and Human Services | \$ 8,261 | \$ - | \$ - | \$ - |

| Public Works - Sanitation | | | | | |
|--|---|-------------------|-------------|-------------|-------------|
| 426.00 | Recycling Collection and Disposal | \$ 54,468 | \$ - | \$ - | \$ - |
| 427.00 | Solid Waste Collection and Disposal (trash) | 420,372 | | | |
| 428.00 | Weed Control | | | | |
| 429.00 | Wastewater/Sewage Collection and Treatment | | | | |
| Total Public Works - Sanitation | | \$ 474,840 | \$ - | \$ - | \$ - |

| EXPENDITURES | | Proprietary Funds | | Fiduciary Fund | Total |
|---------------------------------|--|-------------------|------------------|------------------|-------------------|
| General Government | | Enterprise | Internal Service | Trust and Agency | Memorandum Only |
| 400.00 | Legislative (Governing) Body | \$ - | | \$ - | \$ 10,833 |
| 401.00 | Executive (Manager or Mayor) | | | | - |
| 402.00 | Auditing Services/Financial Administration | | | | 7,130 |
| 403.00 | Tax Collection | | | | 23,043 |
| 404.00 | Solicitor/Legal Services | | | | 158,364 |
| 405.00 | Secretary/Clerk | | | | 177,308 |
| 406.00 | Other General Government Administration | | | | 46,975 |
| 407.00 | IT-Networking Services-Data Processing | | | | - |
| 408.00 | Engineering Services | | | | 162,885 |
| 409.00 | General Government Buildings and Plant | | | | 314,925 |
| Total General Government | | \$ - | \$ - | \$ - | \$ 891,463 |

| Public Safety | | | | | |
|----------------------------|---------------------------------------|-------------|-------------|-------------|-------------------|
| 410.00 | Police | \$ - | \$ - | \$ - | \$ 577,591 |
| 411.00 | Fire | | | | 165,149 |
| 412.00 | Ambulance/Rescue | | | | - |
| 413.00 | UCC and Code Enforcement | | | | 152,781 |
| 414.00 | Planning and Zoning | | | | 51,842 |
| 415.00 | Emergency Management & Communications | | | | - |
| 416.00 | Militia and Armories | | | | - |
| 417.00 | Examination of Licensed Occupations | | | | - |
| 418.00 | Public Scales (weights and measures) | | | | - |
| 419.00 | Other Public Safety | | | | - |
| Total Public Safety | | \$ - | \$ - | \$ - | \$ 947,363 |

| Health and Human Services | | | | | |
|---------------------------|---------------------------|------|------|------|----------|
| 420.00- | | | | | |
| 425.00 | Health and Human Services | \$ - | \$ - | \$ - | \$ 8,261 |

| Public Works - Sanitation | | | | | |
|--|---|---------------------|-------------|-------------|---------------------|
| 426.00 | Recycling Collection and Disposal | \$ - | \$ - | \$ - | \$ - |
| 427.00 | Solid Waste Collection and Disposal (trash) | | | | 420,372 |
| 428.00 | Weed Control | | | | - |
| 429.00 | Wastewater/Sewage Collection and Treatment | 2,458,828 | | | 2,458,828 |
| Total Public Works - Sanitation | | \$ 2,458,828 | \$ - | \$ - | \$ 2,933,668 |

| EXPENDITURES | | Governmental Funds | | | |
|--|--|--------------------|--|---------------------|--------------|
| | | General Fund | Special Revenue (including State Liquid Fuels) | Capital Projects | Debt Service |
| Public Works - Highways and Streets | | | | | |
| 430.00 | General Services- Administration | \$ 153,107 | | \$ - | \$ - |
| 431.00 | Cleaning of Streets and Gutters | | | | |
| 432.00 | Winter Maintenance- Snow Removal | 12,824 | 28,331 | | |
| 433.00 | Traffic Control Devices | 1,593 | 7,281 | | |
| 434.00 | Street Lighting | | 16,539 | | |
| 435.00 | Sidewalks and Crosswalks | | | | |
| 436.00 | Storm Sewers and Drains | | | | |
| 437.00 | Repairs of Tools and Machinery | 3,250 | | | |
| 438.00 | Maintenance & Repairs of Roads & Bridges | 10,789 | 2,964 | | |
| 439.00 | Highway Construction and Rebuilding Projects | 234,833 | 121,457 | | |
| Total Public Works - Highways and Streets | | \$ 416,396 | \$ 176,572 | \$ - | \$ - |

| Public Works - Other Services | | | | | |
|--|-------------------------------|-------------|-------------|-------------|-------------|
| 440.00 | Airports | \$ - | \$ - | \$ - | \$ - |
| 441.00 | Cemeteries | | | | |
| 442.00 | Electric System | | | | |
| 443.00 | Gas System | | | | |
| 444.00 | Markets | | | | |
| 445.00 | Parking | | | | |
| 446.00 | Storm Water and Flood Control | | | | |
| 447.00 | Transit System | | | | |
| 448.00 | Water System | | | | |
| 449.00 | Water Transport and Terminals | | | | |
| Total Public Works-Other Services | | \$ - | \$ - | \$ - | \$ - |

| Culture and Recreation | | | | | |
|-------------------------------------|------------------------------------|-------------------|-------------|-------------|-------------|
| 451.00 | Culture- Recreation Administration | \$ 118,581 | \$ - | \$ - | \$ - |
| 452.00 | Participant Recreation | | | | |
| 453.00 | Spectator Recreation | | | | |
| 454.00 | Parks | | | | |
| 455.00 | Shade Trees | | | | |
| 456.00 | Libraries | 6,794 | | | |
| 457.00 | Civil and Military Celebrations | | | | |
| 458.00 | Senior Citizens' Centers | | | | |
| 459.00 | All Other Culture and Recreation | | | | |
| Total Culture and Recreation | | \$ 125,355 | \$ - | \$ - | \$ - |

| Community Development | | | | | |
|------------------------------------|-----------------------------------|-------------|-------------|-------------|-------------|
| 461.00 | Conservation of Natural Resources | \$ - | \$ - | \$ - | \$ - |
| 462.00 | Community Development and Housing | | | | |
| 463.00 | Economic Development | | | | |
| 464.00 | Economic Opportunity | | | | |
| 465.00- | | | | | |
| 469.00 | All Other Community Development | | | | |
| Total Community Development | | \$ - | \$ - | \$ - | \$ - |

| EXPENDITURES | | Proprietary Funds | | Fiduciary Fund | Total |
|---|--|-------------------|------------------|------------------|-----------------|
| | | Enterprise | Internal Service | Trust and Agency | Memorandum Only |
| Public Works - Highways and Streets | | | | | |
| 430.00 | General Services- Administration | \$ - | \$ - | \$ - | \$ 153,107 |
| 431.00 | Cleaning of Streets and Gutters | | | | - |
| 432.00 | Winter Maintenance- Snow Removal | | | | 41,165 |
| 433.00 | Traffic Control Devices | | | | 8,874 |
| 434.00 | Street Lighting | | | | 16,539 |
| 435.00 | Sidewalks and Crosswalks | | | | - |
| 436.00 | Storm Sewers and Drains | | | | - |
| 437.00 | Repairs of Tools and Machinery | | | | 3,250 |
| 438.00 | Maintenance & Repairs of Roads & Bridges | | | | 13,753 |
| 439.00 | Highway Construction and Rebuilding Projects | | | | 356,290 |
| Total Public Works - Highways and Streets | | \$ - | \$ - | \$ - | \$ 592,968 |

| Public Works - Other Services | | | | | |
|-----------------------------------|-------------------------------|------------|------|------|------------|
| 440.00 | Airports | \$ - | \$ - | \$ - | \$ - |
| 441.00 | Cemeteries | | | | - |
| 442.00 | Electric System | | | | - |
| 443.00 | Gas System | | | | - |
| 444.00 | Markets | | | | - |
| 445.00 | Parking | | | | - |
| 446.00 | Storm Water and Flood Control | | | | - |
| 447.00 | Transit System | | | | - |
| 448.00 | Water System | 637,868 | | | 637,868 |
| 449.00 | Water Transport and Terminals | | | | - |
| Total Public Works-Other Services | | \$ 637,868 | \$ - | \$ - | \$ 637,868 |

| Culture and Recreation | | | | | |
|------------------------------|------------------------------------|------|------|------|------------|
| 451.00 | Culture- Recreation Administration | \$ - | \$ - | \$ - | \$ 118,561 |
| 452.00 | Participant Recreation | | | | - |
| 453.00 | Spectator Recreation | | | | - |
| 454.00 | Parks | | | | - |
| 455.00 | Shade Trees | | | | - |
| 456.00 | Libraries | | | | 6,794 |
| 457.00 | Civil and Military Celebrations | | | | - |
| 458.00 | Senior Citizens' Centers | | | | - |
| 460.00 | All Other Culture and Recreation | | | | - |
| Total Culture and Recreation | | \$ - | \$ - | \$ - | \$ 125,355 |

| Community Development | | | | | |
|-----------------------------|-----------------------------------|------|------|------|------|
| 461.00 | Conservation of Natural Resources | \$ - | \$ - | \$ - | \$ - |
| 462.00 | Community Development and Housing | | | | - |
| 463.00 | Economic Development | | | | - |
| 464.00 | Economic Opportunity | | | | - |
| 465.00- | | | | | - |
| 469.00 | All Other Community Development | | | | - |
| Total Community Development | | \$ - | \$ - | \$ - | \$ - |

| EXPENDITURES | | Governmental Funds | | | |
|--------------------|---|--------------------|---|---------------------|--------------|
| | | General Fund | Special Revenue (including State Local Funds) | Capital Projects | Debt Service |
| Debt Service | | | | | |
| 471.00 | Debt Principal (short-term and long-term) | \$ 67,339 | \$ - | \$ 771,648 | \$ - |
| 472.00 | Debt Interest (short-term and long-term) | 135,510 | | 2,817 | |
| 475.00 | Fiscal Agent Fees | | | 56,744 | |
| Total Debt Service | | \$ 202,849 | \$ - | \$ 831,209 | \$ - |

| Employer Paid Benefits & Withholding Items | | | | | |
|--|--|------------|------|------|------|
| 481.00 | Employer Paid Withholding Taxes and Unemployment Compensation | \$ 69,593 | \$ - | \$ - | \$ - |
| 482.00 | Judgments and Losses | | | | |
| 483.00 | Pension/Retirement Fund Contributions | 125,560 | | | |
| 484.00 | Worker Compensation Insurance | 104,892 | | | |
| 487.00 | Group Insurance and Other Benefits | 451,462 | | | |
| Total Employer Paid Benefits & Withholding Items | | \$ 751,507 | \$ - | \$ - | \$ - |

| Insurance | | | | | |
|-----------|---------------------------------|-----------|------|------|------|
| 488.00 | Insurance, Casualty, and Surety | \$ 97,898 | \$ - | \$ - | \$ - |

| Unclassified Operating Expenditures | | | | | |
|---|--|-----------|------|------|------|
| 488.00 | Fiduciary Fund Benefits and Refunds Paid | | | | |
| 489.00 | All Other Unclassified Expenditures | 36,398 | | | |
| Total Unclassified Operating Expenditures | | \$ 36,398 | \$ - | \$ - | \$ - |

| Other Financing Uses | | | | | |
|----------------------------|-------------------------------|----------|------|------|------|
| 491.00 | Refund of Prior Year Revenues | \$ 3,750 | \$ - | \$ - | \$ - |
| 492.00 | Interfund Operating Transfers | | | | |
| 493.00 | All Other Financing Uses | | | | |
| Total Other Financing Uses | | \$ 3,750 | \$ - | \$ - | \$ - |

| | | | | | |
|---------------------------|--|--------------|------------|------------|------|
| TOTAL EXPENDITURES | | \$ 3,956,080 | \$ 176,572 | \$ 831,209 | \$ - |
|---------------------------|--|--------------|------------|------------|------|

| | | | | | |
|---|--|--------------|-----------|--------------|------|
| EXCESS/DEFICIT OF REVENUES OVER EXPENDITURES | | \$ (194,487) | \$ 41,149 | \$ 6,824,208 | \$ - |
|---|--|--------------|-----------|--------------|------|

| EXPENDITURES | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------|---|-------------------|------------------|------------------|-----------------|
| | | Enterprise | Internal Service | Trust and Agency | Memorandum Only |
| Debt Service | | | | | |
| 471.00 | Debt Principal (short-term and long-term) | | \$ - | \$ - | \$ 838,987 |
| 472.00 | Debt Interest (short-term and long-term) | | | | 138,327 |
| 475.00 | Fiscal Agent Fees | | | | 66,744 |
| Total Debt Service | | \$ - | \$ - | \$ - | \$ 1,034,058 |

| Employer Paid Benefits & Withholding Items | | | | | |
|--|---|------|------|------|------------|
| 481.00 | Employer Paid Withholding Taxes and Unemployment Compensation | \$ - | \$ - | \$ - | \$ 69,583 |
| 482.00 | Judgments and Losses | | | | - |
| 483.00 | Pension/Retirement Fund Contributions | | | | 125,560 |
| 484.00 | Worker Compensation Insurance | | | | 104,892 |
| 487.00 | Group Insurance and Other Benefits | | | | 451,462 |
| Total Employer Paid Benefits & Withholding Items | | \$ - | \$ - | \$ - | \$ 751,507 |

| Insurance | | | | | |
|-----------|---------------------------------|------|------|------|-----------|
| 486.00 | Insurance, Casualty, and Surety | \$ - | \$ - | \$ - | \$ 97,898 |

| Unclassified Operating Expenditures | | | | | |
|---|--|------|------|------|-----------|
| 488.00 | Fiduciary Fund Benefits and Refunds Paid | | | | \$ - |
| 489.00 | All Other Unclassified Expenditures | | | | 36,398 |
| Total Unclassified Operating Expenditures | | \$ - | \$ - | \$ - | \$ 36,398 |

| Other Financing Uses | | | | | |
|----------------------------|-------------------------------|------------|------|------|------------|
| 491.00 | Refund of Prior Year Revenues | \$ - | \$ - | \$ - | \$ 3,750 |
| 492.00 | Interfund Operating Transfers | 112,700 | | | 112,700 |
| 493.00 | All Other Financing Uses | | | | - |
| Total Other Financing Uses | | \$ 112,700 | \$ - | \$ - | \$ 116,450 |

| | | | | | |
|---------------------------|---------------------|-------------|-------------|-------------|---------------------|
| TOTAL EXPENDITURES | \$ 3,209,398 | \$ - | \$ - | \$ - | \$ 8,173,257 |
|---------------------------|---------------------|-------------|-------------|-------------|---------------------|

| | | | | | |
|---|-------------------|-------------|-------------|-------------|---------------------|
| EXCESS/DEFICIT OF REVENUES OVER EXPENDITURES | \$ 263,296 | \$ - | \$ - | \$ - | \$ 6,934,166 |
|---|-------------------|-------------|-------------|-------------|---------------------|

| STATEMENT OF CAPITAL EXPENDITURES | | | |
|-----------------------------------|-------------------|----------------------|---------|
| Category | Capital Purchases | Capital Construction | Total |
| Community Development | \$ - | \$ - | \$ - |
| Electric | | | - |
| Fire | | | - |
| Gas System | | | - |
| General Government | 252,103 | | 252,103 |
| Health | | | - |
| Housing | | | - |
| Libraries | | | - |
| Mass Transit | | | - |
| Parks | | 74,406 | 74,406 |
| Police | | | - |
| Recreation | | | - |
| Sewer | | | - |
| Solid Waste | | 212,053 | 212,053 |
| Streets/Highways | | 295,095 | 295,095 |
| Water | | | - |
| Other (Please Specify) | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |

| | |
|-----------------------------------|-------------------|
| TOTAL CAPITAL EXPENDITURES | \$ 833,657 |
|-----------------------------------|-------------------|

| EMPLOYEE COMPENSATION | |
|---|--------------|
| Total salaries, wages, commissions, etc. paid this year (including all employees and elected officials)* | \$ 1,209,312 |
| *Use income from box 16 of the W-3 Statement | |

KIMMEL, LORAH & ASSOCIATES, LLP

CERTIFIED PUBLIC ACCOUNTANTS

July 13, 2018

INDEPENDENT AUDITORS' REPORT

To the: Supervisors of Valley Township
President Judge of the Court of Common Pleas
Department of Community and Economic Development

We have audited the accompanying annual audit and financial report (the financial statements) of Valley Township, Chester County, Pennsylvania, as of December 31, 2017 which comprise the balance sheet for each fund type as of December 31, 2017 and the related statement of revenues and expenditures for the year then ended.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with the financial reporting provisions prescribed or permitted by the Department of Community and Economic Development of the Commonwealth of Pennsylvania (DCED). Management is also responsible for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Township's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Township's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

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Oaks Corporate Center, 400 Cresson Blvd, Suite 210
PO Box 979, Oaks, PA 19456
www.klacpa.net 610-666-0450 Fax 610-666-1950

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We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Basis for Qualified Opinion

Valley Township experienced a theft loss that impacted the General Fund, Sewer Fund and Water Fund. Our opinion is qualified with respect to the trash revenue in the General Fund, Sewer Fund revenue and Water Fund revenue. The event spanned multiple years. A forensic investigation was ongoing at the time of our audit. The totality of the loss is being quantified but uncertain at the time of the issuance of this report.

Qualified Opinion

In our opinion, except for the effects of the matter described in the "Basis for Qualified Opinion" paragraph, the annual audit and financial report referred to in the first paragraph presents fairly, in all material respects, the balance sheet of each of the fund types of Valley Township, Chester County, Pennsylvania as of December 31, 2017 and the revenues it received and the expenditures it paid for the year then ended, on the basis of accounting described in the second paragraph.

Basis of Accounting

We draw attention to the basis of accounting, which is described in the second paragraph of this report. The financial statements are prepared on the basis of the financial reporting provisions prescribed or permitted by the DCED, which is a basis of accounting other than accounting principles generally accepted in the United States of America, to comply with the requirements of the DCED. As permitted by the DCED, Valley Township, Chester County, Pennsylvania, prepares its annual audit and financial report on the cash basis of accounting; consequently, certain revenues and related assets are recognized when received rather than when earned and certain expenditures are recognized when paid rather than when a liability is incurred. Additionally, in accordance with the prescribed accounting practices permitted by the DCED, Valley Township does not include footnote disclosures. Our opinion is not modified with respect to that matter.

Restriction on Use

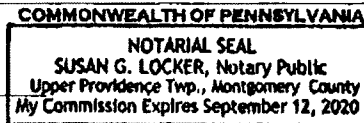
This report is intended solely for the information and use of the governing body and management of Valley Township, Chester County, Pennsylvania; for filing with the Department of Community and Economic Development and the County Courthouse; and is not intended to be and should not be used by anyone other than these specified parties.

Kimmel, Lorah & Associates, LLP
Certified Public Accountants

Subscribed and sworn to before

me this 13th day of July 2018

Signed Susan G. Locker



DCED-CLGS-30

Department of Community & Economic Development
Governor's Center for Local Government Services
Commonwealth Keystone Building
400 North Street, 4th Floor
Harrisburg, PA 17120-0225
Ph: 888-223-6837 | fax: 717-783-1402

2018 MUNICIPAL ANNUAL AUDIT AND FINANCIAL REPORT

Township of: VALLEY County: CHESTER

KIMMEL, LORAH & ASSOCIATES, LLP

CERTIFIED PUBLIC ACCOUNTANTS

VALLEY TOWNSHIP
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**Balance Sheet
December 31, 2018**

| Assets and Other Debits | | GOVERNMENTAL FUNDS | | | |
|--------------------------------------|--------------------------------------|---------------------|-------------------|---------------------|--------------|
| | | General Fund | Special Revenue | Capital Projects | Debt Service |
| 100-120 | Cash and Investments | \$ 2,374,951 | \$ 117,554 | \$ 3,362,388 | \$ - |
| 140-144 | Tax Receivable | | | | |
| 121-129 | Account Receivable (excluding taxes) | | | | |
| 145-149 | | | | | |
| 130 | Due From Other Funds | - | | 20,250 | |
| 131-139 | | | | | |
| 150-159 | Other Current Assets | 605,282 | | | |
| 160-169 | Fixed Assets | | | | |
| 180-189 | Other Debits | | | | |
| Total Assets and Other Debits | | \$ 2,980,233 | \$ 117,554 | \$ 3,382,638 | \$ - |

| Liabilities and Other Credits | | | | | |
|--|---|-------------------|-------------|-------------|-------------|
| 210-229 | Payroll Taxes and Other Payroll Withholdings | \$ - | \$ - | \$ - | \$ - |
| 200-209 | | | | | |
| 231-239 | All Other Current Liabilities | 308,110 | | | |
| 230 | Due To Other Funds | | | | |
| 260-269 | Long Term Liabilities | | | | |
| 240-259 | Current Portion of Long-Term Debt & Other Credits | | | | |
| Total Liabilities and Other Credits | | \$ 308,110 | \$ - | \$ - | \$ - |

| Fund and Account Group Equity | | | | | |
|--|---|---------------------|-------------------|---------------------|-------------|
| 281-284 | Contributed Capital | \$ 32,400 | \$ - | \$ - | \$ - |
| 290 | Investment In General Fixed Assets | | | | |
| 270-289 | Fund Balance / Retained Earnings on 12/31 | 2,639,723 | 117,554 | 3,382,638 | |
| 291-299 | Other Equity | | | | |
| Total Fund and Account Group Equity | | \$ 2,672,123 | \$ 117,554 | \$ 3,382,638 | \$ - |

| Assets and Other Debits | | PROPRIETARY FUNDS | | FIDUCIARY FUND | ACCOUNT GROUPS | | TOTAL |
|--------------------------------------|--------------------------------------|-------------------|------------------|----------------|----------------------|------------------------|----------------------|
| | | Enterprise | Internal Service | Trust & Agency | General Fixed Assets | General Long Term Debt | Memorandum Only |
| 100-120 | Cash and Investments | \$ 676,540 | | | \$ - | \$ - | \$ 6,531,433 |
| 140-144 | Tax Receivable | | | | | | - |
| 121-129 | | | | | | | - |
| 145-149 | Account Receivable (excluding taxes) | | | | | | - |
| 130 | Due From Other Funds | | | | | | 20,250 |
| 131-139 | | | | | | | - |
| 150-159 | Other Current Assets | | | | | | 605,282 |
| 160-169 | Fixed Assets | | | | | | - |
| 180-189 | Other Debits | | | | | 7,693,330 | 7,693,330 |
| Total Assets and Other Debits | | \$ 676,540 | \$ - | \$ - | \$ - | \$ 7,693,330 | \$ 14,850,295 |

| Liabilities and Other Credits | | PROPRIETARY FUNDS | | FIDUCIARY FUND | ACCOUNT GROUPS | | TOTAL |
|--|---|-------------------|------------------|----------------|----------------------|------------------------|---------------------|
| | | Enterprise | Internal Service | Trust & Agency | General Fixed Assets | General Long Term Debt | Memorandum Only |
| 210-229 | Payroll Taxes and Other Payroll Withholdings | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 200-209 | | | | | | | - |
| 231-239 | All Other Current Liabilities | | | | | | 308,110 |
| 230 | Due To Other Funds | - | | | | | - |
| 260-269 | Long Term Liabilities | | | | | 7,433,977 | 7,433,977 |
| 240-259 | Current Portion of Long-Term Debt & Other Credits | | | | | 259,353 | 259,353 |
| Total Liabilities and Other Credits | | \$ - | \$ - | \$ - | \$ - | \$ 7,693,330 | \$ 8,001,440 |

| Fund and Account Group Equity | | PROPRIETARY FUNDS | | FIDUCIARY FUND | ACCOUNT GROUPS | | TOTAL |
|--|---|-------------------|------------------|----------------|----------------------|------------------------|---------------------|
| | | Enterprise | Internal Service | Trust & Agency | General Fixed Assets | General Long Term Debt | Memorandum Only |
| 281-284 | Contributed Capital | | \$ - | \$ - | \$ - | \$ - | \$ 32,400 |
| 290 | Investment in General Fixed Assets | | | | | | - |
| 270-289 | Fund Balance / Retained Earnings on 12/31 | 676,540 | | | | | 6,816,455 |
| 291-299 | Other Equity | | | | | | - |
| Total Fund and Account Group Equity | | \$ 676,540 | \$ - | \$ - | \$ - | \$ - | \$ 6,848,855 |

| | |
|--|----------------------|
| TOTAL LIABILITIES AND FUND AND ACCOUNT GROUP EQUITY | \$ 14,850,295 |
|--|----------------------|

**Statement of Revenues and Expenditures
December 31, 2018**

| Revenues | | Governmental Funds | | | |
|--------------------|---|---------------------|--|---------------------|--------------|
| Taxes | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service |
| 301.00 | Real Estate Taxes | \$ 946,308 | \$ 297,448 | \$ - | \$ - |
| 305.00 | Occupation Taxes(levied under municipal code) | | | | |
| 308.00 | Residence Taxes(levied by cities of 3rd Class) | | | | |
| 309.00 | Regional Asset District Sales Tax (Allegheny County municipalities only) | | | | |
| 310.00 | Per Capita Taxes | | | | |
| 310.10 | Real Estate Transfer Taxes | 217,340 | | | |
| 310.20 | Earned Income Taxes/Wage Taxes | 1,029,923 | | | |
| 310.30 | Business Gross Receipts Taxes | | | | |
| 310.40 | Occupation Taxes (levied under Act 511) | | | | |
| 310.50 | Local Services Tax | 69,675 | | | |
| 310.60 | Amusement/Admission Taxes | | | | |
| 310.70 | Mechanical Device Taxes | | | | |
| 310.90 | Other Local Tax Enabling Act/Act511/Taxes | | | | |
| Total Taxes | | \$ 2,263,246 | \$ 297,448 | \$ - | \$ - |

| Licenses and Permits | | | | | |
|-----------------------------------|---------------------------------|-------------------|-------------|-------------|-------------|
| 320-322 | All Other Licenses and Permits | \$ 5,255 | | \$ - | \$ - |
| 321.80 | Cable Television Franchise Fees | 180,783 | | | |
| Total Licenses and Permits | | \$ 186,038 | \$ - | \$ - | \$ - |

| Fines and Forfeits | | | | | |
|--------------------|--------------------|-----------|------|------|------|
| 330-332 | Fines and Forfeits | \$ 27,653 | \$ - | \$ - | \$ - |

| Interest, Rents, and Royalties | | | | | |
|---|---------------------|------------------|-----------------|------------------|-------------|
| 341.00 | Interest Earnings | \$ 38,351 | \$ 4,478 | \$ 97,535 | \$ - |
| 342.00 | Rents and Royalties | 30,629 | | | |
| Total Interest, Rents, and Royalties | | \$ 68,980 | \$ 4,478 | \$ 97,535 | \$ - |

| Intergovernmental Revenues | | Governmental Funds | | | |
|----------------------------|---|--------------------|--|---------------------|--------------|
| Federal | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service |
| 351.03 | Highways and Streets | \$ - | \$ - | \$ - | \$ - |
| 351.09 | Community Development | | | | |
| 351.00 | All Other Federal Capital and Operating Grants | | | | |
| 352.01 | National Forest | | | | |
| 352.00 | All Other Federal Shared Revenue & Entitlements | | | | |
| 353.00 | Federal Payments in Lieu of Taxes | | | | |
| Total Federal | | \$ - | \$ - | \$ - | \$ - |

| State | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service |
|--------------------|--|-------------------|--|---------------------|--------------|
| 354.03 | Highway and Streets | \$ - | \$ - | \$ - | \$ - |
| 354.09 | Community Development | | | | |
| 354.15 | Recycling/Act 101 | 22,104 | | | |
| 354.00 | All Other State Capital and Operating Grants | | | | |
| 355.01 | Public Utility Realty Tax | 2,078 | | | |
| 355.02- | Motor Vehicle Fuel Tax | | | | |
| 355.03 | (Liquid Fuels Tax) and State Road Turnback | | 225,892 | | |
| 355.04 | Alcoholic Beverage Licenses | 600 | | | |
| 355.05 | General Municipal Pension System State Aid | 102,981 | | | |
| 355.07 | Foreign Fire Insurance Tax Distribution | 40,042 | | | |
| 355.08 | Local Share Assessment/Gaming Proceeds | | | | |
| 355.09 | Marcellus Shale Impact Fee Distribution | | | | |
| 355.00 | All Other State Shared Revenues and Entitlements | | | | |
| 356.00 | State Payment in Lieu of Taxes | | | | |
| Total State | | \$ 167,805 | \$ 225,892 | \$ - | \$ - |

| Local Governmental Units | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service |
|---------------------------------------|---|-------------------|--|---------------------|--------------|
| 357.03 | Highways and Streets | \$ - | \$ - | \$ - | \$ - |
| 357.00 | All Other Local Governmental Units Capital and Operating Grants | 367,000 | | | |
| 358.00 | Local Government Unit Shared Payments for Contracted Intergovernmental Services | | | | |
| 359.00 | Local Governmental Units and Authorities Payments in Lieu of Taxes | | | | |
| Total Local Governmental Units | | \$ 367,000 | \$ - | \$ - | \$ - |

| Intergovernmental Revenues | | Proprietary Funds | | Fiduciary Fund | Total |
|----------------------------|---|-------------------|------------------|------------------|-----------------|
| Federal | | Enterprise | Internal Service | Trust and Agency | Memorandum Only |
| 351.03 | Highways and Streets | \$ - | \$ - | \$ - | \$ - |
| 351.09 | Community Development | | | | |
| 351.00 | All Other Federal Capital and Operating Grants | | | | |
| 352.01 | National Forest | | | | |
| 352.00 | All Other Federal Shared Revenue & Entitlements | | | | |
| 353.00 | Federal Payments in Lieu of Taxes | | | | |
| Total Federal | | \$ - | \$ - | \$ - | \$ - |

| State | | Enterprise | Internal Service | Fiduciary Fund | Total |
|--------------------|--|------------|------------------|----------------|------------|
| 354.03 | Highway and Streets | \$ - | \$ - | \$ - | \$ - |
| 354.09 | Community Development | | | | |
| 354.15 | Recycling/Act 101 | | | | 22,104 |
| 354.00 | All Other State Capital and Operating Grants | | | | |
| 355.01 | Public Utility Realty Tax | | | | 2,078 |
| 355.02- | Motor Vehicle Fuel Tax | | | | |
| 355.03 | (Liquid Fuels Tax) and State Road Turnback | | | | 225,892 |
| 355.04 | Alcoholic Beverage Licenses | | | | 600 |
| 355.05 | General Municipal Pension System State Aid | | | | 102,981 |
| 355.07 | Foreign Fire Insurance Tax Distribution | | | | 40,042 |
| 355.08 | Local Share Assessment/Gaming Proceeds | | | | |
| 355.09 | Marcellus Shale Impact Fee Distribution | | | | |
| 356.00 | All Other State Shared Revenues and Entitlements | | | | |
| 358.00 | State Payment in Lieu of Taxes | | | | |
| Total State | | \$ - | \$ - | \$ - | \$ 393,697 |

| Local Governmental Units | | Enterprise | Internal Service | Fiduciary Fund | Total |
|---------------------------------------|---|------------|------------------|----------------|------------|
| 357.03 | Highways and Streets | \$ - | \$ - | \$ - | \$ - |
| 357.00 | All Other Local Governmental Units Capital and Operating Grants | | | | 367,000 |
| 358.00 | Local Government Unit Shared Payments for Contracted Intergovernmental Services | | | | |
| 359.00 | Local Governmental Units and Authorities Payments in Lieu of Taxes | | | | |
| Total Local Governmental Units | | \$ - | \$ - | \$ - | \$ 367,000 |

| | |
|---|-------------------|
| TOTAL INTERGOVERNMENTAL REVENUES | \$ 780,697 |
|---|-------------------|

| | |
|----------|--------------------|
| Revenues | Governmental Funds |
|----------|--------------------|

| Charges for Service | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service |
|---|-------------------|--|---------------------|--------------|
| 361.00 General Government | \$ 12,872 | \$ - | \$ - | \$ - |
| 362.00 Public Safety | 95,286 | | | |
| 363.20 Parking | | | | |
| 363.00 All Other Charges for Highway & Streets Services | | | | |
| 364.10 Wastewater/Sewage Charges | | | | |
| 364.30 Solid Waste Collection & Disposal Charge (trash) | 770,833 | | | |
| 364.60 Host Municipality Benefit Fee for Solid Waste Facility | | | | |
| 364.00 All Other Charges for Sanitation Services | | | | |
| 365.00 Health | | | | |
| 366.00 Human Services | | | | |
| 367.00 Culture and Recreation | | | | |
| 368.00 Airports | | | | |
| 369.00 Bars | | | | |
| 370.00 Cemeteries | | | | |
| 372.00 Electric System | | | | |
| 373.00 Gas System | | | | |
| 374.00 Housing System | | | | |
| 375.00 Markets | | | | |
| 377.00 Transit Systems | | | | |
| 378.00 Water System | | | | |
| 379.00 All Other Charges for Services | 5,851 | | | |
| Total Charges for Services | \$ 884,442 | \$ - | \$ - | \$ - |

| Unclassified Operating Revenues | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service |
|---|------------------|--|---------------------|--------------|
| 383.00 Assessments | | | \$ - | \$ - |
| 386.00 Escheats (sale of personal property) | | | | |
| 387.00 Contributions & Donations from Private Sectors | 15,400 | | | |
| 388.00 Fiduciary Fund Pension Contributions | | | | |
| 389.00 All Other Unclassified Operating Revenues | 18,082 | | | |
| Total Unclassified Operating Revenues | \$ 33,482 | \$ - | \$ - | \$ - |

| Other Financing Sources | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service |
|--|---------------------|--|---------------------|--------------|
| 391.00 Proceeds of General Fixed Asset Disposition | \$ 17,420 | \$ - | \$ - | \$ - |
| 392.00 Interfund Operating Transfers | 3,559,356 | | 20,250 | |
| 393.00 Proceeds of General Long-Term Debt | | | | |
| 394.00 Proceeds of Short-Term Debt | | | | |
| 395.00 Refunds of Prior Year Expenditures | 43,116 | | | |
| Total Other Financing Sources | \$ 3,619,891 | \$ - | \$ 20,250 | \$ - |

| | | | | |
|-----------------------|---------------------|-------------------|-------------------|-------------|
| TOTAL REVENUES | \$ 7,616,437 | \$ 527,818 | \$ 117,785 | \$ - |
|-----------------------|---------------------|-------------------|-------------------|-------------|

| Revenues | Proprietary Funds | Fiduciary Fund | Total |
|----------|-------------------|----------------|-------|
|----------|-------------------|----------------|-------|

| Charges for Service | | Enterprise | Internal Service | Trust and Agency | Memorandum Only |
|-----------------------------------|--|---------------------|------------------|------------------|---------------------|
| 361.00 | General Government | \$ - | \$ - | \$ - | \$ 12,672 |
| 362.00 | Public Safety | | | | 95,286 |
| 363.20 | Parking | | | | - |
| 363.00 | All Other Charges for Highway & Streets Services | | | | - |
| 364.10 | Wastewater/Sewage Charges | 2,795,379 | | | 2,795,379 |
| 364.30 | Solid Waste Collection & Disposal Charge (trash) | | | | 770,833 |
| 364.60 | Host Municipality Benefit Fee for Solid Waste Facility | | | | - |
| 364.00 | All Other Charges for Sanitation Services | | | | - |
| 365.00 | Health | | | | - |
| 366.00 | Human Services | | | | - |
| 367.00 | Culture and Recreation | | | | - |
| 368.00 | Airports | | | | - |
| 369.00 | Bars | | | | - |
| 370.00 | Cemeteries | | | | - |
| 372.00 | Electric System | | | | - |
| 373.00 | Gas System | | | | - |
| 374.00 | Housing System | | | | - |
| 375.00 | Markets | | | | - |
| 377.00 | Transit Systems | | | | - |
| 378.00 | Water System | 708,629 | | | 708,629 |
| 379.00 | All Other Charges for Services | | | | 5,651 |
| Total Charges for Services | | \$ 3,504,008 | \$ - | \$ - | \$ 4,388,450 |

| Unclassified Operating Revenues | | | | | |
|--|--|-------------|-------------|-------------|------------------|
| 383.00 | Assessments | \$ - | \$ - | \$ - | \$ - |
| 386.00 | Escheats (sale of personal property) | | | | \$ - |
| 387.00 | Contributions & Donations from Private Sectors | | | | 15,400 |
| 388.00 | Fiduciary Fund Pension Contributions | | | | \$ - |
| 389.00 | All Other Unclassified Operating Revenues | | | | 18,082 |
| Total Unclassified Operating Revenues | | \$ - | \$ - | \$ - | \$ 33,482 |

| Other Financing Sources | | | | | |
|--------------------------------------|---|------------------|-------------|-------------|---------------------|
| 391.00 | Proceeds of General Fixed Asset Disposition | \$ 82,580 | \$ - | \$ - | \$ 100,000 |
| 392.00 | Interfund Operating Transfers | | | | 3,579,605 |
| 393.00 | Proceeds of General Long-Term Debt | | | | - |
| 394.00 | Proceeds of Short-Term Debt | | | | - |
| 395.00 | Refunds of Prior Year Expenditures | | | | 43,116 |
| Total Other Financing Sources | | \$ 82,580 | \$ - | \$ - | \$ 3,722,721 |

| | | | | |
|-----------------------|---------------------|-------------|-------------|----------------------|
| TOTAL REVENUES | \$ 3,596,986 | \$ - | \$ - | \$ 11,859,026 |
|-----------------------|---------------------|-------------|-------------|----------------------|

| EXPENDITURES | | Governmental Funds | | | |
|--------------------------|--|--------------------|--|---------------------|--------------|
| General Government | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service |
| 400.00 | Legislative (Governing) Body | \$ 12,917 | \$ - | \$ - | \$ - |
| 401.00 | Executive (Manager or Mayor) | 74,891 | | | |
| 402.00 | Auditing Services/Financial Administration | 51,377 | | | |
| 403.00 | Tax Collection | 900 | | | |
| 404.00 | Solicitor/Legal Services | 247,394 | | | |
| 405.00 | Secretary/Clerk | 191,534 | | | |
| 406.00 | Other General Government Administration | 73,563 | | | |
| 407.00 | IT-Networking Services-Data Processing | | | | |
| 408.00 | Engineering Services | 393,589 | | | |
| 409.00 | General Government Buildings and Plant | 3,828,936 | | | |
| Total General Government | | \$ 4,875,101 | \$ - | \$ - | \$ - |

| Public Safety | | | | | |
|---------------------|---------------------------------------|------------|------------|------|------|
| 410.00 | Police | \$ 602,257 | \$ - | \$ - | \$ - |
| 411.00 | Fire | 41,079 | 122,173 | | |
| 412.00 | Ambulance/Rescue | | 107,624 | | |
| 413.00 | UCC and Code Enforcement | 152,297 | | | |
| 414.00 | Planning and Zoning | 34,376 | | | |
| 415.00 | Emergency Management & Communications | | | | |
| 416.00 | Militia and Armories | | | | |
| 417.00 | Examination of Licensed Occupations | | | | |
| 418.00 | Public Scales (weights and measures) | | | | |
| 419.00 | Other Public Safety | | | | |
| Total Public Safety | | \$ 830,009 | \$ 229,797 | \$ - | \$ - |

| Health and Human Services | | | | | |
|---------------------------|---------------------------|----------|------|------|------|
| 420.00- | | | | | |
| 425.00 | Health and Human Services | \$ 8,879 | \$ - | \$ - | \$ - |

| Public Works - Sanitation | | | | | |
|---------------------------------|---|------------|------|------|------|
| 426.00 | Recycling Collection and Disposal | \$ 72,986 | \$ - | \$ - | \$ - |
| 427.00 | Solid Waste Collection and Disposal (trash) | 439,379 | | | |
| 428.00 | Weed Control | | | | |
| 429.00 | Wastewater/Sewage Collection and Treatment | | | | |
| Total Public Works - Sanitation | | \$ 512,365 | \$ - | \$ - | \$ - |

| EXPENDITURES | | Proprietary Funds | | Fiduciary Fund | Total |
|--------------------------|--|-------------------|------------------|------------------|-----------------|
| | | Enterprise | Internal Service | Trust and Agency | Memorandum Only |
| General Government | | | | | |
| 400.00 | Legislative (Governing) Body | \$ - | | \$ - | \$ 12,917 |
| 401.00 | Executive (Manager or Mayor) | | | | 74,891 |
| 402.00 | Auditing Services/Financial Administration | | | | 51,377 |
| 403.00 | Tax Collection | | | | 900 |
| 404.00 | Solicitor/Legal Services | | | | 247,394 |
| 405.00 | Secretary/Clerk | | | | 191,534 |
| 406.00 | Other General Government Administration | | | | 73,563 |
| 407.00 | IT-Networking Services-Data Processing | | | | - |
| 408.00 | Engineering Services | | | | 393,689 |
| 409.00 | General Government Buildings and Plant | | | | 3,828,936 |
| Total General Government | | \$ - | \$ - | \$ - | \$ 4,875,101 |

| Public Safety | | | | | |
|---------------------|---------------------------------------|------|------|------|--------------|
| 410.00 | Police | \$ - | \$ - | \$ - | \$ 602,257 |
| 411.00 | Fire | | | | 122,173 |
| 412.00 | Ambulance/Rescue | | | | 107,624 |
| 413.00 | UCC and Code Enforcement | | | | 152,287 |
| 414.00 | Planning and Zoning | | | | 34,376 |
| 415.00 | Emergency Management & Communications | | | | - |
| 416.00 | Militia and Amorties | | | | - |
| 417.00 | Examination of Licensed Occupations | | | | - |
| 418.00 | Public Scales (weights and measures) | | | | - |
| 419.00 | Other Public Safety | | | | - |
| Total Public Safety | | \$ - | \$ - | \$ - | \$ 1,059,806 |

| Health and Human Services | | | | | |
|---------------------------|---------------------------|------|------|------|----------|
| 420.00 | | | | | |
| 425.00 | Health and Human Services | \$ - | \$ - | \$ - | \$ 8,879 |

| Public Works - Sanitation | | | | | |
|---------------------------------|---|--------------|------|------|--------------|
| 426.00 | Recycling Collection and Disposal | \$ - | \$ - | \$ - | \$ - |
| 427.00 | Solid Waste Collection and Disposal (trash) | | | | 439,379 |
| 428.00 | Weed Control | | | | - |
| 429.00 | Wastewater/Sewage Collection and Treatment | 3,445,038 | | | 3,445,038 |
| Total Public Works - Sanitation | | \$ 3,445,038 | \$ - | \$ - | \$ 3,957,403 |

| EXPENDITURES | | Governmental Funds | | | |
|---|--|--------------------|--|---------------------|--------------|
| | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service |
| Public Works - Highways and Streets | | | | | |
| 430.00 | General Services- Administration | \$ 149,519 | | \$ - | \$ - |
| 431.00 | Cleaning of Streets and Gutters | 5,694 | | | |
| 432.00 | Winter Maintenance- Snow Removal | 18,345 | 52,740 | | |
| 433.00 | Traffic Control Devices | - | 3,956 | | |
| 434.00 | Street Lighting | | 18,205 | | |
| 435.00 | Sidewalks and Crosswalks | | | | |
| 436.00 | Storm Sewers and Drains | | | | |
| 437.00 | Repairs of Tools and Machinery | 4,670 | | | |
| 438.00 | Maintenance & Repairs of Roads & Bridges | 14,858 | 2,587 | | |
| 439.00 | Highway Construction and Rebuilding Projects | 371,814 | 169,877 | | |
| Total Public Works - Highways and Streets | | \$ 564,700 | \$ 247,185 | \$ - | \$ - |

| Public Works - Other Services | | | | | |
|-----------------------------------|-------------------------------|------|------|------|------|
| 440.00 | Airports | \$ - | \$ - | \$ - | \$ - |
| 441.00 | Cemeteries | | | | |
| 442.00 | Electric System | | | | |
| 443.00 | Gas System | | | | |
| 444.00 | Markets | | | | |
| 445.00 | Parking | | | | |
| 446.00 | Storm Water and Flood Control | | | | |
| 447.00 | Transit System | | | | |
| 448.00 | Water System | | | | |
| 449.00 | Water Transport and Terminals | | | | |
| Total Public Works-Other Services | | \$ - | \$ - | \$ - | \$ - |

| Culture and Recreation | | | | | |
|------------------------------|------------------------------------|-----------|------|------|------|
| 451.00 | Culture- Recreation Administration | \$ 44,315 | \$ - | \$ - | \$ - |
| 452.00 | Participant Recreation | | | | |
| 453.00 | Spectator Recreation | | | | |
| 454.00 | Parks | | | | |
| 455.00 | Shade Trees | | | | |
| 456.00 | Libraries | 6,794 | | | |
| 457.00 | Civil and Military Celebrations | | | | |
| 458.00 | Senior Citizens' Centers | | | | |
| 459.00 | All Other Culture and Recreation | | | | |
| Total Culture and Recreation | | \$ 51,109 | \$ - | \$ - | \$ - |

| EXPENDITURES | | Proprietary Funds | | Fiduciary Fund | Total |
|---|--|-------------------|------------------|------------------|-----------------|
| Public Works - Highways and Streets | | Enterprise | Internal Service | Trust and Agency | Memorandum Only |
| 430.00 | General Services- Administration | \$ - | \$ - | \$ - | \$ 149,519 |
| 431.00 | Cleaning of Streets and Gutters | | | | 5,694 |
| 432.00 | Winter Maintenance- Snow Removal | | | | 71,085 |
| 433.00 | Traffic Control Devices | | | | 3,956 |
| 434.00 | Street Lighting | | | | 18,205 |
| 435.00 | Sidewalks and Crosswalks | | | | - |
| 436.00 | Storm Sewers and Drains | | | | - |
| 437.00 | Repairs of Tools and Machinery | | | | 4,870 |
| 438.00 | Maintenance & Repairs of Roads & Bridges | | | | 17,245 |
| 439.00 | Highway Construction and Rebuilding Projects | | | | 541,491 |
| Total Public Works - Highways and Streets | | \$ - | \$ - | \$ - | \$ 811,865 |

| Public Works - Other Services | | | | | |
|-----------------------------------|-------------------------------|------------|------|------|------------|
| 440.00 | Airports | \$ - | \$ - | \$ - | \$ - |
| 441.00 | Cemeteries | | | | - |
| 442.00 | Electric System | | | | - |
| 443.00 | Gas System | | | | - |
| 444.00 | Markets | | | | - |
| 445.00 | Parking | | | | - |
| 446.00 | Storm Water and Flood Control | | | | - |
| 447.00 | Transit System | | | | - |
| 448.00 | Water System | 683,721 | | | 683,721 |
| 449.00 | Water Transport and Terminals | | | | - |
| Total Public Works-Other Services | | \$ 683,721 | \$ - | \$ - | \$ 683,721 |

| Culture and Recreation | | | | | |
|------------------------------|------------------------------------|------|------|------|-----------|
| 451.00 | Culture- Recreation Administration | \$ - | \$ - | \$ - | \$ 44,315 |
| 452.00 | Participant Recreation | | | | - |
| 453.00 | Spectator Recreation | | | | - |
| 454.00 | Parks | | | | - |
| 455.00 | Shade Trees | | | | - |
| 456.00 | Libraries | | | | 6,794 |
| 457.00 | Civil and Military Celebrations | | | | - |
| 458.00 | Senior Citizens' Centers | | | | - |
| 450.00 | All Other Culture and Recreation | | | | - |
| Total Culture and Recreation | | \$ - | \$ - | \$ - | \$ 51,109 |

| | |
|---------------------|---------------------------|
| EXPENDITURES | Governmental Funds |
|---------------------|---------------------------|

| Community Development | | | | | |
|------------------------------------|-----------------------------------|-----------|----------|-----------|----------|
| 461.00 | Conservation of Natural Resources | \$ | - | \$ | - |
| 462.00 | Community Development and Housing | | | | |
| 463.00 | Economic Development | | | | |
| 464.00 | Economic Opportunity | | | | |
| 465.00- | | | | | |
| 469.00 | All Other Community Development | | | | |
| Total Community Development | | \$ | - | \$ | - |

| Debt Service | | General Fund | Special Revenue (Including State Liquid Fuels) | Capital Projects | Debt Service |
|---------------------------|---|--------------|--|---------------------|--------------|
| 471.00 | Debt Principal (short-term and long-term) | \$ | 118,728 | \$ | - |
| 472.00 | Debt Interest (short-term and long-term) | | 276,291 | | |
| 475.00 | Fiscal Agent Fees | | 500 | | |
| Total Debt Service | | \$ | 395,517 | \$ | - |

| Employer Paid Benefits & Withholding Items | | | | | |
|---|---|-----------|----------------|-----------|----------|
| 481.00 | Employer Paid Withholding Taxes and Unemployment Compensation | \$ | 72,823 | \$ | - |
| 482.00 | Judgments and Losses | | | | |
| 483.00 | Pension/Retirement Fund Contributions | | 115,379 | | |
| 484.00 | Worker Compensation Insurance | | 69,778 | | |
| 487.00 | Group Insurance and Other Benefits | | 445,628 | | |
| Total Employer Paid Benefits & Withholding Items | | \$ | 694,608 | \$ | - |

| Insurance | | | | | |
|-----------|---------------------------------|----|--------|----|---|
| 486.00 | Insurance, Casualty, and Surety | \$ | 75,384 | \$ | - |

| Unclassified Operating Expenditures | | | | | |
|--|--|-----------|---------------|-----------|----------|
| 488.00 | Fiduciary Fund Benefits and Refunds Paid | | | | |
| 489.00 | All Other Unclassified Expenditures | | 14,272 | | |
| Total Unclassified Operating Expenditures | | \$ | 14,272 | \$ | - |

| Other Financing Uses | | | | | |
|-----------------------------------|-------------------------------|-----------|----------|-----------|---------------|
| 491.00 | Refund of Prior Year Revenues | \$ | - | \$ | - |
| 492.00 | Interfund Operating Transfers | | 20,250 | | 3,559,355 |
| 493.00 | All Other Financing Uses | | | | |
| Total Other Financing Uses | | \$ | - | \$ | 20,250 |

| | | | | | | | | |
|---------------------------|-----------|------------------|-----------|----------------|-----------|------------------|-----------|----------|
| TOTAL EXPENDITURES | \$ | 8,021,944 | \$ | 497,212 | \$ | 3,559,355 | \$ | - |
|---------------------------|-----------|------------------|-----------|----------------|-----------|------------------|-----------|----------|

| | | | | | | | | |
|--|-----------|------------------|-----------|---------------|-----------|--------------------|-----------|----------|
| EXCESS/DEFICIT OF REVENUES OVER EXPENDITURES | \$ | (405,607) | \$ | 30,606 | \$ | (3,441,570) | \$ | - |
|--|-----------|------------------|-----------|---------------|-----------|--------------------|-----------|----------|

| EXPENDITURES | Proprietary Funds | Fiduciary Fund | Total |
|--------------|-------------------|----------------|-------|
|--------------|-------------------|----------------|-------|

| Community Development | | | | | |
|-----------------------------|-----------------------------------|------|------|------|------|
| 461.00 | Conservation of Natural Resources | \$ - | \$ - | \$ - | \$ - |
| 462.00 | Community Development and Housing | | | | |
| 463.00 | Economic Development | | | | |
| 464.00 | Economic Opportunity | | | | |
| 465.00- | | | | | |
| 469.00 | All Other Community Development | | | | |
| Total Community Development | | \$ - | \$ - | \$ - | \$ - |

| Debt Service | | Enterprise | Internal Service | Trust and Agency | Memorandum Only |
|--------------------|---|------------|------------------|------------------|-----------------|
| 471.00 | Debt Principal (short-term and long-term) | | \$ - | \$ - | \$ 118,726 |
| 472.00 | Debt Interest (short-term and long-term) | | | | 276,291 |
| 475.00 | Fiscal Agent Fees | | | | 500 |
| Total Debt Service | | \$ - | \$ - | \$ - | \$ 395,517 |

| Employer Paid Benefits & Withholding Items | | | | | |
|--|---|------|------|------|------------|
| 481.00 | Employer Paid Withholding Taxes and Unemployment Compensation | \$ - | \$ - | \$ - | \$ 72,823 |
| 482.00 | Judgments and Losses | | | | - |
| 483.00 | Pension/Retirement Fund Contributions | | | | 115,379 |
| 484.00 | Worker Compensation Insurance | | | | 69,778 |
| 487.00 | Group Insurance and Other Benefits | | | | 446,628 |
| Total Employer Paid Benefits & Withholding Items | | \$ - | \$ - | \$ - | \$ 694,606 |

| Insurance | | | | | |
|-----------|---------------------------------|------|------|------|-----------|
| 486.00 | Insurance, Casualty, and Surety | \$ - | \$ - | \$ - | \$ 75,384 |

| Unclassified Operating Expenditures | | | | | |
|---|--|------|------|------|-----------|
| 488.00 | Fiduciary Fund Benefits and Refunds Paid | | | | \$ - |
| 489.00 | All Other Unclassified Expenditures | | | | 14,272 |
| Total Unclassified Operating Expenditures | | \$ - | \$ - | \$ - | \$ 14,272 |

| Other Financing Uses | | | | | |
|----------------------------|-------------------------------|------|------|------|--------------|
| 491.00 | Refund of Prior Year Revenues | \$ - | \$ - | \$ - | \$ - |
| 492.00 | Interfund Operating Transfers | | | | 3,579,605 |
| 493.00 | All Other Financing Uses | | | | - |
| Total Other Financing Uses | | \$ - | \$ - | \$ - | \$ 3,579,605 |

| | | | | |
|---------------------------|--------------|------|------|---------------|
| TOTAL EXPENDITURES | \$ 4,128,759 | \$ - | \$ - | \$ 16,207,270 |
|---------------------------|--------------|------|------|---------------|

| | | | | |
|---|--------------|------|------|----------------|
| EXCESS/DEFICIT OF REVENUES OVER EXPENDITURES | \$ (631,773) | \$ - | \$ - | \$ (4,348,244) |
|---|--------------|------|------|----------------|

DEBT STATEMENT

| ↓ Type | Purpose ↓ | Bond(B) Note(N) Capital Lease (C) | Issue Date (year) | Maturity Date (year) | Original Amount of Issue | Outstanding Beginning of Year(1) | Principal Incurred This Year (Additions) | Principal Paid this Year | Current Year Accretion of Compound Interest Bonds | Outstanding Year End (1) | Plus(less) Unamortized Premium (Discount) | Total Balance |
|---|-----------|--|-------------------------|----------------------------|--------------------------------|--|--|-----------------------------|--|-----------------------------|--|---------------|
| General Obligation Bonds and Notes | | | | | | | | | | | | |
| General Obligation Bond Series 2017 | | N | 2017 | 2046 | \$ 7,500,000 | \$ 7,500,000 | | \$ 25,000 | | \$ 7,475,000 | | \$ 7,475,000 |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| Revenue Bonds and Notes | | | | | | | | | | | | |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| Lease Rental Debt/General Leases | | | | | | | | | | | | |
| Ford Motor Credit Co. Lease Police Car 4 | | C | 2015 | 2019 | 42,268 | 12,394 | | 11,411 | | \$ 983 | | \$ 983 |
| Ford Motor Credit Co. Lease Road Dept Trucks (2) | | C | 2015 | 2020 | 150,918 | 71,195 | | 30,904 | | 40,291 | | 40,291 |
| Interceptor Utility Vehicle Lease | | C | 2016 | 2019 | 28,257 | 14,702 | | 9,650 | | 5,052 | | 5,052 |
| Frelighliner Trash Truck | | C | 2017 | 2023 | 212,053 | 212,053 | | 40,049 | | 172,004 | | 172,004 |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| Other | | | | | | | | | | | | |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |
| | | | | | | | | | | - | | - |

| | |
|-----------------------------------|---------------------|
| Total bonds and notes outstanding | \$ 7,475,000 |
| Capitalized lease obligations | 218,330 |
| Other debt | - |
| TOTAL OUTSTANDING DEBT | \$ 7,693,330 |

STATEMENT OF CAPITAL EXPENDITURES

| Category | Capital Purchases | Capital Construction | Total |
|------------------------|-------------------|----------------------|---------|
| Community Development | \$ - | \$ - | \$ - |
| Electric | | | - |
| Fire | | | - |
| Gas System | | | - |
| General Government | 198,990 | | 198,990 |
| Health | | | - |
| Housing | | | - |
| Libraries | | | - |
| Mass Transit | | | - |
| Parks | | | - |
| Police | | | - |
| Recreation | | | - |
| Sewer | | | - |
| Solid Waste | | - | - |
| Streets/Highways | | 534,103 | 534,103 |
| Water | | | - |
| Other (Please Specify) | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |
| | | | - |

| | |
|-----------------------------------|-------------------|
| TOTAL CAPITAL EXPENDITURES | \$ 733,093 |
|-----------------------------------|-------------------|

EMPLOYEE COMPENSATION

| | |
|---|--------------|
| Total salaries, wages, commissions, etc. paid this year (including all employees and elected officials)* | \$ 1,171,466 |
|---|--------------|

*Use income from box 16 of the W-3 Statement

KIMMEL, LORAH & ASSOCIATES, LLP

CERTIFIED PUBLIC ACCOUNTANTS

May 31, 2019

INDEPENDENT AUDITOR'S REPORT

To the: Supervisors of Valley Township
President Judge of the Court of Common Pleas
Department of Community and Economic Development

We have audited the accompanying financial statements of Valley Township, Chester County, Pennsylvania, as of December 31, 2018 which comprise the balance sheet for each fund type as of December 31, 2018 and the related statement of revenues and expenditures for the year then ended.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with the financial reporting provisions prescribed or permitted by the Department of Community and Economic Development of the Commonwealth of Pennsylvania (DCED). Management is also responsible for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Township's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Township's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

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Oaks Corporate Center, 400 Cresson Blvd, Suite 210
PO Box 979, Oaks, PA 19456

www.klacpa.net 610-666-0450 Fax 610-666-1950

Valley Wastewater Financials

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We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the balance sheet of each of the fund types of Valley Township, Chester County, Pennsylvania as of December 31, 2018 and the revenues it received and the expenditures it paid for the year then ended, in accordance with the financial reporting provisions of prescribed or permitted by the Department of Community and Economic Development of the Commonwealth of Pennsylvania (DCED) as described in the Basis of Accounting paragraph below.

Basis of Accounting

We draw attention to the basis of accounting, which is described in the second paragraph of this report. The financial statements are prepared on the basis of the financial reporting provisions prescribed or permitted by the DCED, which is a basis of accounting other than accounting principles generally accepted in the United States of America, to comply with the requirements of the DCED. As permitted by the DCED, Valley Township, Chester County, Pennsylvania, prepares its annual financial statements on the cash basis of accounting; consequently, certain revenues and related assets are recognized when received rather than when earned and certain expenditures are recognized when paid rather than when a liability is incurred. Additionally, in accordance with the prescribed accounting practices permitted by the DCED, Valley Township does not include footnote disclosures. Our opinion is not modified with respect to this matter.

Restriction on Use

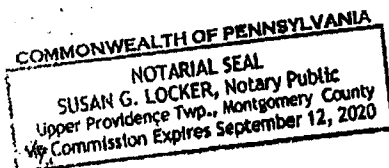
This report is intended solely for the information and use of the governing body and management of Valley Township, Chester County, Pennsylvania; for filing with the Department of Community and Economic Development and the County Courthouse; and is not intended to be and should not be used by anyone other than these specified parties.

Kimmel, Lorah & Associates, LLP
Certified Public Accountants

Subscribed and sworn to before

me this 31 day of May 2019.

Signed Susan G. Locker



7. OPERATING EXPENSES

DRAFT

Statement of Revenues & Expenditures
Valley Township
For Period Ending 12/31/2019
SEWER FUND

| ACCOUNT DESCRIPTION | CURRENT YEAR BUDGET | YEAR-TO-DATE ACTUAL | PRIOR YEAR BUDGET | YEAR-TO-DATE ACTUAL |
|--|---------------------|---------------------|---------------------|---------------------|
| 08.332.1000 RESTITUTION | | 99,575.32 | | |
| 08.341.0000 Interest Earnings | 8,000.00 | 3,191.70 | 8,500.00 | 8,346.27 |
| 08.350.0400 PA DCED GRANT | | | 50,000.00 | |
| 08.354.0400 PA DCED GRANT | 50,000.00 | | | |
| 08.364.1000 Sewerage Charges | | | 2,670,000.00 | 2,770,573.75 |
| 08.364.1100 CONNECTION FEES | 5,000.00 | 972.92 | | |
| 08.364.1200 SEWERAGE CHARGES | 2,640,000.00 | 2,663,203.34 | | |
| 08.364.1209 Connection Fees | | | 10,000.00 | 3,829.22 |
| 08.364.1210 SEWERAGE PENALTY CHARGES | 55,250.00 | 64,336.75 | | |
| 08.364.1240 Conveyance fees | 15,000.00 | 15,444.15 | 14,000.00 | 20,976.41 |
| 08.364.1900 Miscellaneous | | | | 0.10 |
| 08.391.2000 INSURANCE COMPENSATION FOR LOSS | | | | 65,900.00 |
| 08.392.0810 Interfund Transfer - From CSB SF MM | | 237,623.54 | | |
| 08.392.0830 TRANSFER FROM PLGIT SEWER ACCT | | 35,116.77 | | |
| Totals for : | | | | |
| 08 (- 08) | 2,773,250.00 | 3,119,464.49 | 2,752,500.00 | 2,869,625.75 |
| Total Revenues | 2,773,250.00 | 3,119,464.49 | 2,752,500.00 | 2,869,625.75 |
| 08.427.4300 Sewage Treatment Costs | | 237,882.94 | | |
| 08.429.1100 SALARIES - WAGES SECRETARIES | | | 31,065.00 | 56,809.41 |
| 08.429.1120 Salary - Administration | 40,045.00 | 44,201.80 | | |
| 08.429.1400 Salary - Public Works | 28,000.00 | 10,358.88 | | |
| 08.429.1800 Salary - Overtime | 8,400.00 | 8,665.21 | | |
| 08.429.2100 OFFICE SUPPLIES | | 489.04 | 3,000.00 | 1,564.41 |
| 08.429.2150 | | | | |

Statement of Revenues & Expenditures
Valley Township
For Period Ending 12/31/2019
SEWER FUND

| ACCOUNT DESCRIPTION | CURRENT YEAR BUDGET | YEAR-TO-DATE ACTUAL | PRIOR YEAR BUDGET | YEAR-TO-DATE ACTUAL |
|---|---------------------|---------------------|-------------------|---------------------|
| Postage | 3,000.00 | 1,451.49 | | |
| 08.429.2200 BANK CHARGES | | | 45.00 | |
| 08.429.2270 Sanitation Supplies | 2,300.00 | 1,647.80 | | |
| 08.429.2300 TELEPHONE | | | 3,800.00 | 3,138.64 |
| 08.429.2390 Diesel Fuel for Emergency Generators | 900.00 | 823.03 | | |
| 08.429.2391 Propane for Emergency Generators | 1,600.00 | 234.64 | | |
| 08.429.3100 SOLICITOR FEES | | 203.50 | | |
| 08.429.3109 ENGINEERING | | | 30,000.00 | 34,016.25 |
| 08.429.3110 Audit Services | 3,423.00 | 5,812.67 | | |
| 08.429.3130 Engineering | 25,000.00 | 21,148.25 | | |
| 08.429.3140 LEGAL FEES | | 138.75 | | |
| 08.429.3200 LEGAL | | | | 92.50 |
| 08.429.3210 Telephone | 3,150.00 | 3,182.32 | | |
| 08.429.3300 AUDIT | | | 4,800.00 | 32,817.24 |
| 08.429.3400 FACILITY & OFFICE EXPENSE | | | 47,895.00 | |
| 08.429.3410 BENEFIT ALLOCATION | | | 64,805.00 | |
| 08.429.3420 Printing | 2,800.00 | 300.00 | | |
| 08.429.3610 ELECTRICITY | 16,500.00 | 15,874.49 | | |
| 08.429.3720 Maint & Repair Contracted Svc | 34,689.00 | 68,700.47 | | |
| 08.429.3800 Sewage Treatment Costs | 2,600,000.00 | 2,728,345.98 | | |
| 08.429.4300 SEWAGE TREATMENT COSTS | | | 2,338,000.00 | 3,183,866.04 |
| 08.429.4500 ELECTRICITY | | | 15,100.00 | 17,198.06 |
| 08.429.4600 MAINTENANCE & REPAIRS | | | 35,000.00 | 72,992.61 |
| 08.429.4610 | | | | |

Statement of Revenues & Expenditures
Valley Township
For Period Ending 12/31/2019
SEWER FUND

| ACCOUNT DESCRIPTION | CURRENT YEAR BUDGET | YEAR-TO-DATE ACTUAL | PRIOR YEAR BUDGET | YEAR-TO-DATE ACTUAL |
|--|------------------------|------------------------|----------------------|------------------------|
| ROAD CREW SALARIES | | | 65,770.00 | 37,568.12 |
| 08.429.4620 | | | | |
| I&I | | | 25,000.00 | 625.00 |
| 08.429.4630 | | | | |
| UPGRADE TO SYSTEM - PA DCED GRANT PROJECTS | | | 50,000.00 | |
| 08.429.4700 | | | | |
| SUPPLIES & EQUIPMENT | | | 6,000.00 | 4,348.51 |
| 08.429.4900 | | | | |
| MISCELLANEOUS | | | 950.00 | |
| 08.429.6100 | | | | |
| CAPITAL CONST. PA DCED GRANT | 110,500.00 | | | |
| 08.482.4100 | | | | |
| Judgements & Damages | | 2,000.00 | | |
| 08.491.0000 | | | | |
| REFUND OF PRIOR YEARS REVENUES | | 1,058.20 | | |
| 08.492.0100 | | | | |
| Interfund Transfer to Gen Fund - Benefit Allocati | 60,406.00 | | | |
| 08.492.0800 | | | | |
| INTERFUND TRANSFER - SEWER FUND - NEW BANK ACCT | | 272,740.31 | | |
| Is for : | | | | |
| (- 08) | 2,940,713.00 | 3,425,259.77 | 2,721,230.00 | 3,445,036.79 |
| Total Expenditures | 2,940,713.00 | 3,425,259.77 | 2,721,230.00 | 3,445,036.79 |
| Excess of Revenues over Expenditures for Report | -167,463.00 | -305,795.28 | 31,270.00 | -575,411.04 |

VALLEY TOWNSHIP

2019 BUDGET

OTHER FUNDS

December 3, 2018

| VALLEY TOWNSHIP | | | | | | |
|--------------------------------|----------------------------------|--------------------|--------------------|------------------------------|----------|--------------------|
| 2019 SEWER FUND BUDGET | | | | | | |
| FUND 08 | | | | | | |
| | | 11/07/18 | 2018 | | | 2019 |
| SEWER FUND REVENUES | | | BUDGET | | | BUDGET |
| ACCT. # | | | | | | Increase |
| 08. | | | | | | (Decrease) |
| | Balance Forward | | | | | \$167,463 |
| 341.0000 | INTEREST EARNINGS | \$6,586 | \$8,500 | | | \$8,000 |
| 354.0400 | PA DCED GRANT | | \$50,000 | | | \$50,000 |
| 364.1200 | SEWERAGE CHARGES | \$2,591,105 | \$2,670,000 | | | \$2,640,000 |
| 364.1210 | SEWERAGE PENALTY CHARGES | \$53,972 | | | | \$55,250 |
| 364.1100 | CONNECTION FEES | \$3,829 | \$10,000 | | | \$5,000 |
| 364.1240 | CONVEYANCE FEES | \$20,038 | \$14,000 | | | \$15,000 |
| 389.0000 | MISCELLANEOUS REVENUES | \$0 | | | | \$0 |
| | TOTAL REVENUES | \$2,675,529 | \$2,752,500 | | | \$2,940,713 |
| | | | | | | \$188,213 |
| SEWER FUND EXPENDITURES | | | | | | |
| 429.1120 | SALARY - ADMINISTRATIVE | \$47,801 | \$31,065 | | | \$40,045 |
| | | | | Senior Clerk | \$16,126 | |
| | | | | Clerk | \$13,311 | |
| | | | | Asst Sec-Treas | \$4,576 | |
| | | | | Sec-Treas | \$6,032 | |
| 429.1400 | SALARY - PUBLIC WORKS | \$32,555 | \$65,770 | | | \$28,000 |
| 429.1800 | SALARY - OVERTIME | | | | | \$8,400 |
| | | | | Clerks | \$900 | |
| | | | | Public Works | \$7,500 | |
| 429.2150 | POSTAGE | \$1,564 | \$3,000 | 2 Utility billings | | \$3,000 |
| 429.2390 | DIESEL FUEL FOR EMERG GENERATORS | | | | | \$900 |
| 429.2391 | PROPANE FOR EMERG GENERATORS | | | | | \$1,600 |
| 429.3420 | PRINTING | | | 2 Utility billings | | \$2,800 |
| 429.3900 | BANK CHARGES | | \$45 | | | |
| 429.3210 | TELEPHONE | \$2,880 | \$3,800 | | | \$3,150 |
| 429.3130 | ENGINEERING | \$30,630 | \$30,000 | | | \$25,000 |
| 429.3100 | SOLICITOR FEES | \$93 | \$0 | | | \$0 |
| 429.3110 | AUDITORS | \$6,167 | \$4,800 | | | \$3,423 |
| 429.3800 | SEWAGE TREATMENT COSTS | \$2,674,977 | \$2,338,000 | | | \$2,600,000 |
| 429.3610 | ELECTRICITY | \$13,238 | \$15,100 | | | \$16,500 |
| 429.3720 | MAINT & REPAIR SVC - CONTRACTED | \$54,669 | \$60,000 | | | \$34,689 |
| | | | | M&B | \$10,282 | |
| | | | | M & S Annual Pump Station | \$4,467 | |
| | | | | I&I Clean & Televisi Hayti E | \$19,940 | |
| 429.6100 | CAPITAL CONST. PA DCED GRANT | | \$50,000 | | | \$110,500 |
| 429.2270 | SANITATION SUPPLIES | \$2,129 | \$6,000 | | | \$2,300 |
| 489.0000 | MISCELLANEOUS EXPENSES | | \$950 | | | |
| | | | | | | (\$950) |
| | DUE TO GENERAL FUND | | \$64,805 | | | |
| 492.0100 | BENEFIT ALLOCATION | | \$60,500 | | | \$60,406 |
| 492.0110 | FACILITY & OFFICE EXPENSE | | | | | \$0 |
| | TOTAL EXPENDITURES | \$2,866,701 | \$2,733,835 | | | \$2,940,713 |
| | | | | | | \$206,878 |
| FUND 08 | NET SURPLUS (DEFICIT) | (\$191,172) | \$18,665 | | | \$0 |

| 2019 SEWER FUND BUDGET | | | | | | |
|--------------------------------------|----------------------------------|--------------------|--------------------|------------------------------|--------------------|------------------|
| FUND 08 | | | | | | |
| | | 11/07/18 | 2018 | | 2019 | Increase |
| SEWER FUND REVENUES | | | BUDGET | | BUDGET | (Decrease) |
| ACCT. # | | | | | | |
| 08. | Balance Forward | | | | \$167,463 | |
| 341.0000 | INTEREST EARNINGS | \$6,586 | \$8,500 | | \$8,000 | (\$500) |
| 354.0400 | PA DCED GRANT | | \$50,000 | | \$50,000 | \$0 |
| 364.1200 | SEWERAGE CHARGES | \$2,591,105 | \$2,670,000 | | \$2,640,000 | (\$30,000) |
| 364.1210 | SEWERAGE PENALTY CHARGES | \$53,972 | | | \$55,250 | \$5,250 |
| 364.1100 | CONNECTION FEES | \$3,829 | \$10,000 | | \$5,000 | (\$5,000) |
| 364.1240 | CONVEYANCE FEES | \$20,038 | \$14,000 | | \$15,000 | \$1,000 |
| 389.0000 | MISCELLANEOUS REVENUES | \$0 | | | | \$0 |
| TOTAL REVENUES | | \$2,675,529 | \$2,752,500 | | \$2,940,713 | \$188,213 |
| SEWER FUND EXPENDITURES | | | | | | |
| 429.1120 | SALARY - ADMINISTRATIVE | \$47,801 | \$31,065 | | \$40,045 | \$8,980 |
| | | | | Senior Clerk | \$16,126 | |
| | | | | Clerk | \$13,311 | |
| | | | | Asst Sec-Treas | \$4,576 | |
| | | | | Sec-Treas | \$6,032 | |
| 429.1400 | SALARY - PUBLIC WORKS | \$32,555 | \$65,770 | | \$28,000 | (\$37,770) |
| 429.1800 | SALARY - OVERTIME | | | | \$8,400 | |
| | | | | Clerks | \$900 | |
| | | | | Public Works | \$7,500 | |
| 429.2150 | POSTAGE | \$1,564 | \$3,000 | 2 Utility billings | | \$3,000 |
| 429.2390 | DIESEL FUEL FOR EMERG GENERATORS | | | | \$900 | |
| 429.2391 | PROPANE FOR EMERG GENERATORS | | | | \$1,600 | |
| 429.3420 | PRINTING | | | 2 Utility billings | | \$2,800 |
| 429.3900 | BANK CHARGES | | \$45 | | | (\$45) |
| 429.3210 | TELEPHONE | \$2,880 | \$3,800 | | \$3,150 | (\$650) |
| 429.3130 | ENGINEERING | \$30,630 | \$30,000 | | \$25,000 | (\$5,000) |
| 429.3100 | SOLICITOR FEES | \$93 | \$0 | | | \$0 |
| 429.3110 | AUDITORS | \$6,167 | \$4,800 | | \$3,423 | (\$1,377) |
| 429.3800 | SEWAGE TREATMENT COSTS | \$2,674,977 | \$2,338,000 | | \$2,600,000 | \$262,000 |
| 429.3610 | ELECTRICITY | \$13,238 | \$15,100 | | \$16,500 | \$1,400 |
| 429.3720 | MAINT & REPAIR SVC - CONTRACTED | \$54,669 | \$60,000 | | \$34,689 | (\$25,311) |
| | | | | M&B | \$10,282 | |
| | | | | M & S Annual Pump Station | \$4,467 | |
| | | | | I&I Clean & Televisi Hayti E | \$19,940 | |
| 429.6100 | CAPITAL CONST. PA DCED GRANT | | \$50,000 | | \$110,500 | \$60,500 |
| 429.2270 | SANITATION SUPPLIES | \$2,129 | \$6,000 | | \$2,300 | (\$3,700) |
| 489.0000 | MISCELLANEOUS EXPENSES | | \$950 | | | (\$950) |
| DUE TO GENERAL FUND | | | \$64,805 | | | |
| 492.0100 | BENEFIT ALLOCATION | | \$60,500 | | \$60,406 | (\$94) |
| 492.0110 | FACILITY & OFFICE EXPENSE | | | | | \$0 |
| TOTAL EXPENDITURES | | \$2,866,701 | \$2,733,835 | | \$2,940,713 | \$206,878 |
| FUND 08 NET SURPLUS (DEFICIT) | | (\$191,172) | \$18,665 | | \$0 | |

| VALLEY TOWNSHIP S:\water industry\PA American - Valley\Valley Water\GF Request\Info - Water to AUS 4-7-20\2019 Budget - Other Funds DEC 3 (1) | | | | | | | | | |
|---|---|--------------------|--------------------|-----------------------------|--------------------|---------------------|-------------|-------------|--|
| 2019 SEWER FUND BUDGET | | | | | | | | | |
| FUND 08 | | | | | | | | | |
| OLD ACCT | SEWER FUND REVENUES | 11/07/18 | 2018 BUDGET | | 2019 BUDGET | Increase (Decrease) | | | |
| ACCT. # | 08. | | | | | | | | |
| | Balance Forward | | | | \$167,463 | | | | |
| | 341.0000 INTEREST EARNINGS | \$6,586 | \$8,500 | | \$8,000 | (\$500) | -5.9% | | |
| | 354.0400 PA DCED GRANT | | \$50,000 | | \$50,000 | \$0 | 0.0% | | |
| 364.1000 | 364.1200 SEWERAGE CHARGES | \$2,591,105 | \$2,670,000 | | \$2,640,000 | (\$30,000) | -1.1% | | |
| NEW | 364.1210 SEWERAGE PENALTY CHARGES | \$53,972 | | | \$55,250 | \$5,250 | 0.0% | | |
| 364.1200 | 364.1100 CONNECTION FEES | \$3,829 | \$10,000 | | \$5,000 | (\$5,000) | -50.0% | | |
| | 364.1240 CONVEYANCE FEES | \$20,038 | \$14,000 | | \$15,000 | \$1,000 | 7.1% | | Marriott \$5849, PA American \$5274 + \$9738 (why so high) |
| 364.1900 | 389.0000 MISCELLANEOUS REVENUES | \$0 | | | \$0 | \$0 | 0.0% | | |
| | TOTAL REVENUES | \$2,675,529 | \$2,752,500 | | \$2,940,713 | \$188,213 | 6.8% | | |
| | SEWER FUND EXPENDITURES | | | | | | | | |
| 429.1100 | 429.1120 SALARY - ADMINISTRATIVE | \$47,801 | \$31,065 | | \$40,045 | \$8,980 | 28.9% | | |
| | | | | Senior Clerk | \$16,126 | | | | |
| | | | | Clerk | \$13,311 | | | | |
| | | | | Asst Sec-Treas | \$4,576 | | | | |
| | | | | Sec-Treas | \$6,032 | | | | |
| 11/14/2018 | 429.1400 SALARY - PUBLIC WORKS | \$32,555 | \$65,770 | | \$28,000 | (\$37,770) | -57.4% | | |
| | 429.1800 SALARY - OVERTIME | | | | \$8,400 | | | | |
| | | | | Clerks | \$900 | | | | JD = \$1500, KY = \$1200 divided by 3 charge accounts |
| | | | | Public Works | \$7,500 | | | | |
| 429.2100 | 429.2150 POSTAGE | \$1,564 | \$3,000 | | \$3,000 | | | | |
| new | 429.2390 DIESEL FUEL FOR EMERG GENERATORS | | | | \$900 | | | | |
| NEW | 429.2391 PROPANE FOR EMERG GENERATORS | | | | \$1,600 | | | | |
| 429.2100 | 429.3420 PRINTING | | | | \$2,800 | \$2,800 | 0.0% | | |
| 429.2200 | 429.3900 BANK CHARGES | | \$45 | | | (\$45) | -100.0% | | |
| 429.2300 | 429.3210 TELEPHONE | \$2,880 | \$3,800 | | \$3,150 | (\$650) | -17.1% | | |
| 429.3100 | 429.3130 ENGINEERING | \$30,630 | \$30,000 | | \$25,000 | (\$5,000) | -16.7% | | |
| 429.3200 | 429.3100 SOLICITOR FEES | \$93 | \$0 | | \$0 | \$0 | 0.0% | | |
| 429.3300 | 429.3110 AUDITORS | \$6,167 | \$4,800 | | \$3,423 | (\$1,377) | -28.7% | \$8,223 | |
| 429.4300 | 429.3800 SEWAGE TREATMENT COSTS | \$2,674,977 | \$2,338,000 | | \$2,600,000 | \$262,000 | 11.2% | \$3,566,636 | |
| 429.4500 | 429.3610 ELECTRICITY | \$13,238 | \$15,100 | | \$16,500 | \$1,400 | 9.3% | \$17,650 | |
| 429.4600 | 429.3720 MAINT & REPAIR SVC - CONTRACTED | \$54,669 | \$60,000 | | \$34,689 | (\$25,311) | -42.2% | \$72,892 | |
| | | | | M&B | \$10,282 | | | | |
| | | | | M & S Annual Pump Station | \$4,467 | | | | |
| | | | | I&I Clean & Televis Hayti E | \$19,940 | | | | |
| 429.4630 | 429.6100 CAPITAL CONST. PA DCED GRANT | | \$50,000 | | \$110,500 | \$60,500 | 121.0% | \$0 | Rock Run Pump Station |
| 429.4700 | 429.2270 SANITATION SUPPLIES | \$2,129 | \$6,000 | | \$2,300 | (\$3,700) | -61.7% | \$2,839 | SUBTRACT \$542 |
| 429.4900 | 489.0000 MISCELLANEOUS EXPENSES | | \$950 | | | (\$950) | -100.0% | \$0 | |
| | | | | | | | | \$0 | |
| | | | | | | | | \$0 | 2,297 |
| | DUE TO GENERAL FUND | | \$64,805 | | | | | \$0 | |
| 429.3410 | 492.0100 BENEFIT ALLOCATION | | \$60,500 | | \$60,406 | (\$94) | -0.2% | \$0 | |
| 429.3400 | 492.0110 FACILITY & OFFICE EXPENSE | | | | | \$0 | 0.0% | \$0 | |
| | TOTAL EXPENDITURES | \$2,866,701 | \$2,733,835 | | \$2,940,713 | \$206,878 | 7.6% | | |
| | FUND 08 NET SURPLUS (DEFICIT) | (\$191,172) | \$18,665 | | \$0 | | | | |

VALLEY TOWNSHIP SEWERAGE FACILITIES ENGINEERING ASSESSMENT AND ORIGINAL COST

**Valley Township
Chester County, PA**

Prepared for:

Valley Township
890 West Lincoln Highway
P.O. Box 467
Coatesville, PA 19320

Pennsylvania American Water
852 Wesley Drive
Mechanicsburg, PA 17055

Submitted By:

Pennoni Associates Inc.
Christiana Executive Campus
121 Continental Drive, Suite 207
Newark, DE 19713



Michael J. Ellis, PE
Senior Engineer

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APPENDICES

APPENDIX A – SYSTEM MAPPING

- A1 – Sanitary Sewer System Map (EX-1)

APPENDIX B

- Uniform System of Accounts - Section 300
- PA ACT 12 of 2016

1. EXECUTIVE SUMMARY

As required by PA Act 12 of 2016 and following the guidelines of the "Uniform System of Accounts for Class A Wastewater Utilities", an assessment of the tangible assets of facilities and equipment of the Valley Township wastewater utility is prepared as part of the asset purchase agreement with Pennsylvania-American Water Company (PAWC). Each facility and class of equipment was coded based on Section 300 of the "Wastewater Utility Plant Accounts" of the Guidelines. The Asset Survey included six pump stations and associated force mains, and approximately 39 miles of gravity sewers. Asset cost information was derived from various sources. Site visits to each of the facilities were conducted to inventory the equipment and assess conditions.

Site inventories and facility conditions were documented on facility information sheets and summarized in the facility description summaries.

Conditions of the pump stations vary from poor to very good based on the age and/or completion of recent improvements.

Gravity sewer and force main conditions were not determined. The piping installation period ranges from 1970 to 2017.

A complete list of the assets and original costs is provided in Section 9 of this report.

2. PURPOSE OF REPORT

The purpose of this report is to “conduct an assessment of the tangible assets of the selling utility” per the requirements of PA Act 12 of 2016.

This engineering assessment will be used by the Utility Valuation Experts (UVEs) retained by both the seller (Valley Township) and buyer (PAWC). The engineering assessment followed the practices and procedures of the Public Utility Commission (PUC) and National Association of Regulatory Utility Commissioners (NARUC) Systems of Accounts. The engineering assessment report documents the conditions and original costs of Valley Township’s assets that will be used as the common list for the UVEs to develop their appraisal of the system.

The report preparation process included meeting with key Township and PAWC representatives to identify and confirm specific information needed to support the assessment and to prepare the report, providing a mutually agreed upon scope of work with Valley Township and PAWC. The inventory is a compilation of data gathered by Pennoni, developed from institutional knowledge, available records, maps, work orders, payment records from construction projects, site evaluations, and other sources to provide an inventory and listing.

This report contains the following:

- An inventory of the used and useful assets to be transferred, compiled by year and account (codes).
- Identification of facilities being held for future use (if any).
- A list of non-depreciable property such as land and rights-of-way.
- A review of system components, plans, and reports of key facilities. This includes:
 - Permitted discharges, including regulatory requirements
 - Pumping Stations (6 each), including force mains
 - Gravity collection system
- Summary of the operation and maintenance expenses based upon review of Valley Township operating records.
- An assessment of the identified assets.
- Determination and/or establishment of an original cost of construction for each asset.

Assets were identified through various sources. Gravity sewer and force main sizes and quantities were taken from Construction Escrow Releases/Estimates, Township Sewer System Mapping, and Land Development Plans. Pump Stations were field inventoried and evaluated; and supplemented with information obtained from drawings, where available. Asset costs are based on Construction

Escrow Releases/Estimates where available or estimated current cost and back calculated to the year of installation using the ENR Construction Cost Index.

A coding system as described in Section 300 of the Uniform System of Accounts for Class A Wastewater Utilities was used for classifying various assets. Section 300 as well as the listing of codes can be found in Appendix B.

3. SYSTEM DESCRIPTION

System Summary

Valley Township, Chester County, PA borders West Brandywine and West Caln Townships to the north; East Fallowfield Township and the Borough of South Coatesville to the south; the City of Coatesville and Caln Township to the east; and Sadsbury Township to the west.

The wastewater system in the Township consists of approximately 39 miles of gravity collectors and interceptors ranging in size from 8 to 18 inches diameter, approximately 3,260 LF of low pressure sewer piping ranging in size from 1-1/2 to 2 inches diameter, approximately 5 miles of force mains ranging in size from 2 to 10 inches diameter, six Township-owned sewage pumping stations, and one undedicated pumping station that is permitted to the Township. With the exception of the pumping station that is undedicated, the wastewater systems are owned and maintained by Valley Township. The Township contracts M&B Environmental Inc. to provide licensed operations of the six Township-owned sewage pumping stations. All wastewater is conveyed to PAWC's Wastewater Treatment Plant (WWTP) in South Coatesville.

A map of the Township's three sewage system drainage basins is located in Appendix A. There are approximately 3,275 EDUs connected to the Township's sewer system as direct customers of Valley Township. There are also three intermunicipal connections in which wastewater is conveyed through the Township's sewer system via intermunicipal conveyance agreements with PAWC. The average annual flow for the Township in 2019, excluding intermunicipal flows, was 0.930 MGD, well within the Township's allocation at the PAWC WWTP of 1.140 MGD.

System Drainage Basins

The Rock Run Basin covers roughly the northern third of the Township. Three Township-owned pump stations – Rock Run Pump Station, Highlands Corporate Center Pump Station #1, and Country Ridge Pump Station – are located in this basin. Two of the intermunicipal connections are also located within the Rock Run Basin – the Coatesville Country Club and the Marriott (aka OTP Corporation) Hotel & Restaurant. All of the basin's wastewater flows are conveyed into the Rock Run Pump Station, where they are metered and then pumped into PAWC's system.

The Hayti Basin covers roughly the central third of the Township. The two Township-owned Round Hill Pump Stations are located in this basin. All flows are conveyed through a gravity interceptor along W. Lincoln Hwy to the Charles Street Meter Pit, where flows are metered prior to flowing into PAWC's system.

The Westwood Basin covers roughly the southern third of the Township. All flows are conveyed through a gravity interceptor along Valley Road to the Valley Road Meter Pit, where flows are metered

prior to flowing into PAWC's system. The third intermunicipal connection, from the Strasburg Hunt subdivision in East Fallowfield Township, is located within this basin.

4. INVENTORY OF ASSETS

4.1. PUMP STATIONS

Rock Run PS

Facility Description (see attached Information Sheet)

The Rock Run PS is located at 1069 Williams Way. The pump station is equipped with two submersible pumps with an 800 GPM permitted peak flow controlled with variable frequency drives (VFDs). Wastewater is discharged through a 3,825 LF force main, starting as 10" ductile iron at the pump station, transitioning to 10" HDPE along Wagontown Road, and transitioning to 6" cast iron near the border with the City of Coatesville before it ties into a PAWC sewer system manhole. The pump station was originally installed in 1972 with demolition of most of the original pump station and major upgrades performed in 2004.

The wet well is concrete (168 SF) with three 3' x 2.5' and one 8' x 3.5' aluminum hatchways. The control panel is manufactured by Myriad. There are two 8" check valves and two 8" gate valves. The influent line to the wet well contains a Muffin Monster grinder operated via a 5 HP hydraulic power pack. The station has a magnetic flow meter and Endress Hauser data logger installed.

The building (500 SF) is constructed of brick exterior with CMU interior and fiberglass shingles roof in good condition. The building contains overhead fluorescent lighting, two single fiberglass doors, and an 8' insulated roll-up door.

The generator is a Cummins 125 KW unit with a 200-gallon diesel tank. The Automatic Transfer Switch (ATS) is manufactured by Cummins.

The entire property is surrounded by an approximately 100 LF chain link fence. The facility also contains a stall lavatory and sink.

Property Condition

The building and all mechanical and electrical equipment are in good condition.



Figure 1 – Wet Well Exterior

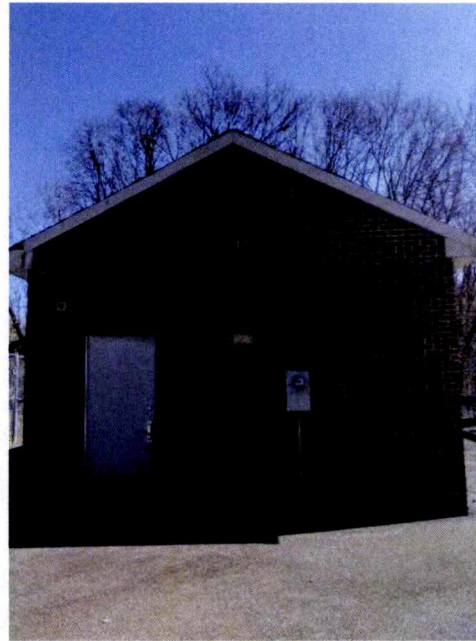


Figure 2 – Building Exterior

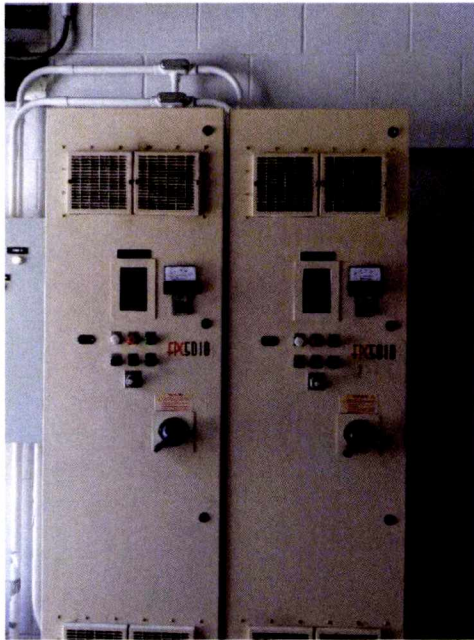


Figure 3 – VFDs

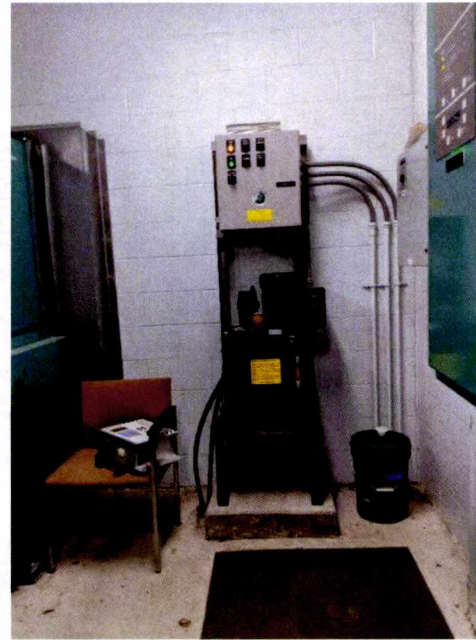


Figure 4 – Muffin Monster Controls

| PUMP STATION | | | | Scheduled Visit Date: | 3/9/2020 |
|---------------|---------|--|--|-----------------------|------------------------------------|
| Station Name | | Rock Run | Phone # | | |
| Location | | 1069 Williams Way, Valley Township, PA | | | |
| Start Up Date | | orig. 1972, upgraded in 2004 | | | |
| CODE | SUBCODE | PUMP STATION | | | COMMENTS |
| 354.3 | | PUMP(S) | | | |
| | | Condition | unknown | | |
| | | No. of Pumps | 2 | | |
| | | Type | submersible | | |
| | | Pump Manufacturer | Flygt | | |
| | | Pump Model Number | CP-3170 | | |
| | | Year Installed | | | |
| | | Pump GPM | 800 ± | | |
| | | Pump TDH Ft. | 85 | | |
| | | Outlet Size | 6" | | |
| | | Motor HP | 30 | | |
| | | Motor Voltage | 480 | | |
| | | Pump Control (VFD?) | VFDs | | |
| 370.3 | | WET WELL | | | |
| | | Condition | good | | |
| | | Size | 168 SF | | |
| | | Material | CONCRETE | | |
| | | Lined | Epoxy | | |
| | | Hatch | (3) 3-ft x 2.5-ft aluminum, (1) 8-ft x 3.5-ft aluminum | | |
| | | Vent | 8" SS | | |
| | | Rails | | | |
| | | Cable | | | |
| | | Piping | | | |
| 371.3 | | CONTROL PANEL | | | |
| | | Manufacturer | Myriad | | |
| | | Year Installed | 2004 | | |
| | | Model/Serial number | | | |
| 361 | | INFLUENT PIPING (IF KNOWN) | | | |
| | | Material | | | |
| | | Diameter | 18" | | |
| 371 | | GRINDER | | | |
| | | Manufacturer | Muffin Monster | | |
| | | Model/Serial number | | | |
| | | HP | 5 | | |
| | | Year Installed | | | |
| 371 | | CRAIN/HOIST | | | |
| | | Manufacturer | Thern Portable Winch | | Stored in building, not installed. |
| | | Model/Serial number | M4312PB-K | | |
| | | Year Installed | Uninstalled, stored in building | | |
| 360 | | VALVES (DISCHARGE) | | | |
| | | Type | CHECK | GATE | |
| | | Manufacturer | | | |
| | | Size | 8" | 8" | |
| | | # | 2 | 2 | |
| | | Year Installed | 2004 | | |
| 355 | | GENERATOR | | | |
| | | Manufacturer | Cummins | | |
| | | Generator KW | 125 | | |
| | | Generator KVA | 156 | | |
| | | Fuel Tank (Gals) | 200 gal diesel | | |
| 355 | | ATS (manf/model #) | Cummins PowerCommand OTPCB-5636642 | | |
| | | Year Installed | 2004 | | |
| 360 | | FORCE MAIN | | | |
| | | Force Main Size | 10", 6" | | |
| | | Force Main Mat. | DI, HDPE, CI | | |
| | | Length in Feet | 3,825 | | |
| | | Year Installed | varies | | |
| | | Discharge Point | SMH | | |
| | | Discharge Point Location | CCA | | |

| | | | | | |
|-------|----------------------------|-------------------------------|--|--|-------------------------|
| 354.2 | BUILDING | | | | |
| | Condition | | | | |
| | Size | 500 SF | | | |
| | Main Structure Material | BRICK | | | |
| | Roof Type | FIBERGLASS SHINGLES | | | |
| | Roof Condition | unknown | | | |
| | Doors (number /material) | 1 FIBERGLASS, 1, 8' ROLLUP | | | |
| | Lighting (Type) | overhead fluorescent | | | |
| | Year Installed | 2004 | | | |
| | ELECTRICAL | | | | |
| 371.3 | MCC | | | | |
| 396 | Alarm System (manf/ model) | DiaLog Scout | | | COMMENTS |
| | Year Installed | 2004 | | | |
| 354.3 | HVAC | | | | |
| | Condition | good | | | |
| | Type | (2) Electric unit heaters | | | |
| | Manufacturer | | | | |
| | Year Installed | | | | |
| 364 | Flow Meter | magnetic | | | |
| 364 | Chart Recorder | circular | | | |
| 354.3 | Hydrants | | | | |
| | GROUNDS | | | | |
| 354.3 | Fence Length | 100 | | | |
| | Fence Type | CHAIN LINK | | | |
| | Year Installed | 2004 | | | |
| 354.3 | Paving and Walkways | ASPHALT | | | |
| 371.3 | ODOR CONTROL | N/A | | | |
| | Manufacturer | | | | |
| | Type | | | | |
| | MISCELLANEOUS | | | | |
| | Other Buildings | Bathroom and Sink in building | | | |
| | Spare Parts | | | | DESCRIPTION OF FACILITY |
| | Vac Truck Suitable | | | | |
| | Spare Parts | | | | |
| | Vac Truck Suitable | | | | |

Round Hill PS #1

Facility Description (see attached Information Sheet)

Round Hill PS #1 is located on Larose Drive and is equipped with two submersible non-clog Hydromatic S4NX500JC pumps with a permitted peak flow of 160 GPM. Wastewater is discharged through a 905 LF, 4" ductile iron force main that ties into the Township's existing sewage collection system at Manhole 111 on Robinson Avenue. The pump station was installed in 2008.

The wet well is concrete (36 SF) with a 36" x 66" aluminum hatchway. The control panel is manufactured by Hydromatic. There are two 4" gate valves and one 4" check valve. The influent line to the wet well contains a trash rack. The station has a Sparling flow meter and Endress Hauser data logger.

The building (200 SF) is constructed of CMU and architectural shingle roof in good condition. The building contains overhead fluorescent lighting and a double door.

The Generator is a Cummins 35 KW unit with 70 gallon diesel tank. The Automatic Transfer Switch (ATS) is manufactured by Cummins.

The entire property is surrounded by an approximate 200 LF chain link fence with privacy slats. The facility has an inactive Bioxide system for odor control.

Property Condition

The building and all mechanical and electrical equipment are in good condition.



Figure 1 – Building Exterior



Figure 2 – Wet Well Interior



Figure 3 – Control Panel & Electrical

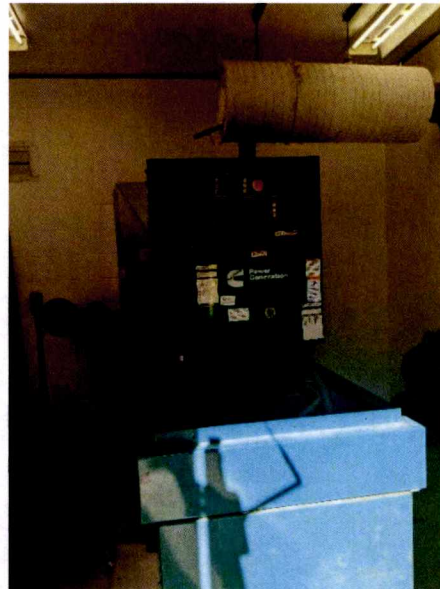


Figure 4 – Generator

| PUMP STATION | | | | Scheduled Visit Date: | 3/9/2020 |
|---------------|---------|-----------------------------------|------------------------------------|-----------------------|---------------------|
| Station Name | | Round Hill #1 | Phone # | | |
| Location | | Larose Dr, Valley Township, PA | | | |
| Start Up Date | | 2008 | | | |
| CODE | SUBCODE | PUMP STATION | | | COMMENTS |
| 371.3 | | PUMP(S) | | | |
| 371.3 | | Condition | unknown | | |
| | | No. of Pumps | 2 | | |
| | | Type | submersible non-clog | | |
| | | Pump Manufacturer | Hydromatic | | |
| | | Pump Model Number | S4NX500JC | | |
| | | Year Installed | 2008 | | |
| | | Pump GPM | 160 | | |
| | | Pump TDH Ft. | 38.67 | | |
| | | Outlet Size | | | |
| | | Motor HP | 5 | | |
| | | Motor Voltage | 240 | | |
| 371.3 | | Pump Control (VFD?) | floats | | |
| 370.3 | | WET WELL | | | |
| | | Condition | good | | |
| | | Size | 36 SF | | |
| | | Material | CONCRETE | | |
| | | Lined | | | |
| | | Hatch | 36" x 66" Aluminum Hatch | | |
| | | Vent | 6" DI | | |
| | | Rails | Hydromatic Pultruded rail lift out | | |
| | | Cable | | | |
| | | Piping | | | |
| 371.3 | | CONTROL PANEL | | | |
| | | Manufacturer | Hydromatic | | |
| | | Year Installed | 2008 | | |
| | | Model/Serial number | Hydromatic/B-H150700671 | | |
| 361 | | INFLUENT PIPING (IF KNOWN) | | | |
| | | Material | PVC | | |
| | | Diameter | 8" | | |
| 371 | | GRINDER | N/A | | Trash Rack in place |
| | | Manufacturer | | | |
| | | Model/Serial number | | | |
| | | HP | | | |
| | | Year Installed | | | |
| 371 | | CRAIN/HOIST | | | |
| | | Manufacturer | Thern | | |
| | | Model/Serial number | 1000 LB, #5110 MI-SS | | |
| | | Year Installed | 2008 | | |
| 360 | | VALVE VAULT | | | |
| | | Type | GATE | CHECK | |
| | | Manufacturer | | | |
| | | Size | 4" | 4" | |
| | | # | 2 | 1 | |
| | | Year Installed | | | |
| 355 | | GENERATOR | | | |
| | | Manufacturer | CUMMINS | | |
| | | Generator KW | 35 | | |
| | | Generator KVA | 43.75 | | |
| | | Fuel Tank (Gals) | 70 | | |
| 355 | | ATS (manf/model #) | Cummins / OTECA-5876305 | | |
| | | Year Installed | 2008 | | |
| 360 | | FORCE MAIN | | | |
| | | Force Main Size | 4" | | |
| | | Force Main Mat. | DI | | |
| | | Length in Feet | 905 | | |
| | | Year Installed | 2008 | | |
| | | Discharge Point | SMH 111 | | |
| | | Discharge Point Location | ROBINSON AVE | | |

| | | | | | |
|-------|----------------------------|-------------------------------|--|--|-----------------|
| 354.2 | BUILDING | | | | |
| | Condition | good | | | |
| | Size | 187 SF | | | |
| | Main Structure Material | CMU | | | |
| | Roof Type | ARCHITECTURAL SHINGLES | | | |
| | Roof Condition | good | | | |
| | Doors (number /material) | double door | | | |
| | Lighting (Type) | fluorescent | | | |
| | Year Installed | 2008 | | | |
| | ELECTRICAL | | | | |
| 371.3 | MCC | | | | |
| 396 | Alarm System (manf/ model) | Microtel Series 1000 Dialer | | | COMMENTS |
| | Year Installed | 2008 | | | |
| 354.3 | HVAC | | | | |
| | Condition | HEAT | | | |
| | Type | ELECTRIC | | | |
| | Manufacturer | CHROMALOX | | | |
| | Year Installed | 2008 | | | |
| 364 | Flow Meter | Sparling FM656-043-116-0 | | | |
| 364 | Chart Recorder | Sparling RR770-1-0-000-A-0 | | | |
| 354.3 | Hydrants | | | | |
| | GROUNDINGS | | | | |
| 354.3 | Fence Length | 200 LF | | | |
| | Fence Type | CHAIN LINK with privacy slats | | | |
| | Year Installed | | | | |
| 354.3 | Paving and Walkways | ASPHALT | | | |
| 371.3 | ODOR CONTROL | | | | |
| | Manufacturer | Siemens | | | unused |
| | Type | Bioxide | | | |
| | MISCELLANEOUS | | | | |
| | Other Buildings | | | | |
| | Spare Parts | | | | |
| | Vac Truck Suitable | | | | |
| | Spare Parts | | | | |
| | Vac Truck Suitable | | | | |

Round Hill PS #2

Facility Description (see attached Information Sheet)

Round Hill PS #2 is located on Larose Drive and is equipped with two submersible Hydromatic grinder pumps with a permitted peak flow of 40 GPM. Wastewater is discharged through a 1,230 LF, 2" ductile iron force main that ties into the existing sewage collection system at Manhole 111 on Robinson Avenue. The pump station was installed in 2008.

The wet well is concrete (30 SF) with a 36" x 66" aluminum hatchway. The control panel is manufactured by Hydromatic. There are two 4" gate valves and one 4" check valve. The station has a flow meter and Endress Hauser data logger.

The building (200 SF) is constructed of CMU and architectural shingle roof in good condition. The building contains overhead fluorescent lighting and a double door.

The Generator is a Cummins 35 KW unit with 70 gallon diesel tank. The Automatic Transfer Switch (ATS) is manufactured by Cummins.

The entire property is surrounded by an approximate 200 LF chain link fence with privacy slats. The facility has an inactive Bioxide system onsite for odor control.

Property Condition

The building and all mechanical and electrical equipment are in good condition.



Figure 1 – Building Exterior

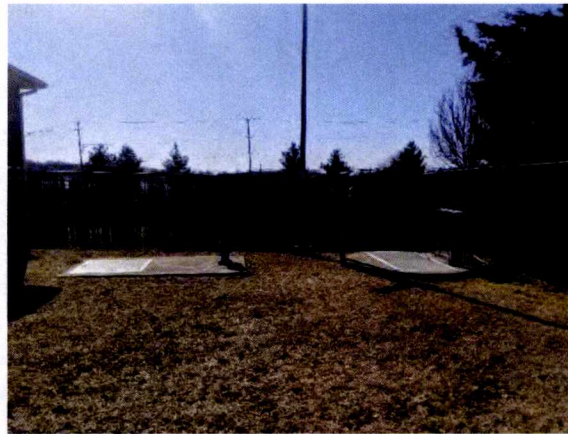


Figure 2 – Wet Well Exterior



Figure 3 – Cummins Generator

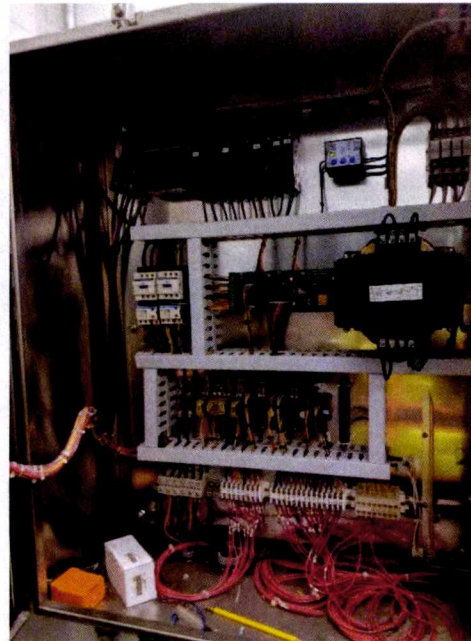


Figure 4 – Hydromatic Control Panel

| PUMP STATION | | | | Scheduled Visit Date: | 3/9/2020 |
|---------------------|---------|-----------------------------------|------------------------------------|------------------------------|----------|
| Station Name | | Round Hill #2 | Phone # | | |
| Location | | Larose Dr, Valley Township, PA | | | |
| Start Up Date | | 2008 | | | |
| CODE | SUBCODE | PUMP STATION | | | COMMENTS |
| 371.3 | | PUMP(S) | | | |
| 371.3 | | Condition | unknown | | |
| | | No. of Pumps | 2 | | |
| | | Type | submersible grinder | | |
| | | Pump Manufacturer | Hydromatic | | |
| | | Pump Model Number | HPGHX500EC | | |
| | | Year Installed | 2008 | | |
| | | Pump GPM | 40 | | |
| | | Pump TDH Ft. | 68.69 | | |
| | | Outlet Size | | | |
| | | Motor HP | 5 | | |
| | | Motor Voltage | 240 | | |
| 371.3 | | Pump Control (VFD?) | floats | | |
| 370.3 | | WET WELL | | | |
| | | Condition | | | |
| | | Size | 6' DIA | | |
| | | Material | CONCRETE | | |
| | | Lined | | | |
| | | Hatch | 36" x 66" Aluminum Hatch | | |
| | | Vent | 4" DI | | |
| | | Rails | " Hydr-O-Rail lift out rail system | | |
| | | Cable | | | |
| | | Piping | | | |
| 371.3 | | CONTROL PANEL | | | |
| | | Manufacturer | Hydromatic | | |
| | | Year Installed | 2008 | | |
| | | Model/Serial number | | | |
| 361 | | INFLUENT PIPING (IF KNOWN) | | | |
| | | Material | PVC | | |
| | | Diameter | 8" | | |
| 371 | | GRINDER | N/A | | |
| | | Manufacturer | | | |
| | | Model/Serial number | | | |
| | | HP | | | |
| | | Year Installed | | | |
| 371 | | CRAIN/HOIST | | | |
| | | Manufacturer | Thern Portabe Hoist/Winch | | |
| | | Model/Serial number | 1000 LB, #5110 MI-SS | | |
| | | Year Installed | 2008 | | |
| 360 | | VALVE VAULT | | | |
| | | Type | GATE | CHECK | |
| | | Manufacturer | | | |
| | | Size | 4" | 4" | |
| | | # | 2 | 2 | |
| | | Year Installed | 2008 | 2008 | |
| 355 | | GENERATOR | | | |
| | | Manufacturer | CUMMINS | | |
| | | Generator KW | 35 | | |
| | | Generator KVA | 43.75 | | |
| | | Fuel Tank (Gals) | 70 | | |
| 355 | | ATS (manf/model #) | Cummins / OTECA-5876305 | | |
| | | Year Installed | 2008 | | |
| 360 | | FORCE MAIN | | | |
| | | Force Main Size | 2" | | |
| | | Force Main Mat. | DI | | |
| | | Length in Feet | 1230 | | |
| | | Year Installed | 2008 | | |
| | | Discharge Point | SMH 111 | | |
| | | Discharge Point Location | ROBINSON AVE | | |

| | | | | | |
|-------|----------------------------|-----------------------------|--|--|-----------------|
| 354.2 | BUILDING | | | | |
| | Condition | good | | | |
| | Size | 184 | | | |
| | Main Structure Material | CMU | | | |
| | Roof Type | ARCHITECTURAL SHINGLES | | | |
| | Roof Condition | good | | | |
| | Doors (number /material) | double door | | | |
| | Lighting (Type) | fluorescent | | | |
| | Year Installed | 2008 | | | |
| | ELECTRICAL | | | | |
| 371.3 | MCC | | | | |
| 396 | Alarm System (manf/ model) | Microtel Series 1000 Dialer | | | COMMENTS |
| | Year Installed | | | | |
| 354.3 | HVAC | | | | |
| | Condition | HEAT | | | |
| | Type | ELECTRIC | | | |
| | Manufacturer | CHROMALOX | | | |
| | Year Installed | 2008 | | | |
| 364 | Flow Meter | Sparling FM656-023-116-0 | | | |
| 364 | Chart Recorder | Sparling RR770-1-0-000-A-0 | | | |
| 354.3 | Hydrants | | | | |
| | GROUNDNS | | | | |
| 354.3 | Fence Length | 228 | | | |
| | Fence Type | CHAIN LINK | | | |
| | Year Installed | 2008 | | | |
| 354.3 | Paving and Walkways | ASPHALT | | | |
| 371.3 | ODOR CONTROL | | | | |
| | Manufacturer | Siemens | | | unused |
| | Type | Bioxide | | | |
| | MISCELLANEOUS | | | | |
| | Other Buildings | | | | |
| | Spare Parts | | | | |
| | Vac Truck Suitable | | | | |
| | Spare Parts | | | | |
| | Vac Truck Suitable | | | | |

DESCRIPTION OF FACILITY

Highland Corp. PS #1

Facility Description (see attached Information Sheet)

Highland Corp. PS #1 is located at 755 Fox Chase Road and is equipped with two submersible Hydromatic pumps with a permitted peak flow of 150 GPM. Wastewater is discharged through a 3,450 LF, 3" PVC force main that ties into the existing sewage collection system at Manhole 100 on Hilltop Lane. The pump station was installed in 1988.

The wet well is concrete (40 SF) with an aluminum hatchway. The control panel is manufactured by USEMCO. There are two 4" quarter turn butterfly valves .

There is no building or enclosure at this site.

The Generator is an Onan portable unit. The Automatic Transfer Switch (ATS) is manufactured by ASCO.

The entire property is surrounded by a 4 foot high chain link fence with barbed wire.

Property Condition

The mechanical and electrical equipment are aged and in poor condition.



Figure 1 – Pump Station Site



Figure 2 – Control Panel

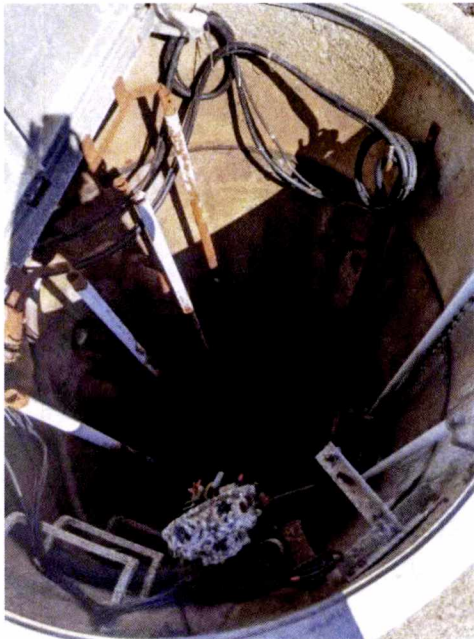


Figure 3 – Wet Well Interior



Figure 4 – ATS

| PUMP STATION | | | Scheduled Visit Date: | 3/9/2020 |
|---------------|-------------------------------------|-----------------------------------|-----------------------|----------------------|
| Station Name | Highland Corp. Center PS #1 | Phone # | | |
| Location | 755 Fox Chase Road, Coatesville, PA | | | |
| Start Up Date | 1988 | | | |
| CODE | SUBCODE | PUMP STATION | | COMMENTS |
| 371.3 | | PUMP(S) | | |
| 371.3 | | Condition | unknown | |
| | | No. of Pumps | 2 | |
| | | Type | submersible | |
| | | Pump Manufacturer | | |
| | | Pump Model Number | | |
| | | Year Installed | 1988 | |
| | | Pump GPM | | |
| | | Pump TDH Ft. | | |
| | | Outlet Size | | |
| | | Motor HP | | |
| | | Motor Voltage | | |
| 371.3 | | Pump Control (VFD?) | floats | |
| 370.3 | | WET WELL | | |
| | | Condition | fair | |
| | | Size | 7' | |
| | | Material | Concrete | |
| | | Lined | unlined | |
| | | Hatch | aluminum hatch | |
| | | Vent | steel | |
| | | Rails | metal | |
| | | Cable | | |
| | | Piping | | |
| 371.3 | | CONTROL PANEL | | |
| | | Manufacturer | USEMCO | |
| | | Year Installed | | |
| | | Model/Serial number | | |
| 361 | | INFLUENT PIPING (IF KNOWN) | | |
| | | Material | PVC SDR | |
| | | Diameter | 8" | |
| 371 | | GRINDER | N/A | Trash rack installed |
| | | Manufacturer | | |
| | | Model/Serial number | | |
| | | HP | | |
| | | Year Installed | | |
| 371 | | CRAIN/HOIST | N/A | |
| | | Manufacturer | | |
| | | Model/Serial number | | |
| | | Year Installed | | |
| 360 | | VALVE VAULT | | |
| | | Type | 1/4 turn butterfly | |
| | | Manufacturer | Kennedy | |
| | | Size | 4" | |
| | | # | 2 | |
| | | Year Installed | 1988 | |
| 355 | | GENERATOR | | |
| | | Manufacturer | Onan Portable | |
| | | Generator KW | 39.5/60 | |
| | | Generator KVA | | |
| | | Fuel Tank (Gals) | | |
| 355 | | ATS (manf/model #) | ASCO/D03ATSA30200NGXF | |
| | | Year Installed | June 13, 1905 | |
| 360 | | FORCE MAIN | | |
| | | Force Main Size | 3" | |
| | | Force Main Mat. | PVC SDR | |
| | | Length in Feet | 3450 | |
| | | Year Installed | 1988 | |
| | | Discharge Point | Hilltop Lane | |
| | | Discharge Point Location | | |

| | | | | | |
|-------|----------------------------|------------|--|--|-----------------|
| 354.2 | BUILDING | N/A | | | |
| | Condition | | | | |
| | Size | | | | |
| | Main Structure Material | | | | |
| | Roof Type | | | | |
| | Roof Condition | | | | |
| | Doors (number /material) | | | | |
| | Lighting (Type) | | | | |
| | Year Installed | | | | |
| | ELECTRICAL | | | | |
| 371.3 | MCC | | | | |
| 396 | Alarm System (manf/ model) | | | | COMMENTS |
| | Year Installed | | | | |
| 354.3 | HVAC | N/A | | | |
| | Condition | | | | |
| | Type | | | | |
| | Manufacturer | | | | |
| | Year Installed | | | | |
| 364 | Flow Meter | | | | |
| 364 | Chart Recorder | | | | |
| 354.3 | Hydrants | | | | |
| | GROUND | | | | |
| 354.3 | Fence Length | | | | |
| | Fence Type | chain link | | | |
| | Year Installed | | | | |
| 354.3 | Paving and Walkways | | | | |
| 371.3 | ODOR CONTROL | | | | |
| | Manufacturer | | | | |
| | Type | | | | |
| | MISCELLANEOUS | | | | |
| | Other Buildings | | | | |
| | Spare Parts | | | | |
| | Vac Truck Suitable | | | | |
| | Spare Parts | | | | |
| | Vac Truck Suitable | | | | |

Country Ridge PS

Facility Description (see attached Information Sheet)

Country Ridge PS is located at 104 North Mount Airy Road and is equipped with two submersible pumps with a permitted peak flow of 65 GPM. Wastewater is discharged through a 1,956 LF, 4" PVC force main that ties into the existing sewage collection system at Manhole 24 at the intersection of Dunbar Drive and Barlow Drive. The pump station was installed in 1990.

The wet well is concrete (40 SF) with a 42" x 42" aluminum hatchway. The control panel is manufactured by Mid Atlantic Pump & Equipment Company. There are two 3" quarter turn butterfly valves. The influent line has a trash rack.

The Building (200 SF) is constructed of brick exterior and CMU with a shingle roof in good condition. The building contains overhead fluorescent lighting and a double door.

The generator is a Martin Machinery 50 KW unit with a propane tank. The Automatic Transfer Switch (ATS) is manufactured by Zenith.

The propane tank outside of the building is surrounded by an approximate 200 LF chain link fence with barbed wire.

Property Condition

The building is in good condition and all mechanical and electrical equipment are older in fair condition.

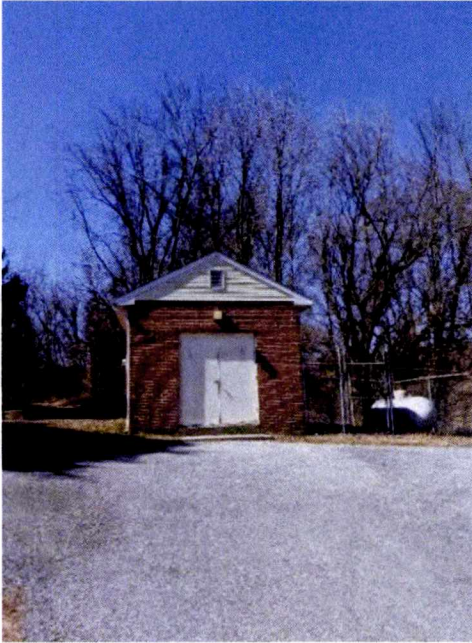


Figure 1 – Building Exterior with Propane Tank



Figure 2 – Wet Well Interior with Trash Rack

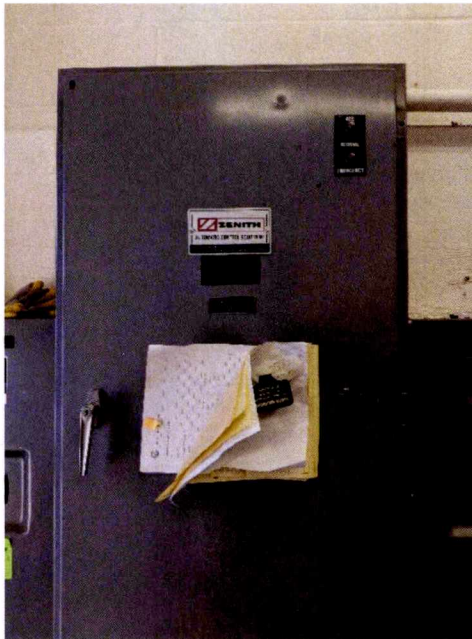


Figure 3 – ATS



Figure 4 – Generator

| PUMP STATION | | | | Scheduled Visit Date: | 3/9/2020 |
|---------------|---------|--|---------------------------------------|-----------------------|------------|
| Station Name | | Country Ridge PS | Phone # | | |
| Location | | 104 N Mount Airy Road, Coatesville, PA | | | |
| Start Up Date | | 1990 | | | |
| CODE | SUBCODE | PUMP STATION | | | COMMENTS |
| 371.3 | | PUMP(S) | | | |
| 371.3 | | Condition | unknwon | | |
| | | No. of Pumps | 2 | | |
| | | Type | submersible | | |
| | | Pump Manufacturer | | | |
| | | Pump Model Number | | | |
| | | Year Installed | 1990 | | |
| | | Pump GPM | 65 | | |
| | | Pump TDH Ft. | | | |
| | | Outlet Size | | | |
| | | Motor HP | | | |
| | | Motor Voltage | | | |
| 371.3 | | Pump Control (VFD?) | floats | | |
| 370.3 | | WET WELL | | | |
| | | Condition | fair | | |
| | | Size | 7' | | |
| | | Material | concrete | | |
| | | Lined | | | |
| | | Hatch | 42" x 42" aluminum hatch | | |
| | | Vent | 3" steel or iron | | |
| | | Rails | | | |
| | | Cable | | | |
| | | Piping | | | |
| 371.3 | | CONTROL PANEL | | | |
| | | Manufacturer | Mid Atlantic Pump & Equipment Company | | |
| | | Year Installed | June 12, 1905 | | |
| | | Model/Serial number | | | |
| 361 | | INFLUENT PIPING (IF KNOWN) | | | |
| | | Material | PVC SDR | | |
| | | Diameter | 8" | | |
| 371 | | GRINDER | N/A | | Trash rack |
| | | Manufacturer | | | |
| | | Model/Serial number | | | |
| | | HP | | | |
| | | Year Installed | 1990 | | |
| 371 | | CRAIN/HOIST | N/A | | |
| | | Manufacturer | | | |
| | | Model/Serial number | | | |
| | | Year Installed | | | |
| 360 | | VALVE VAULT | | | |
| | | Type | 1/4 turn butterfly | | |
| | | Manufacturer | | | |
| | | Size | 3" | | |
| | | # | 2 | | |
| | | Year Installed | 1990 | | |
| 355 | | GENERATOR | | | |
| | | Manufacturer | Martin Machinery | | |
| | | Generator KW | 50 | | |
| | | Generator KVA | 63 | | |
| | | Fuel Tank (Gals) | Propane | | |
| 355 | | ATS (manf/model #) | Zenith | | |
| | | Year Installed | 1990 | | |
| 360 | | FORCE MAIN | | | |
| | | Force Main Size | 4" | | |
| | | Force Main Mat. | SDR 35 | | |
| | | Length in Feet | 1956 | | |
| | | Year Installed | 1990 | | |
| | | Discharge Point | MH 24 | | |
| | | Discharge Point Location | Barlow Drive | | |

| | | | | | |
|-------|----------------------------|----------------------------|--|--|----------|
| 354.2 | BUILDING | | | | |
| | Condition | good | | | |
| | Size | 14' | | | |
| | Main Structure Material | CMU | | | |
| | Roof Type | shingles | | | |
| | Roof Condition | good | | | |
| | Doors (number /material) | 1 double door | | | |
| | Lighting (Type) | fluorescent overhead | | | |
| | Year Installed | 1990 | | | |
| | ELECTRICAL | | | | |
| 371.3 | MCC | | | | |
| 396 | Alarm System (manf/ model) | | | | COMMENTS |
| | Year Installed | | | | |
| 354.3 | HVAC | | | | |
| | Condition | | | | |
| | Type | | | | |
| | Manufacturer | | | | |
| | Year Installed | | | | |
| 364 | Flow Meter | | | | |
| 364 | Chart Recorder | | | | |
| 354.3 | Hydrants | | | | |
| | GROUNDS | | | | |
| 354.3 | Fence Length | around propane tank only | | | |
| | Fence Type | chainlink with barbed wire | | | |
| | Year Installed | | | | |
| 354.3 | Paving and Walkways | asphalt drive | | | |
| 371.3 | ODOR CONTROL | N/A | | | |
| | Manufacturer | | | | |
| | Type | | | | |
| | MISCELLANEOUS | | | | |
| | Other Buildings | | | | |
| | Spare Parts | | | | |
| | Vac Truck Suitable | | | | |
| | Spare Parts | | | | |
| | Vac Truck Suitable | | | | |

Hillview PS

Facility Description (see attached Information Sheet)

Hillview PS is located on McElree Lane and is equipped with two Barnes 4XSE-EHA submersible pumps with a permitted peak flow of 220 GPM. Wastewater is discharged through a 2,640 LF 4" PVC force main that ties into the existing sewage collection system at a manhole on Haslan Lane.

The pump wet well is concrete (40 SF) with a 36" x 48" aluminum hatchway. The control panel is manufactured by Pumpak. There are two 4" gate valves, one 4" wedge valve, and two 4" check valves. The influent line to the wet well contains a Muffin Monster grinder operated via a 5 HP hydraulic power pack. The station has an Endress Hauser ProMag flow meter with a paper chart recorder.

The Building (210 SF) is constructed of vinyl exterior and CMU interior with a shingle roof in good condition. The building contains overhead fluorescent lighting and a double door.

The generator is a Kohler 130 KW unit with a natural gas line connection. The Automatic Transfer Switch (ATS) is manufactured by Kohler.

The property is surrounded by an approximately 150 LF chain link fence. The peroxide odor control unit onsite is not in use.

Property Condition

The building is in good condition and all mechanical and electrical equipment are in good condition.

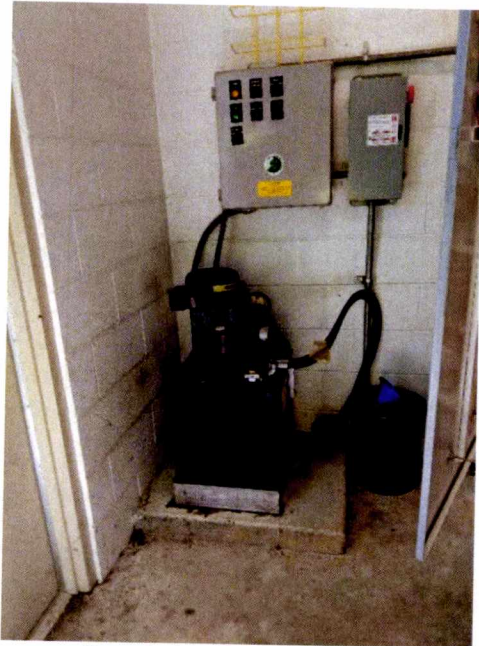


Figure 1 – Muffin Monster Control Panel



Figure 2 – Pump Control Panel

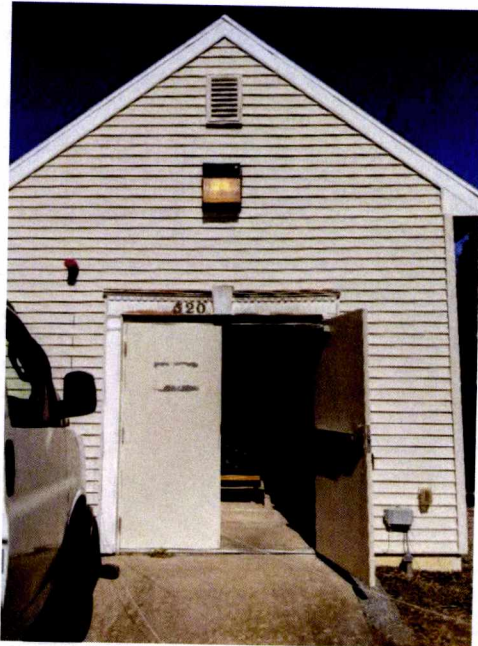


Figure 3 – Exterior



Figure 4 – Valve Vault

| PUMP STATION | | | | Scheduled Visit Date: | 3/9/2020 |
|---------------|---------|-----------------------------------|--------------------------------|-----------------------|----------|
| Station Name | | Hillview | | Phone # | |
| Location | | McElree Lane, Valley Township, PA | | | |
| Start Up Date | | 2003 | | | |
| CODE | SUBCODE | PUMP STATION | | | COMMENTS |
| 371.3 | | PUMP(S) | | | |
| 371.3 | | Condition | unknown | | |
| | | No. of Pumps | 2 | | |
| | | Type | SUBMERSIBLE NON CLOG | | |
| | | Pump Manufacturer | FAIRBANKS MORSE | | |
| | | Pump Model Number | D5435MU | | |
| | | Year Installed | 2004 | | |
| | | Pump GPM | 220 | | |
| | | Pump TDH Ft. | 178 | | |
| | | Outlet Size | 4" | | |
| | | Motor HP | 30 | | |
| | | Motor Voltage | 460 | | |
| 371.3 | | Pump Control (VFD?) | Floats | | |
| 370.3 | | WET WELL | | | |
| | | Condition | good | | |
| | | Size | 7' DIA | | |
| | | Material | CONCRETE | | |
| | | Lined | 2 COATS WHITE EPOXY | | |
| | | Hatch | 36" x 48" Aluminum Double door | | |
| | | Vent | 8" PVC | | |
| | | Rails | | | |
| | | Cable | | | |
| | | Piping | | | |
| 371.3 | | CONTROL PANEL | | | |
| | | Manufacturer | Pumpak | | |
| | | Year Installed | June 25, 1905 | | |
| | | Model/Serial number | D5435MU | | |
| 361 | | INFLUENT PIPING (IF KNOWN) | | | |
| | | Material | PVC | | |
| | | Diameter | 8" | | |
| 371 | | GRINDER | | | |
| | | Manufacturer | Muffin Monster | | |
| | | Model/Serial number | 30005-008-DI | | |
| | | HP | HPP, SHP | | |
| | | Year Installed | 2004 | | |
| 371 | | CRAIN/HOIST | | | |
| | | Manufacturer | Thern | | |
| | | Model/Serial number | 1000 LB, #5004-24776 | | |
| | | Year Installed | 2004 | | |
| 360 | | VALVE VAULT | | | |
| | | Type | gate | check | wedge |
| | | Manufacturer | | | |
| | | Size | 4" | 4" | 4" |
| | | # | 2 | 2 | |
| | | Year Installed | 2004 | 2004 | 2004 |
| 355 | | GENERATOR | | | |
| | | Manufacturer | Kohler | | |
| | | Generator KW | 130 | | |
| | | Generator KVA | 162 | | |
| | | Fuel Tank (Gals) | natural gas line | | |
| 355 | | ATS (manf/model #) | Winter Engine KCT-AMTB-02255 | | |
| | | Year Installed | 2004 | | |
| 360 | | FORCE MAIN | | | |
| | | Force Main Size | 4" | | |
| | | Force Main Mat. | PVC | | |
| | | Length in Feet | 2640 | | |
| | | Year Installed | 2004/2005 | | |
| | | Discharge Point | MH | | |
| | | Discharge Point Location | Haslan Lane | | |

| | | | | | |
|-------|----------------------------|-----------------------|--|--|-----------------|
| 354.2 | BUILDING | | | | |
| | Condition | good | | | |
| | Size | 210 SF | | | |
| | Main Structure Material | 8" CMU | | | |
| | Roof Type | SHINGLES | | | |
| | Roof Condition | good | | | |
| | Doors (number /material) | 2 | | | |
| | Lighting (Type) | USI/COLUMBIA | | | |
| | Year Installed | 2004 | | | |
| | ELECTRICAL | | | | |
| 371.3 | MCC | | | | |
| 396 | Alarm System (manf/ model) | | | | COMMENTS |
| | Year Installed | | | | |
| 354.3 | HVAC | | | | |
| | Condition | | | | |
| | Type | ELECTRIC | | | |
| | Manufacturer | CHROMALOX | | | |
| | Year Installed | 2004 | | | |
| 364 | Flow Meter | Endress Hauser Promag | | | |
| 364 | Chart Recorder | RSC | | | |
| 354.3 | Hydrants | | | | |
| | GROUNDS | | | | |
| 354.3 | Fence Length | 151=0 | | | |
| | Fence Type | CHAIN LINK | | | |
| | Year Installed | | | | |
| 354.3 | Paving and Walkways | ASPHALT | | | |
| 371.3 | ODOR CONTROL | | | | not in use |
| | Manufacturer | | | | |
| | Type | Peroxide | | | |
| | MISCELLANEOUS | | | | |
| | Other Buildings | | | | |
| | Spare Parts | | | | |
| | Vac Truck Suitable | | | | |
| | Spare Parts | | | | |
| | Vac Truck Suitable | | | | |

4.2. COLLECTION SYSTEM

Valley Township owns the collection system in Valley Township and portions of the collection system in West Caln Township. The collection system consists of gravity piping and low pressure systems. The Township owns the portion of the laterals from the main to the curb. A map of the collection system and service areas can be found in Appendix A, Figure A1. Collection system related cost data can be found in Section 9 for the gravity mains, manholes and force mains under account codes 361.21, 361.23, and 360.21 respectively.

5. OWNED PROPERTY & EASEMENTS OF VALUE

The Township owns the properties upon which Rock Run Pump Station, Highland Corps Pump Station #1, and Country Ridge Pump Stations are located. Country Ridge and Highland Corps Pump Stations #1 properties were dedicated to the Township by the land developer that constructed the facilities. It is believed that the Rock Run Pump Station was acquired during the original sewer system construction in the 1970s. The deeds for Highland Corporate Center Pump Station #1 and Country Ridge Pump Station can be found in the following pages. Country Ridge Pump Station was dedicated to the Township for the purchase price of \$1; Highland Corporate Center Pump Station #1 was dedicated to the Township with no purchase price. The deed and purchase history for Rock Run Pump Station were not available. All three properties are included in the Section 9 – “List of Assets and Costs”.

Meeting minutes from the time of construction for the original three basins, Hayti, Rock Run, and Westwood, provide a list of requisitions for construction of the original sewer system. The total price of these 23 ROW requisitions is included in Section 9 – “List of Assets and Costs”. Parcel information for these properties is unavailable. There are a number of additional easements for the sewer system that are not provided but are believed to be of no value.

The following is a list of real property owned by the Township and easements for the pump stations owned by the Township. These easements were dedicated to the Township by the land developer that constructed the facilities and have no value.

Real Property

- 1069 William Way (Rock Run Pump Station) – Parcel ID 38-2M-126.1
- 1069 William Way (Rock Run Pump Station) – Parcel ID 38-2M-126
- 104 N Mount Airy Road (Country Ridge P.S.) – Parcel ID 28-9-82.5
- 755 Fox Chase Road (Highlands Corp. Center P.S. #1) – Parcel ID 38-2-387.1

Easements

- Highlands Corp Center P.S. #2 - Easement on Parcel ID 38-1-3.10
- Round Hill P.S. #1 - Easement on Parcel ID 38-1-23
- Round Hill P.S. #2 - Easement on Parcel ID 38-1-23

5P
20
CUT

DEED OF DEDICATION

THIS INDENTURE, made this 27th day of April, A.D., 1994, between CALN DEVELOPMENT COMPANY, being the owner and party in interest in the following described property (hereinafter called "Grantor") and the VALLEY TOWNSHIP AUTHORITY, County of Chester, Commonwealth of Pennsylvania (hereinafter called "Grantee").

WITNESSETH

That the said Grantor for and in consideration of the advantages to it accruing and for diverse other considerations affecting the public welfare which they seek to advance, have granted, bargained, sold, aliened, enfeoffed, released and confirmed, and by these presents do grant, bargain, sell, alien, enfeoff, release and confirm unto the said VALLEY TOWNSHIP AUTHORITY, its successors and assigns the following property: as more fully described on the "Pump Station and Utility Easement Description" attached hereto as Exhibit "A".

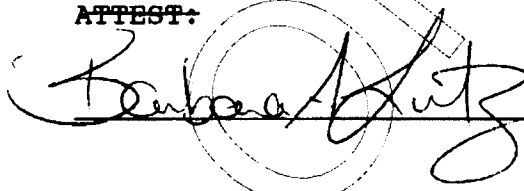
TO HAVE AND TO HOLD the said property and the pumping station located thereon to the said VALLEY TOWNSHIP AUTHORITY, its successors and assigns, to and for the only property use and behoof of the said VALLEY TOWNSHIP AUTHORITY, its successors and assigns, forever as and for a pumping station, and for no other use or purpose whatsoever.

AND, the said Grantor, for itself, its successors and assigns, does by these presents further covenant, promise and agree to and with said Grantee, its successors and assigns, that the said lot of ground above described unto the said Grantee, its successors and assigns, against them the said Grantor, its heirs and assigns, and against all and any person or persons whomsoever lawfully claiming or to claim the same or any part thereof, by, from or under them or any of them shall and will warrant and forever defend.

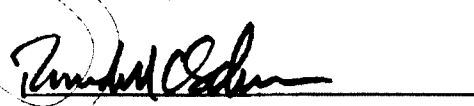
IN WITNESS WHEREOF, the said Grantor has caused these presents to be duly executed and its common or corporate seal hereto affixed, the day and year first above written.

witness

ATTEST:



ATTEST:



GRANTOR:

CALN VALLEY DEVELOPMENT COMPANY

BY: LANCASTER DEVELOPMENT COMPANY,
GENERAL PARTNER

BY:


Edward S. Hoover, Attorney-in-Fact

GRANTEE:

VALLEY TOWNSHIP AUTHORITY

BY:


William A. Robinson, Chairman

COMMONWEALTH OF PENNSYLVANIA:

COUNTY OF *Lancaster* :

SS

On this *21th* day of *February*, 1994, before me, the undersigned, a notary public for the Commonwealth of Pennsylvania, residing in the County of *Lancaster*, personally appeared *Edward Hoover* known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Barbara A. Lutz
Notary Public

Notarial Seal
Barbara A. Lutz, Notary Public
East Lampeter Twp., Lancaster County
My Commission Expires Oct. 9, 1995
Member, Pennsylvania Association of Notaries

Grantee's Address
Valley Township Authority
800 West Lincoln Highway
Coatesville, PA 19320

Un

COMMONWEALTH OF PENNSYLVANIA:

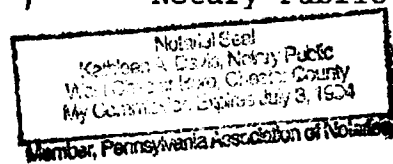
COUNTY OF *Chesler* :

SS

On this *27th* day of *April*, 1994, before me, the undersigned, a notary public for the Commonwealth of Pennsylvania, residing in the County of *Chesler*, personally appeared *William Robinson* known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Kathleen A. Davis
Notary Public



Robert C. Drake
& Associates, Inc.
Engineers, Surveyors,
Site Planners

P.O. Box 612, Suite F
701 E. Baltimore Pike
Kennett Square, PA 19348
Telephone (215) 444-6599
Fax (215) 444-1698

PUMP STATION AND UTILITY EASEMENT DESCRIPTION



ALL THAT CERTAIN easement situate in the Townships of Valley and West Caln, County of Chester, State of Pennsylvania, described according to a Final Subdivision Plan of Highlands Corporate Center prepared by NTH/Russell Associates, dated May 9, 1988 and last revised October 14, 1988, as follows to wit:

BEGINNING at a point on the northerly right of way of Fox Chase, said point being the southeast corner of lot 17 and the southwest corner of lot 16; Thence along the line between lot 17 and lot 16 north 04 degrees 02 minutes 05 seconds west, 449.25 feet to a point on line of lands of Paul M. & Helen Sands; Thence by the same south 82 degrees 05 minutes 47 seconds west, 10.00 feet to a point being the southwest corner of an easement for pump station 1; Thence by the same and through lands of Paul M. and Helen Sands the following 3 courses and distances:

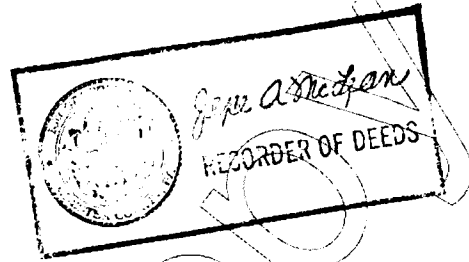
- 1) North 07 degrees 54 minutes 13 seconds west, 40.00 feet to a point;
- 2) North 82 degrees 05 minutes 47 seconds east, 40.00 feet to a point;
- 3) South 07 degrees 54 minutes 13 seconds east, 40.00 feet to a point on line of lot 16;

Thence by the same south 82 degrees 05 minutes 47 seconds west, 5.00 feet to a point; Thence through lot 16 and along the easterly side of a 25' wide utility easement south 04 degrees 02 minutes 05 seconds east, 457.76 feet to a point on the northerly right of way line of Fox Chase; Thence by the same north 78 degrees 44 minutes 06 seconds west, 25.92 feet to a point being the first mentioned point of beginning.

CONTAINING 0.296 acres be they more or less.

EXHIBIT "A"

BK 3772 PG 1130



DATE: 06/20/1994 TIME: 12:56P INST NO.: 48100

CHESTER COUNTY, PA
OFFICE OF THE RECORDER OF DEEDS

| | | | |
|--------------|--------|------------|-------|
| RECEIPT NO : | 042151 | TYPE DOC : | DEED |
| REC FEE | : | | 15.00 |
| LOC RTT | : | | 0.00 |
| ST RTT | : | | 0.00 |
| WRIT TAX | : | | 0.50 |

DATE: 06/20/1994 TIME: 12:56P INST NO.:

CHESTER COUNTY, PA
OFFICE OF THE RECORDER OF DEEDS

| | | | |
|--------------|--------|------------|---------|
| RECEIPT NO : | 042151 | TYPE DOC : | HOUSING |
| REC FEE | : | | 15.00 |
| LOC RTT | : | | 0.00 |
| ST RTT | : | | 0.00 |
| WRIT TAX | : | | 0.00 |

Unofficial



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF REVENUE
BUREAU OF INDIVIDUAL TAXES
DEPT. 280603
HARRISBURG, PA 17128-0603

**REALTY TRANSFER TAX
STATEMENT OF VALUE**

See Reverse for Instructions

RECORDER'S USE ONLY

| | |
|----------------|---------|
| State Tax Paid | |
| Book Number | 3772 |
| Page Number | 1127 |
| Date Recorded | 6/20/94 |

Complete each section and file in duplicate with Recorder of Deeds when (1) the full value/consideration is not set forth in the deed, (2) when the deed is without consideration, or by gift, or (3) a tax exemption is claimed. A Statement of Value is not required if the transfer is wholly exempt from tax based on: (1) family relationship or (2) public utility easement. If more space is needed, attach additional sheet(s).

A CORRESPONDENT - All inquiries may be directed to the following person:

| | | | | | |
|--|-----------------------------|-------|----------|-------------------|---------------|
| Name | Randall C. Schauer, Esquire | | | Telephone Number: | |
| Street Address | City | State | Zip Code | Area Code (| 610) 436-0100 |
| 17 West Miner Street, West Chester, PA 19380 | | | | | |

B TRANSFER DATA

| | | | | | |
|----------------------|---------------------------|----------|-----------------------|--------------------------------|--------------------------|
| Grantor(s)/Lessor(s) | Cain Development Company | | | Date of Acceptance of Document | April 27, 1994 |
| Grantee(s)/Lessee(s) | Valley Township Authority | | | | |
| Street Address | 1853 William Penn Way | | | Street Address | 800 West Lincoln Highway |
| City | State | Zip Code | City | State | Zip Code |
| Lancaster, PA 17605 | | | Coatesville, PA 19320 | | |

C PROPERTY LOCATION

| | | | | | |
|----------------|-----------------------------------|-------------------|-------------------------|---------------------------------------|--|
| Street Address | Highlands Corporate Center Lot 16 | | City, Township, Borough | partly West Cain and Valley Townships | |
| County | School District | Tax Parcel Number | | | |
| Chester | Coatesville Area | 38-2-387 | | | |

D VALUATION DATA

| | | |
|------------------------------|-----------------------------|------------------------|
| 1. Actual Cash Consideration | 2. Other Consideration | 3. Total Consideration |
| None | + None | = None (gift) |
| 4. County Assessed Value | 5. Common Level Rate Factor | 6. Fair Market Value |
| \$1890 | x 15.39 | = \$29,087.10 |

E EXEMPTION DATA

| | |
|---------------------------------|-------------------------------------|
| 1a. Amount of Exemption Claimed | 1b. Percentage of Interest Conveyed |
| \$29,087.10 | 100% |

2. Check Appropriate Box Below for Exemption Claimed

- Will or intestate succession _____ (Name of Decedent) _____ (Estate File Number)
- Transfer to Industrial Development Agency.
- Transfer to agent or straw party. (Attach copy of agency/straw party agreement).
- Transfer between principal and agent. (Attach copy of agency/straw trust agreement). Tax paid prior deed \$ _____.
- Transfers to the Commonwealth, the United States, and Instrumentalities by gift, dedication, condemnation or in lieu of condemnation. (Attach copy of resolution). Deed of Dedication (gift)
- Transfer from mortgagor to a holder of a mortgage in default. Mortgage Book Number _____, Page Number _____.
- Corrective deed (Attach copy of the prior deed).
- Statutory corporate consolidation, merger or division. (Attach copy of articles).
- Other (Please explain exemption claimed, if other than listed above.) _____

Under penalties of law, I declare that I have examined this Statement, including accompanying information, and to the best of my knowledge and belief, it is true, correct and complete.

| | |
|---|---------|
| Signature of Correspondent or Responsible Party | Date |
| <i>Randall C. Schauer</i> | 6/17/94 |

(SEE REVERSE)

This Deed,

made this

day of

19

Between,

AMS Enterprises, Inc.

, a corporation organized and existing under and by

virtue of the laws of
(hereinafter called "Grantor"), of the one part, and

(hereinafter called the "Grantee"), of the other part.

Witnesseth, That in consideration of One Dollar (\$1.00)

Dollars,

in hand paid, the receipt whereof is hereby acknowledged, the said Grantor do hereby grant and convey unto the said Grantee Valley Twp. Authority and assigns,

All that certain lot or piece of ground with buildings and improvements thereon erected situate in the Township of West Caln, County of Chester, Commonwealth of Penna., bounded and described according to a Title Plan of "Country Ridge" made by Lester R. Andes, Of Thorndale, Pa., dated 2/15/88 and last revised 7/19/89, as follows to wit:

Beginning at a point on the West Side of Mount Airy Road (T-453), said point being in line of lands now or late of Samuel S. Mohr, Jr. Samuel S. Mohr, Sr., and Margaret K. Mohr, his wife, thence from said beginning point and along said lands, North 78 degrees 04 minutes 30 seconds West 125.00 feet to a point a corner of Lot #51 of said Plan; thence along the same the two following courses and distances (1) North 20 degrees 13 minutes 54 seconds East 103.86 feet to a point (2) South 83 degrees 11 minutes 36 seconds East 109.55 feet to a point on the West side of said Mount Airy Road; thence along the same the two following courses and distances (1) South 07 degrees 12 minutes 23 seconds West 34.42 feet to a point (2) South 13 degrees 21 minutes 00 seconds West 78.26 feet to the first mentioned point and place of beginning.

Containing 12,711 square feet be the same more or less

Being Lot #52 of the above mentioned plan.

Together with rights to use and maintain Sanitary Sewer Easements as shown on the Plan of "Country Ridge", aforesaid.

Being part of the same premises which Edward D. Marple and Leslie S. Marple, by Indenture bearing date the 1st day of October, A.D. 1986, and recorded at West Chester, Pa., in the Office of the Recorder of Deeds, in Chester County Record Book 477 page 120, granted and conveyed unto AMS Enterprises, Inc., in fee.

And the said Grantor doth hereby covenant to and with the said Grantee that, it, the said Grantor, its successors, SHALL and WILL, Warrant and forever defend the herein above described premises, with the hereditaments and appurtenances, unto the said Grantee and assigns, against the said Grantor and against every other person lawfully claiming or who shall hereafter claim the same or any part thereof, by, from or under it them or any of them. IN WITNESS WHEREOF, the said Grantor ha caused these present to be duly executed, the day and year first above written.

Attest:

By:

Secretary

Amos M. Stoltzfus
President

State of Penna. County of Chester

On this _____ day of _____, A. D. 1991, before me, the undersigned officer,

personally appeared Amos M. Stoltzfus, who acknowledged himself to be the

President of the said Grantor corporation, and that he, as such President, being authorized

to do so, executed the foregoing instrument, for the purposes therein contained, by signing the name of the corporation

by himself as President.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Notary Public

**MANITO TITLE
INSURANCE
COMPANY**



No. _____

Deed

The address of the Grantee is _____

RDED in Deed Book _____ page _____
under my hand and the seal of the said _____
the date above written.

Recorder of Deeds

6. REGULATORY REQUIREMENTS

The following is a list of permits in the Township's name. Included in this list is the PADEP WQM permit for Valley View Business Park Pump Station which lists Valley Township as the permittee while the pump station is owned, operated, and maintained by the developer All County Partnership.



Pennsylvania Department of Environmental Protection

Lee Park, Suite 6010
555 North Lane
Conshohocken, PA 19428

March 13, 2003

Southeast Regional Office

Phone: 610-832-6130
Fax: 610-832-6133

Mr. Edward Hammond
Chairman, Board of Supervisors
Valley Township
890 West Lincoln Highway
Coatesville, PA 19320

Re: Hill Farm - Villages at Hillview
Water Quality Management
Part II Permit No. 1503404
APS No. 475159, AUTH No. 492779
Valley Township
Chester County

Dear Mr. Hammond:

Your permit is enclosed.

You must comply with all Standard and Special Conditions attached to this Permit. Construction must be done in accordance with the permit application and all supporting documentation. Please review the permit conditions and the supporting documentation submitted with your application before starting construction.

Please note that applications, which will be submitted for subsequent phases of this project, should be applied for as amendments to this permit. Due to capacity limitations of the Pennsylvania American Coatesville Waste Water Treatment Plant, which ultimately will receive the sewerage from this project, Phase two of this project cannot be permitted until appropriate 537 Planning has been approved and modifications have been made to obtain sufficient capacity.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa. C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, 717-787-3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800-654-5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at 717-787-3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.



Mr. Edward Hammond

- 2 -

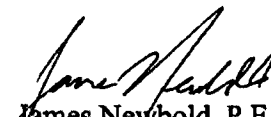
March 13, 2003

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST REACH THE BOARD WITHIN 30 DAYS. YOU DO NOT NEED A LAWYER TO FILE AN APPEAL WITH THE BOARD.

IMPORTANT LEGAL RIGHTS ARE AT STAKE, HOWEVER, SO YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD (717-787-3483) FOR MORE INFORMATION.

If you have any questions, please call Mr. Paul R. Grella at 610-832-6195.

Sincerely,


James Newbold, P.E.
Regional Manager
Water Management

Enclosures

cc: Operations Section
Water Management
Permits Chief
File
Re 30 (RN03WQM)64-16

3600-PM-WQ0015 Rev. 8/94

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER MANAGEMENT PROGRAM

PERMIT NO. 1503404
AMENDMENT NO. _____

WATER QUALITY MANAGEMENT PERMIT

A. PERMITTEE (Name & Address):
Valley Township - Client ID No. 81247
890 West Lincoln Highway
Coatesville, PA 19320

B. PROJECT (Name, County, Municipality)
Hill Farm - Villages at Hillview - Site ID No. 604062
Valley Township
Chester County

| | | | |
|-----------|--|---|---|
| C. THIS: | <input checked="" type="checkbox"/> Permit | <input type="checkbox"/> Permit Amendment | <input type="checkbox"/> Permit Transfer |
| APPROVES: | <input checked="" type="checkbox"/> | The construction/operation of: | Modification(s) to the construction/operation of: |
| | <input type="checkbox"/> | Sewage Treatment Facilities | Industrial Waste Treatment Facilities |
| | <input type="checkbox"/> | Land Application Facilities | Other: _____ |
| | <input type="checkbox"/> | Average Design Flow of _____ | MGD consisting of: _____ |
| | <input checked="" type="checkbox"/> | Sewers and Appurtenances | Pump Station(s) |
| | <input type="checkbox"/> | Impoundment(s) | Injection Well(s) |
| | <input type="checkbox"/> | Soil Erosion & Sedimentation Control Plan | Forcemain with or without Individual Pumps |
| | <input type="checkbox"/> | Stream Crossing(s) | Outfall & Headwall(s) |

D. APPROVAL GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING CONDITIONS:

1. a. All construction, operations, and procedures shall be in accordance with the Water Quality Management Permit/Permit Amendment Application dated January 23, 2003, its supporting documentation, and addendums dated _____ Such application, its supporting documentation and addendums are hereby made a part of this permit.

b. Water Quality Management Permit No. _____ dated _____ and conditions, supporting documentation and addendums are (except for any modifications to the original permit herein permitted) also made a part of this permit amendment.

2. Conditions numbered 1-6, 11-13, 15, 17-19 of the Sewerage standard conditions dated 09/98 and conditions numbered 1-13 of the erosion control standard conditions dated 09/98 are attached and made part of this permit.

3. Special conditions numbered I are attached and made part of this permit.

E. THE AUTHORITY GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING FURTHER QUALIFICATIONS:

1. If there is a conflict between the application or its supporting documents and amendments and the standard or special conditions, the standard or special conditions shall apply.

2. Failure to comply with the rules and regulations of the Department or with the terms or conditions of this permit shall void the authority given to the permittee by the issuance of the permit.

3. This permit is issued pursuant to the Clean Stream law Act of June 22, 1937, P.L. 1987, as amended 35 P.S. § 691.1 et seq., and/or the Dam Safety and Encroachments Act of November 26, 1978, P.L. 1375, as amended, 32 P.S. § 693.1 et seq. Issuance of this permit shall not relieve the permittee of any responsibility under any other law.

4. Industrial Facilities - If the herein permitted facilities or modifications are not completed with two (2) years of the issue date below, this permit will become null and void and reapplication shall be required.

| | |
|----------------------------|--|
| PERMIT ISSUED: | DEPARTMENT OF ENVIRONMENTAL PROTECTION |
| DATE <u>March 13, 2003</u> | BY: <u><i>Jama J. Seubold</i></u> |
| AMENDMENT ISSUED: | TITLE: <u>Regional Manager, Water Management</u> |
| DATE _____ | |

**Sewerage Permit No. 1503404
Valley Township
Valley Township, Chester County**

This permit is subject to the following Special Condition(s):

- I. Consistent with Department of Environmental Protection Policy, the Department did not conduct a detailed technical review of the application for this permit. The Department considers the registered professional engineer whose seal is affixed to the design documents, to be fully responsible for the adequacy of all aspects of the facility design.

Re 30 (GJC03WQM)64-1



Pennsylvania Department of Environmental Protection

2 East Main Street
Norristown, PA 19401
July 6, 2007

Southeast Regional Office

Phone: 484-250-5970
Fax: 484-250-5971

Ms. Karen Chandler
Township Secretary
Valley Township
P.O. Box 467
890 West Lincoln Highway
Coatesville, PA 19320

Re: PA American Water Company – Coatesville WWTF
Valley View Subdivision
Application No. WQG02-150710
File Type: Permit
Valley Township
Chester County

Dear Ms. Chandler:

Your permit is enclosed.

You must comply with all Standard and Special Conditions attached to this permit. Construction must be done in accordance with the permit application and all supporting documentation. Please review the permit conditions and the supporting documentation submitted with your application before starting construction.

A Water Quality Management Permit must be obtained from the Department of Environmental Protection (Department) prior to constructing the permanent pump station that is associated with the capped 6-inch force main.

Enclosed is the "Sewage and Industrial Wastewater Facilities Construction Certification" form. A Pennsylvania-registered Professional Engineer must sign and complete this form prior to startup of the facilities (see Special Conditions). You or your authorized representative must also sign the form. This certification and other post-construction documentation must be submitted to the Department within 30 days following startup of the facilities.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, 717-787-3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800-654-5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at 717-787-3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.



Ms. Karen Chandler

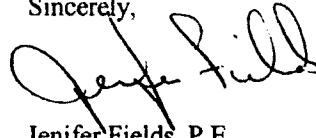
- 2 -

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If you have any questions, please call Mr. Andrew Haneiko at 484-250-5183.

Sincerely,

A handwritten signature in black ink, appearing to read "Jenifer Fields". The signature is written in a cursive, flowing style.

Jenifer Fields, P.E.
Regional Manager
Water Management

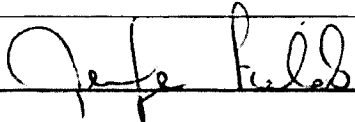
Enclosures

cc: Mr. Hudson, P.E. – Evans Mill Environmental, Inc.
Facilities Chief
Operations Section
Mr. Sheckler
Re 30 (joh07wqm)172-1



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

WQG-02
WATER QUALITY MANAGEMENT
GENERAL PERMIT FOR SEWER EXTENSIONS AND PUMP STATIONS
PERMIT NUMBER WQG02150710

| | |
|--|---|
| <p>A. PERMITTEE (Name and Address): Valley Township P.O. Box 467 890 W. Lincoln Highway Coatesville, PA 19320</p> <p>CLIENT ID#: 81247</p> | <p>B. PROJECT/FACILITY (Name): Valley View Subdivision</p> <p>C. LOCATION (County, Municipality): Chester County Valley Township</p> |
| <p>D. This General Permit approves the construction and operation of:</p> <p><input checked="" type="checkbox"/> SEWER EXTENSION</p> <p><input checked="" type="checkbox"/> PUMP STATION</p> | |
| <p>E. APPROVAL GRANTED BY THIS GENERAL PERMIT IS SUBJECT TO THE FOLLOWING:</p> <p>1. All construction, operations and procedures shall be in accordance with the <i>Domestic Wastewater Facilities Manual</i>.</p> <p>Transfers: In the event the permittee plans to transfer ownership of the facility to another entity, the permittee and the transferee shall submit an application for such transfer to DEP. If the transfer is approved by DEP, the transferee is subject to the terms and conditions of this General Permit.</p> <p>2. The attached conditions apply to this General Permit and are hereby made part of same.</p> | |
| <p>F. THE AUTHORITY GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING FURTHER QUALIFICATIONS:</p> <p>1. If there is a conflict between the NOI or its supporting documents and amendments and the attached conditions, the attached conditions shall apply.</p> <p>2. Failure to comply with the rules and regulations of DEP or with the terms or conditions of this General Permit shall void the authority given to the permittee by the issuance of this General Permit.</p> <p>3. This General Permit is issued pursuant to the Clean Streams Law, Act of June 22, 1937, P.L. 1987, as amended 35 P.S. §691.1 <i>et seq.</i> Issuance of this General Permit shall not relieve the permittee of any responsibility under any other law.</p> | |
| <p>PERMIT ISSUED: July 6, 2007</p> | <p>BY:  TITLE: <u>Water Management Program Manager</u></p> |

Permit



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

PERMIT CONDITIONS

General

1. Consistent with DEP's technical guidance document *Conducting Technical Reviews of Water Quality Management Permit Wastewater Treatment Facilities*, DEP ID: 362-2000-007, available on DEP's website, DEP considers the registered professional engineer whose seal is affixed to the design documents to be fully responsible for the adequacy of all aspects of the facility's design.
2. The approval is specifically made contingent on the permittee acquiring all necessary property rights, by easement or otherwise, providing for the satisfactory construction, operation, maintenance and replacement of all sewers or sewerage structures in, along or across private property with full rights of ingress, egress and regress.
3. If, at any time, the sewer extension and/or pump station covered by this General Permit creates a public nuisance, including but not limited to, causing malodors or causing environmental harm to waters of the Commonwealth, DEP may require the permittee to adopt appropriate remedial measures to abate the nuisance or harm.
4. This permit does not relieve the permittee of its obligations to comply with all federal, interstate, state or local laws, ordinances and regulations applicable to the facilities.
5. This General Permit does not give any real or personal property rights or grant any exclusive privileges, nor shall it be construed to grant or confirm any right, easement or interest in, on, to, or over any lands which belong to the Commonwealth.
6. No discharge is authorized from these facilities unless approved by an NPDES Permit.

Construction

7. An Erosion and Sedimentation (E&S) Control Plan must be developed prior to construction of the permitted facility, pursuant to Title 25 Pa. Code Chapter 102, and implemented during and after the earth disturbance activity.
If the activity involves 5 or more acres of earth disturbance, or from 1 to 5 acres of earth disturbance with a point source discharge to surface waters of the Commonwealth, an NPDES Permit is required.
In addition to the state NPDES permitting requirements, some municipalities, through local ordinances, require the E&S Control Plan to be reviewed and approved by the local county conservation district office prior to construction. For specific information regarding E&S control planning approval and NPDES permitting requirements please contact your local county conservation district office.
8. Prior to beginning any construction or excavation, the locations of all utility lines must be identified through notification to the PA One Call system (www.paonecall.org). The notification shall not be less than three nor more than 10 working days in advance of beginning the construction or excavation.
9. The local waterways conservation officer of the Pennsylvania Fish and Boat Commission (PFBC) shall be notified when the construction of any stream crossing and/or outfall is started and completed. A written permit must be secured from the PFBC if there is any use of explosives in any waterways and the permittee shall notify the local waterways conservation officer when explosives are to be used.
10. Manhole inverts shall be formed to facilitate the flow of the sewage and to prevent the stranding of sewage solids. The whole manhole structure shall be built to prevent undue infiltration, entrance of street wash or grit and provide safe access to facilitate manhole maintenance activities.
11. The facilities shall be constructed under the supervision of a Pennsylvania registered Professional Engineer in accordance with the approved reports, plans and specifications.

12. A Pennsylvania registered Professional Engineer shall certify that construction of the permitted facilities was completed in accordance with the application and design plans submitted to DEP, using "Post Construction Certification" (3800-PM-WSWM0179a). It is the permittee's responsibility to ensure that a Professional Engineer is on-site to provide the necessary oversight and/or inspections to certify the facilities. The certification must be submitted to DEP before the facility is placed in operation. If requested, "as-built" drawings, photographs (if available) and a description of any DEP-approved deviations from the application and design plans must be submitted to DEP within 30 days of certification. Construction must be completed within two years of permit issue date.

| |
|----------------------------------|
| Operation and Maintenance |
|----------------------------------|

13. The permittee shall maintain sewer extension and/or pump station operation and maintenance (O&M) manuals at the facility and ensure proper O&M of the permitted facility. The permittee shall file the O&M manuals with DEP upon request.
14. Stormwater from roofs, foundation drains, basement drains or other sources shall not be admitted directly to the sewer extension or pump station.
15. The sewer extension shall have adequate foundation support as soil conditions require. Trenches shall be back-filled to ensure that sewers will have proper structural stability, with minimal settling and adequate protection against breakage. Concrete used in connection with these sewers shall be protected from damage by water, freezing, drying or other harmful conditions until cured.
16. The approved sewer extensions and/or pump stations shall be maintained in good condition, kept free of deposits by flushing or other cleaning methods and repaired when necessary.
17. The sewer extension and/or pump station shall be properly operated and maintained so that the facility will perform as designed.
18. The attention of the permittee is called to the highly explosive nature of certain gases generated by the digestion of sewage solids when these gases are mixed in proper proportions with air and to the highly toxic character of certain gases arising from such digestion or from sewage in poorly ventilated compartments or sewers. Therefore, at all places throughout the facilities where hazard of fire, explosion or danger from toxic gases may occur, the permittee shall post conspicuous permanent and legible warnings. The permittee shall instruct all employees concerning the aforesaid hazards, first aid and emergency methods of meeting such hazards and shall make all necessary equipment and material accessible.
19. There shall be no physical connection between a public water supply system and a sewer or appurtenance to it which would permit the passage of any sewage or polluted water into the potable water supply. No water pipe shall pass through or come in contact with any part of the sewer extension and/or pump station.
20. Collected screenings, slurries, sludge and other solids shall be handled and disposed of in compliance with Title 25 Pa. Code, Chapters 271, 273, 275, 283 and 285 (related to permits and requirements for land filling, land application, incineration and storage of sewage sludge), Federal Regulations 40 CFR Part 257 and the Federal Clean Water Act and its amendments.



COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

**WATER QUALITY MANAGEMENT
 POST CONSTRUCTION CERTIFICATION**

PERMITTEE IDENTIFIER

| | |
|----------------|-----------------|
| Permittee | Valley Township |
| Municipality | Valley Township |
| County | Chester |
| WQM Permit No. | WQG02150710 |
| Facility Type | Pump Station |

All of the above information should be taken directly from the Water Quality Management Permit.

CERTIFICATION

This certification must be completed and returned to the permits section of the DEP's regional office issuing the WQM permit within 30 days of completion of the project and received by DEP prior to operation, and if requested, as-built drawings, photographs (if available) and a discussion of any DEP-approved deviations from the design plans during construction.

I, being a Registered Professional Engineer in Pennsylvania, do hereby certify to the best of my knowledge and belief, based upon personal observation and interviews, that the above facility approved under the Water Quality Management Permit has been constructed in accordance with the plans, specifications and modifications approved by DEP.

Construction Completion Date (MM/DD/YYYY): _____

| | |
|--|---|
| | Professional Engineer |
| | Name _____ (Please Print or Type) |
| | Signature |
| | Date |
| | License Expiration Date |
| | Firm or Agency |
| | Telephone |
| | Permittee or Authorized Representative |
| | Name _____ (Please Print or Type) |
| | Signature |
| | Title |
| | Telephone |



pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION

SOUTHEAST REGIONAL OFFICE

November 23, 2010

Mr. Grover Koon, Chairman
Valley Township
890 West Lincoln Highway
P.O. Box 467
Coatesville, PA 19320

Re: Keystone Foods Pump Station Re-Rate
Permit No. WQG02-150710 A1
File Type: Amendment
Valley Township
Chester County

Dear Mr. Koon:

Your permit is enclosed. This amendment re-rates the capacity of the Keystone Foods Pump Station from 3,413 gpd to 5,513 gpd. All other conditions remain the same. Please review the permit conditions and the supporting documentation.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, 717.787.3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800.654.5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at 717.787.3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST REACH THE BOARD WITHIN 30 DAYS. YOU DO NOT NEED A LAWYER TO FILE AN APPEAL WITH THE BOARD.

IMPORTANT LEGAL RIGHTS ARE AT STAKE, HOWEVER, SO YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD (717.787.3483) FOR MORE INFORMATION.

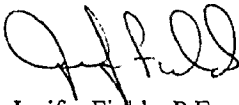
Mr. Grover Koon, Chairman

- 2 -

November 23, 2010

If you have any questions, please call Mr. Keith Dudley at 484.250.5190.

Sincerely,



Jenifer Fields, P.E.
Regional Manager
Water Management

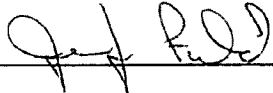
Enclosures

cc: Mr. Edward F. Rasiul, P.E. – Pennoni Associates, Inc.
Mr. Dan Hudson, P.E. – Evans Mill Environmental, LLC ✓
Operations Section
Re 30 (CM10WQ)327-3



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

WQG-02
WATER QUALITY MANAGEMENT
GENERAL PERMIT FOR SEWER EXTENSIONS AND PUMP STATIONS
PERMIT NUMBER WQG02150710A1

| | |
|--|--|
| A. PERMITTEE (Name and Address): Valley Township P.O. Box 467 890 West Lincoln highway Coatesville, PA 19320 CLIENT ID#: 81247 | B. PROJECT/FACILITY (Name): Keystone Foods PS (aka Valley View Sub) C. LOCATION (County, Municipality): Chester County Valley Township |
| D. This General Permit approves the construction and operation of: <input type="checkbox"/> SEWER EXTENSION <input checked="" type="checkbox"/> PUMP STATION: Approved Avg. Annual – 5,513 gpd, Design Hydraulic Capacity – 37,152 gpd. | |
| E. APPROVAL GRANTED BY THIS GENERAL PERMIT IS SUBJECT TO THE FOLLOWING: 1. All construction, operations and procedures shall be in accordance with the <i>Domestic Wastewater Facilities Manual</i> . Transfers: In the event the permittee plans to transfer ownership of the facility to another entity, the permittee and the transferee shall submit an application for such transfer to DEP. If the transfer is approved by DEP, the transferee is subject to the terms and conditions of this General Permit. 2. The attached conditions apply to this General Permit and are hereby made part of same. | |
| F. THE AUTHORITY GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING FURTHER QUALIFICATIONS: 1. If there is a conflict between the NOI or its supporting documents and amendments and the attached conditions, the attached conditions shall apply. 2. Failure to comply with the rules and regulations of DEP or with the terms or conditions of this General Permit shall void the authority given to the permittee by the issuance of this General Permit 3. This General Permit is issued pursuant to the Clean Streams Law, Act of June 22, 1937, P.L. 1987, as amended 35 P.S. §691.1 <i>et seq.</i> Issuance of this General Permit shall not relieve the permittee of any responsibility under any other law. | |
| PERMIT ISSUED: November 23, 2010 | BY:  TITLE: Water Management Program Manager |



pennsylvania

DEPARTMENT OF ENVIRONMENTAL
PROTECTION

11/18/18

CERTIFIED MAIL NO. 7001 2510 0006 1769 5860
RETURN RECEIPT NO. 9590 9402 2927 7094 0157 74

Patrice Proctor
Valley Township
P. O. Box 467 890 W Lincoln Highway
Coatesville, PA 19320-0467

Re: WQM Permit - Sewage
Valley View Business Park Pump Station
Permit No. WQG02150710 A-2
Authorization ID No. 1293899
Valley Township, Chester County

Dear Ms. Proctor:

Your Water Quality Management (WQM) permit amendment is enclosed. You must comply with all Standard and Special Conditions attached to this Permit. Construction must be done in accordance with the permit application and all supporting documentation. Please review the permit conditions and the supporting documentation submitted with your application before starting construction.

Please note that you are responsible for securing all other required permits, approvals and/or registrations associated with the project, if applicable, under Chapters 102 (erosion and sedimentation control), 105 (stream obstructions and encroachments) and 106 (floodplains) of DEP's regulations. Construction may not proceed until all other required permits have been obtained.

Any person aggrieved by this action may appeal the action to the Environmental Hearing Board (Board), pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. § 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter 5A. The Board's address is:

Environmental Hearing Board
Rachel Carson State Office Building, Second Floor
400 Market Street
P.O. Box 8457
Harrisburg, PA 17105-8457

TDD users may contact the Environmental Hearing Board through the Pennsylvania Relay Service, 800-654-5984.

Appeals must be filed with the Board within 30 days of receipt of notice of this action

Ms. Patrice Proctor

- 2 -

unless the appropriate statute provides a different time. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

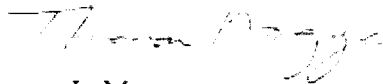
A Notice of Appeal form and the Board's rules of practice and procedure may be obtained online at <http://ehb.courtapps.com> or by contacting the Secretary to the Board at 717-787-3483. The Notice of Appeal form and the Board's rules are also available in braille and on audiotape from the Secretary to the Board.

IMPORTANT LEGAL RIGHTS ARE AT STAKE. YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD AT 717-787-3483 FOR MORE INFORMATION. YOU DO NOT NEED A LAWYER TO FILE A NOTICE OF APPEAL WITH THE BOARD.

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST BE FILED WITH AND RECEIVED BY THE BOARD WITHIN 30 DAYS OF RECEIPT OF NOTICE OF THIS ACTION.

During construction or upon completing construction, please contact Reza H. Chowdhury, E.I.T. at 484.250.5197 or rchowdhury@pa.gov so that an inspection of the facilities may be conducted, at DEP's discretion.

Sincerely,



Thomas L. Magge
Environmental Program Manager
Clean Water Program

Enclosures

cc: Mr. Reading – All County Partnership
Mr. Dobinsky – Montrose Environmental Group Company
Mr. McAdams – Operations Section
Chester County Health Department (w/o enclosure)
File



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

WQG-02
WATER QUALITY MANAGEMENT
GENERAL PERMIT FOR SEWER EXTENSIONS AND PUMP STATIONS
PERMIT NUMBER WQG02150710 A-2

| | |
|---|--|
| <p>A. PERMITTEE (Name and Address): Valley Township PO Box 467 890 W Lincoln Highway Coatesville, PA 19320-0467</p> <p>CLIENT ID# 81247</p> | <p>B. PROJECT/FACILITY (Name): Valley View Business Park Pump Station</p> <p>C. LOCATION (County, Municipality): Valley Township, Chester County</p> |
| <p>D. This General Permit approves the construction and operation of:</p> <p><input type="checkbox"/> SEWER EXTENSION</p> <p><input checked="" type="checkbox"/> PUMP STATION Average Annual flow of 11,775 GPD, Hydraulic Design Capacity 47,100 GPD.</p> | |
| <p>E. APPROVAL GRANTED BY THIS GENERAL PERMIT IS SUBJECT TO THE FOLLOWING:</p> <ol style="list-style-type: none">1 All construction, operations and procedures shall be in accordance with the <i>Domestic Wastewater Facilities Manual Transfers</i>: In the event the permittee plans to transfer ownership of the facility to another entity, the permittee and the transferee shall submit an application for such transfer to DEP. If the transfer is approved by DEP, the transferee is subject to the terms and conditions of this General Permit2 The attached conditions apply to this General Permit and are hereby made part of same | |
| <p>F. THE AUTHORITY GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING FURTHER QUALIFICATIONS:</p> <ol style="list-style-type: none">1 If there is a conflict between the NOI or its supporting documents and amendments and the attached conditions the attached conditions shall apply2 Failure to comply with the rules and regulations of DEP or with the terms or conditions of this General Permit shall void the authority given to the permittee by the issuance of this General Permit.3 This General Permit is issued pursuant to the Clean Streams Law, Act of June 22, 1937 P.L. 1987 as amended 35 P.S. §691.1 et seq. Issuance of this General Permit shall not relieve the permittee of any responsibility under any other law. | |
| <p>PERMIT ISSUED: NOV 13 2018</p> | <p>BY: <u>Thomas Meece</u></p> <p>TITLE: <u>Clean Water Program Manager</u></p> |

WQG-02
WATER QUALITY MANAGEMENT
GENERAL PERMIT FOR SEWER EXTENSIONS AND PUMP STATIONS
PERMIT CONDITIONS

General

1. DEP considers the licensed professional engineer whose seal is affixed to the design documents to be fully responsible for the adequacy of all aspects of the facility's design.
2. The approval is specifically made contingent on the permittee acquiring all necessary property rights, by easement or otherwise, providing for the satisfactory construction, operation, maintenance and replacement of all sewers or sewerage structures in, along or across private property with full rights of ingress, egress and regress.
3. If, at any time, the sewer extension and/or pump station covered by this General Permit creates a public nuisance, including but not limited to, causing malodors or causing environmental harm to waters of the Commonwealth, DEP may require the permittee to adopt appropriate remedial measures to abate the nuisance or harm.
4. The approval of the plans, and the authority granted in this permit, if not specifically extended, shall cease and be null and void 2 years from the issuance date of this permit unless construction or modification of the facilities covered by this permit has begun on or before the second anniversary of the permit date.
5. This permit does not relieve the permittee of its obligations to comply with all federal, interstate, state or local laws, ordinances and regulations applicable to the facilities.
6. This General Permit does not give any real or personal property rights or grant any exclusive privileges, nor shall it be construed to grant or confirm any right, easement or interest in, on, to, or over any lands which belong to the Commonwealth.
7. No discharge is authorized from these facilities unless approved by an NPDES Permit.

Construction

8. A permit or approval is required under Chapter 102 for most earth disturbance activities. A permit or registration under Chapter 105 is required for stream obstructions, crossings, etc. The permittee must secure the necessary permits, approvals or registrations under Chapters 102 and 105 prior to beginning construction.
9. Prior to beginning any construction or excavation, the locations of all utility lines must be identified through notification to the PA One Call system (www.paonecall.org). The notification shall not be less than three nor more than 10 working days in advance of beginning the construction or excavation.
10. The local waterways conservation officer of the Pennsylvania Fish and Boat Commission (PFBC) shall be notified when the construction of any stream crossing and/or outfall is started and completed. A written permit must be secured from the PFBC if there is any use of explosives in any waterways and the permittee shall notify the local waterways conservation officer when explosives are to be used.
11. Manhole inverts shall be formed to facilitate the flow of the sewage and to prevent the stranding of sewage solids. The whole manhole structure shall be built to prevent undue infiltration, entrance of street wash or grit and provide safe access to facilitate manhole maintenance activities.
12. The facilities shall be constructed under the supervision of a Pennsylvania licensed Professional Engineer in accordance with the approved reports, plans and specifications.
13. A Pennsylvania licensed Professional Engineer shall certify that construction of the permitted facilities was completed in accordance with the application and design plans submitted to DEP, using "Post Construction Certification" (3800-PM-WSFR0179a). It is the permittee's responsibility to ensure that a Professional Engineer is on-site to provide the necessary oversight and/or inspections to certify the facilities. The certification must be submitted to DEP before the facility is placed in operation. If requested, "as-built" drawings, photographs (if available) and a description of any DEP-approved deviations from the application and design plans must be submitted to DEP within 30 days of certification. Construction must be completed within two years of permit issue date.

Operation and Maintenance

-
14. The permittee shall maintain sewer extension and/or pump station operation and maintenance (O&M) manuals at the facility and ensure proper O&M of the permitted facility. The permittee shall file the O&M manuals with DEP upon request.
 15. Stormwater from roofs, foundation drains, basement drains or other sources shall not be admitted directly to the sewer extension or pump station.
 16. The sewer extension shall have adequate foundation support as soil conditions require. Trenches shall be back-filled to ensure that sewers will have proper structural stability, with minimal settling and adequate protection against breakage. Concrete used in connection with these sewers shall be protected from damage by water, freezing, drying or other harmful conditions until cured.
 17. The approved sewer extensions and/or pump stations shall be maintained in good condition, kept free of deposits by flushing or other cleaning methods and repaired when necessary.
 18. The sewer extension and/or pump station shall be properly operated and maintained so that the facility will perform as designed.
 19. The attention of the permittee is called to the highly explosive nature of certain gases generated by the digestion of sewage solids when these gases are mixed in proper proportions with air and to the highly toxic character of certain gases arising from such digestion or from sewage in poorly ventilated compartments or sewers. Therefore, at all places throughout the facilities where hazard of fire, explosion or danger from toxic gases may occur, the permittee shall post conspicuous permanent and legible warnings. The permittee shall instruct all employees concerning the aforesaid hazards, first aid and emergency methods of meeting such hazards and shall make all necessary equipment and material accessible.
 20. There shall be no physical connection between a public water supply system and a sewer or appurtenance to it which would permit the passage of any sewage or polluted water into the potable water supply. No water pipe shall pass through or come in contact with any part of the sewer extension and/or pump station.
 21. Collected screenings, slurries, sludge and other solids shall be handled and disposed of in compliance with Title 25 Pa. Code, Chapters 271, 273, 275, 283 and 285 (related to permits and requirements for land filling, land application, incineration and storage of sewage sludge), Federal Regulations 40 CFR Part 257 and the Federal Clean Water Act and its amendments.



pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHEAST REGIONAL OFFICE

September 28, 2010

Mr. Grover Koon, Chairman
Valley Township
890 West Lincoln Highway
P.O. Box 467
Coatesville, PA 19320

Re: Rock Run Pump Station Rerate No. 2
Permit No. 1502419-A-3
File Type: Amendment
Valley Township
Chester County

Dear Mr. Koon:

Your permit amendment is enclosed.

Please review the permit conditions and the supporting documentation submitted with your application before starting construction.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, 717.787.3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800.654.5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at 717.787.3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST REACH THE BOARD WITHIN 30 DAYS. YOU DO NOT NEED A LAWYER TO FILE AN APPEAL WITH THE BOARD.

IMPORTANT LEGAL RIGHTS ARE AT STAKE, HOWEVER, SO YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD (717.787.3483) FOR MORE INFORMATION.

RECEIVED
SEP 30 2010

PENNONI ASSOCIATES INC

Southeast Regional Office | 2 East Main Street | Norristown, PA 19401-4915

484.250.5970 | Fax 484.250.5971

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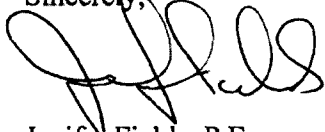
www.depweb.state.pa.us

Mr. Grover Koon, Chairman

- 2 -

If you have any questions, please call Mr. Keith Dudley at 484.250.5190.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Fields", written in a cursive style.

Jenifer Fields, P.E.
Regional Manager
Water Management

Enclosures

cc: Mr. Rasiul, P.E. – Pennoni Associates
Operations Section
Re (GJS10WQM)260-8



**WATER QUALITY MANAGEMENT
PERMIT**

| | | |
|---|---|--|
| <p>A. PERMITTEE (Name and Address): Valley Township 890 W. Lincoln Highway P.O. Box 467 Coatesville, PA 19320</p> | <p>CLIENT ID#: 81247</p> | <p>B. PROJECT/FACILITY (Name): Rock Run Pump Station Re-Rate</p> |
| <p>C. LOCATION (Municipality, County): Valley Township Chester County</p> | | <p>SITE ID#: 481242</p> |
| <p>D. This amendment approves the modification of sewerage facilities consisting of: -Reprogramming the variable frequency drives to allow the pump station to operate at 800 gpm maximum peak pumping rate, with any one pump out of service.</p> | | |
| <p>Pump Stations: <u>1</u> Design Hydraulic Capacity: <u>800</u> GPM Average Annual Flow: <u>0.384</u> MGD</p> | <p>Manure Storage: Volume: _____ MG Freeboard: _____ inches</p> | <p>Industrial Wastewater/Sewage Treatment Facility: Annual Average Flow: _____ MGD Design Hydraulic Capacity: _____ MGD Design Organic Capacity: _____ lb/day</p> |
| <p>E. APPROVAL GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING:</p> <p>1. New Permits: All construction, operations and procedures shall be in accordance with the Water Quality Management Permit application dated <u>1502419</u>, its supporting documentation and addendums dated <u>3/18/2003</u>, which are hereby made a part of this permit.</p> <p>Amendments: All construction, operations and procedures shall be in accordance with the Water Quality Management Permit Amendment application dated <u>6/10/2010</u> and its supporting documentation and addendums dated <u>2/24/2006</u>, which are hereby made a part of this amendment.</p> <p>Except for any herein approved modifications, all terms, conditions, supporting documentation and addendums approved under Water Quality Management Permit No. _____ dated _____ shall remain in effect.</p> <p>Transfers: Water Quality Management Permit No. _____ dated _____ and conditions, supporting documentation and addendums are also made part of this transfer.</p> <p>2. Permit Conditions Relating to Sewerage are attached and made part of this permit.</p> <p>3. Special Conditions numbered <u>N/A</u> are attached and made part of this permit.</p> | | |
| <p>F. THE AUTHORITY GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING FURTHER QUALIFICATIONS:</p> <p>1. If there is a conflict between the application or its supporting documents and amendments and the attached conditions, the attached conditions shall apply.</p> <p>2. Failure to comply with the rules and regulations of DEP or with the terms or conditions of this permit shall void the authority given to the permittee by the issuance of this permit.</p> <p>3. This permit is issued pursuant to the Clean Streams Law Act of June 22, 1937, P.L. 1987, as amended 35 P.S. §691.1 <i>et seq.</i> Issuance of this permit shall not relieve the permittee of any responsibility under any other law.</p> | | |
| <p>PERMIT ISSUED: September 28, 2010</p> | | <p>BY: TITLE: <u>Water Management Program Manager</u></p> |



Pennsylvania Department of Environmental Protection

2 East Main Street
Norristown, PA 19401

September 25, 2006

Southeast Regional Office

Phone: 484-250-5970

Fax: 484-250-5971

Ms. Patrice L. Proctor
Vice Chairman
Valley Township
890 West Lincoln Highway
Coatesville, PA 19320-1943

Re: Round Hill Development
Application No. 1506413
File Type: Permit
Valley Township
Chester County

Dear Ms. Proctor:

Your permit is enclosed.

You must comply with all Standard and Special Conditions attached to this permit. Construction must be done in accordance with the permit application and all supporting documentation. Please review the permit conditions and the supporting documentation submitted with your application before starting construction.

Enclosed is the "Sewage and Industrial Wastewater Facilities Construction Certification" form. A Pennsylvania-registered Professional Engineer must sign and complete this form prior to startup of the facilities (see Special Conditions). You or your authorized representative must also sign the form. This certification and other post-construction documentation must be submitted to the Department within 30 days following startup of the facilities.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, 717-787-3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800-654-5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at 717-787-3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.



Ms. Patrice Proctor

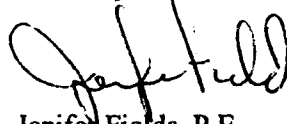
- 2 -

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST REACH THE BOARD WITHIN 30 DAYS. YOU DO NOT NEED A LAWYER TO FILE AN APPEAL WITH THE BOARD.

IMPORTANT LEGAL RIGHTS ARE AT STAKE, HOWEVER, SO YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD (717-787-3483) FOR MORE INFORMATION.

If you have any questions, please call Mr. Andrew Haneiko at 484-250-5183.

Sincerely,

A handwritten signature in black ink, appearing to read "Jenifer Fields". The signature is written in a cursive style with a large initial "J".

Jenifer Fields, P.E.
Regional Manager
Water Management

Enclosures

cc: Mr. McCarthy, P.E. – McCarthy Engineering Association
Operations Section
Mr. Sheckler
Re (AR06WQM)268-8



**WATER QUALITY MANAGEMENT
PERMIT**

| | | |
|--|--------------------------|---|
| A. PERMITTEE (Name and Address): Valley Township 890 W. Lincoln Highway P.O. Box 467 Coatesville, PA 19320-1943 | CLIENT ID#: 81247 | B. PRIMARY FACILITY (Name): Coatesville STP |
|--|--------------------------|---|

| | |
|---|----------------------------|
| C. LOCATION (Municipality, County): Valley Township Chester County | SITE ID#: 481242 |
|---|----------------------------|

D. This permit approves the construction of sewerage facilities consisting of:
Two pump stations with associated force main and the upgrade of sanitary sewer.

| | | |
|---|--|--|
| Pump Stations: <u>2</u> Design Capacity: <u>0.1895, 0.0491</u> MGD Average Annual Flow: <u>0.0486, 0.0117</u> MGD | Manure Storage: Volume _____ MG Freeboard: _____ inches | Industrial Wastewater/Sewage Treatment Facility: Annual Average Flow: _____ MGD Design Hydraulic Capacity: _____ MGD Design Organic Capacity: _____ lb/day |
|---|--|--|

E. APPROVAL GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING:

- New Permits:** All construction, operations, and procedures shall be in accordance with the Water Quality Management Permit application dated 07/18/2006, its supporting documentation, and addendums dated __, which are hereby made a part of this permit.

Amendments: All construction, operations, and procedures shall be in accordance with the Water Quality Management Permit Amendment application dated __ and its supporting documentation, and addendums dated __, which are hereby made a part of this amendment.

 Except for any herein approved modifications, all terms, conditions, supporting documentation and addendums approved under Water Quality Management Permit No. ____ dated __ shall remain in effect.

Transfers: Water Quality Management Permit No. ____ dated __ and conditions, supporting documentation and addendums are also made part of this transfer.
- Permit Conditions Relating to sewerage** are attached and made part of this permit.
- Special Conditions numbered __ are attached and made part of this permit.

F. THE AUTHORITY GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING FURTHER QUALIFICATIONS:

- If there is a conflict between the application or its supporting documents and amendments and the attached conditions, the attached conditions shall apply.
- Failure to comply with the rules and regulations of DEP or with the terms or conditions of this permit shall void the authority given to the permittee by the issuance of this permit.
- This permit is issued pursuant to the Clean Streams Law Act of June 22, 1937, P.L. 1987, as amended 35 P.S. §691.1 *et seq.* Issuance of this permit shall not relieve the permittee of any responsibility under any other law.

| | |
|--|--|
| PERMIT ISSUED: _____ September 25, 2006 | BY: _____ _____ TITLE: <u>Water Management Program Manager</u> |
|--|--|



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

PERMIT CONDITIONS RELATING TO SEWERAGE
For use in Water Quality Management Permits

(Place a \checkmark in the box that applies)

General

- 1. Consistent with the Department of Environmental Protection's (DEP) technical guidance document *Conducting Technical Reviews of Water Quality Management Permit Wastewater Treatment Facilities* (DEP ID: 362-2000-007) available on DEP's website at www.dep.state.pa.us. DEP considers the registered Professional Engineer whose seal is affixed to the design documents to be fully responsible for the adequacy of all aspects of the facility design.
- 2. The permittee shall adopt and enforce an ordinance requiring the abandonment of privies, cesspools or similar receptacles for human waste and onlot sewage disposal systems on the premises of occupied structures accessible to public sewers. All such structures must be connected to the public sewers.
- 3. The outfall sewer or drain shall be extended to the low water mark of the receiving body of water. Where necessary to ensure proper mixing and waste assimilation, an outfall sewer or drain may be extended with appurtenances below the low water mark and into the bed of a navigable stream provided that the permittee has secured an easement, right-of-way, license or lease from DEP in accordance with Section 15 of the Dam Safety and Encroachments Act, the Act of November 26, 1978, P.L. 1375, as amended.
- 4. The approval is specifically made contingent on the permittee acquiring all necessary property rights, by easement or otherwise, providing for the satisfactory construction, operation, maintenance and replacement of all sewers or sewerage structures in, along or across private property with full rights of ingress, egress and regress.
- 5. When construction of the approved sewerage facilities is completed and before they are placed in operation, the permittee shall notify DEP in writing so that a DEP representative may inspect the facilities.
- 6. If, at any time, the sewerage facilities covered by this permit create a public nuisance, including but not limited to, causing malodors or causing environmental harm to waters of the Commonwealth, DEP may require the permittee to adopt appropriate remedial measures to abate the nuisance or harm.
- 7. This permit authorizes the construction and operation of the proposed sewerage facilities until such time as facilities for conveyance and treatment at a more suitable location are installed and capable of receiving and treating the permittee's sewage. Such facilities must be in accordance with the applicable municipal official plan adopted pursuant to Section 5 of the Pennsylvania Sewage Facilities Act, the Act of January 24, 1966, P.L. 1535 as amended. When such municipal sewerage facilities become available, the permittee shall provide for the conveyance of the sewage to these sewerage facilities, abandon the use of these approved facilities and notify DEP accordingly. This permit shall then, upon notice from DEP, terminate and become null and void and shall be relinquished to DEP.
- 8. This permit does not relieve the permittee of its obligations to comply with all federal, interstate, state or local laws, ordinances and regulations applicable to the sewerage facilities.
- 9. This permit does not give any real or personal property rights or grant any exclusive privileges, nor shall it be construed to grant or confirm any right, easement or interest in, on, to or over any lands which belong to the Commonwealth.
- 10. The authority granted by this permit is subject to all effluent requirements, monitoring requirements and other conditions as set forth in NPDES Permit No. PA_____ and all subsequent amendments and renewals. No discharge is authorized from these facilities unless approved by an NPDES Permit.

Construction

- 11. An Erosion and Sedimentation (E&S) Plan must be developed prior to construction of the permitted facility, pursuant to Title 25 Pa. Code Chapter 102, and implemented during and after the earth disturbance activity.

If the activity involves 5 or more acres of earth disturbance, or from 1 to 5 acres of earth disturbance with a point source discharge to surface waters of the Commonwealth, an NPDES permit for the Discharge of Stormwater Associated with Construction Activity is required.

In addition to the state NPDES permitting requirements, some municipalities, through local ordinances, require the E&S Control Plan to be reviewed and approved by the local County Conservation District office prior to

construction. For specific information regarding E&S control planning approval and NPDES permitting requirements, please contact your local County Conservation District office.

- 12. The facilities shall be constructed under the supervision of a Pennsylvania registered Professional Engineer in accordance with the approved reports, plans and specifications.
- 13. A Pennsylvania registered Professional Engineer shall certify that construction of the permitted facilities was completed in accordance with the application and design plans submitted to DEP, using "Post Construction Certification" (3800-PM-WSWM0179a). It is the permittee's responsibility to ensure that a Professional Engineer is on-site to provide the necessary oversight and/or inspections to certify the facilities. The certification must be submitted to DEP before the facility is placed in operation. If requested, "as-built" drawings, photographs (if available) and a description of any DEP-approved deviations from the application and design plans must be submitted to DEP within 30 days of certification.
- 14. Manhole inverts shall be formed to facilitate the flow of the sewage and to prevent the stranding of sewage solids. The manhole structure shall be built to prevent undue infiltration, entrance of street wash or grit and provide safe access to facilitate manhole maintenance activities.
- 15. The local Waterways Conservation Officer of the Pennsylvania Fish and Boat Commission (PFBC) shall be notified when the construction of any stream crossing and/or outfall is started and completed. A written permit must be secured from the PFBC if the use of explosives in any waterways is required and the permittee shall notify the local Waterways Conservation Officer when explosives are to be used.

Operation and Maintenance

- 16. The permittee shall maintain records of "as-built" plans showing all the treatment facilities as actually constructed together with facility operation and maintenance (O&M) manuals and any other relevant information that may be required. Upon request, the "as-built" plans and O&M manuals shall be filed with DEP.
- 17. The sewers shall have adequate foundation support as soil conditions require. Trenches shall be back-filled to ensure that sewers will have proper structural stability, with minimum settling and adequate protection against breakage. Concrete used in connection with these sewers shall be protected from damage by water, freezing, drying or other harmful conditions until cured.
- 18. Stormwater from roofs, foundation drains, basement drains or other sources shall not be admitted directly to the sanitary sewers.
- 19. The approved sewers shall be maintained in good condition, kept free of deposits by flushing or other cleaning methods and repaired when necessary.
- 20. The sewerage facilities shall be properly operated and maintained to perform as designed.
- 21. The attention of the permittee is called to the highly explosive nature of certain gases generated by the digestion of sewage solids when these gases are mixed in proper proportions with air and to the highly toxic character of certain gases arising from such digestion or from sewage in poorly ventilated compartments or sewers. Therefore, at all places throughout the sewerage facilities where hazard of fire, explosion or danger from toxic gases may occur, the permittee shall post conspicuous permanent and legible warnings. The permittee shall instruct all employees concerning the aforesaid hazards, first aid and emergency methods of meeting such hazards and shall make all necessary equipment and material accessible.
- 22. An operator certified in accordance with the Water and Wastewater Systems Operator Certification Act of February 21, 2002, 63 P.S. §§1001, *et seq.* shall operate the sewage treatment plant.
- 23. The permittee shall properly control any industrial waste discharged into its sewerage system by regulating the rate and quality of such discharge, requiring necessary pretreatment and excluding industrial waste, if necessary, to protect the integrity or operation of the permittee's sewerage system.
- 24. There shall be no physical connection between a public water supply system and a sewer or appurtenance to it which would permit the passage of any sewage or polluted water into the potable water supply. No water pipe shall pass through or come in contact with any part of a sewer manhole.
- 25. All connections to the approved sanitary sewers must be in accordance with the corrective action plan as contained in the approved Title 25 Pa. Code Chapter 94 Municipal Wasteload Management Annual Report.
- 26. Collected screenings, slurries, sludge and other solids shall be handled and disposed of in compliance with Title 25 Pa. Code Chapters 271, 273, 275, 283 and 285 (related to permits and requirements for land filling, land application, incineration and storage of sewage sludge), Federal Regulations 40 CFR 257 and the Federal Clean Water Act and its amendments.



COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

**WATER QUALITY MANAGEMENT
 POST CONSTRUCTION CERTIFICATION**

PERMITTEE IDENTIFIER

| | |
|----------------|----------------------------|
| Permittee | Valley Township |
| Municipality | Valley Township |
| County | Chester |
| WQM Permit No. | 1506413 |
| Facility Type | Pump Stations and sewerage |

All of the above information should be taken directly from the Water Quality Management Permit.

CERTIFICATION

This certification must be completed and returned to the permits section of the DEP's regional office issuing the WQM permit within 30 days of completion of the project and received by DEP prior to operation, and if requested, as-built drawings, photographs (if available) and a discussion of any DEP-approved deviations from the design plans during construction.

I, being a Registered Professional Engineer in Pennsylvania, do hereby certify to the best of my knowledge and belief, based upon personal observation and interviews, that the above facility approved under the Water Quality Management Permit has been constructed in accordance with the plans, specifications and modifications approved by DEP.

Construction Completion Date (MM/DD/YYYY): _____

| | |
|--------------------|---|
| Engineer's Seal | Professional Engineer |
| | Name _____ (Please Print or Type) |
| | Signature _____ |
| | Date _____ |
| | License Expiration Date _____ |
| | Firm or Agency _____ |
| | Telephone _____ |
| | Permittee or Authorized Representative |
| | Name _____ (Please Print or Type) |
| | Signature _____ |
| | Title _____ |
| | Telephone _____ |

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
BUREAU OF WATER QUALITY MANAGEMENT

WATER QUALITY MANAGEMENT PERMIT

NO. 1588447

| | |
|--|--|
| <p>A. PERMITTEE (Name and Address) Valley Township Authority 890 W. Lincoln Highway Coatesville, PA 19320</p> | <p>B. PROJECT LOCATION Municipality <u>Valley and West Clam Townships</u> County <u>Chester County</u></p> |
| <p>C. TYPE OF FACILITY (For industrial wastes, type of establishment) Sanitary Sewer Extension and Sewage Pumping Stations</p> | <p>D. NAME OF PLANT AREA SERVED, OUTFALL NO., ETC Highlands Corporate Center</p> |

| | |
|--------------------------|---|
| E. THIS PERMIT APPROVES: | <p>1. Plans For Construction Of:</p> <p>a. <input checked="" type="checkbox"/> Pump Stations, Sewers and Appurtenances b. <input type="checkbox"/> Sewage Treatment Facilities c. <input type="checkbox"/> Industrial Wastes Treatment Facilities</p> <p>d. <input type="checkbox"/> Injection Well e. <input type="checkbox"/> Outfall & Headwall f. <input type="checkbox"/> Stream Crossing g. <input type="checkbox"/> Impoundment</p> |
| | <p>2. The Discharge Of: a. <input type="checkbox"/> Treated <u>N/A</u> b. <input type="checkbox"/> Untreated c. <input type="checkbox"/> Sewage d. <input type="checkbox"/> Industrial Wastes</p> |
| | <p>3. Discharge To: a. <input type="checkbox"/> Surface Water <u>N/A</u> Name of Stream to which discharged or drainage area in which groundwater discharge takes place or impoundment is located. b. <input type="checkbox"/> Ground Water</p> |
| | <p>4. Preparedness, Prevention, Contingency (PPC) Plan <input type="checkbox"/> <u>N/A</u> B. An Erosion and Sedimentation Control Plan <input checked="" type="checkbox"/> Project Area is <u>136.4</u> Acres</p> |

F. THIS APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS.

- ALL CONSTRUCTION, OPERATIONS, PROCEDURES AND DISCHARGE SHALL BE IN ACCORDANCE WITH APPLICATION NO. 1588447 DATED 10/29/88 ITS SUPPORTING DOCUMENTATION, AND AMENDMENTS DATED 12/16/88, 11/25/88, 11/14/88 SUCH APPLICATION, ITS SUPPORTING DOCUMENTATION AND AMENDMENTS ARE HEREBY MADE A PART OF THIS PERMIT. 10/25/88
- CONDITIONS NUMBERED 1 thru 7, 9, 13, 14, 16, 20 thru 22 OF THE Sewerage STANDARD CONDITIONS DATED 09/02/83 AND CONDITIONS NUMBERED 1 thru 12 OF THE EROSION CONTROL STANDARD CONDITIONS DATED 1985 WHICH CONDITIONS ARE ATTACHED AND MADE PART OF THIS PERMIT.
- SPECIAL CONDITIONS DESIGNATED _____ WHICH ARE ATTACHED AND ARE MADE A PART OF THIS PERMIT.

G. THE AUTHORITY GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING FURTHER QUALIFICATIONS

- IF THERE IS A CONFLICT BETWEEN THE APPLICATION ON ITS SUPPORTING DOCUMENTS AND AMENDMENTS AND THE STANDARD OR SPECIAL CONDITIONS, THE STANDARD OR SPECIAL CONDITIONS SHALL APPLY.
- FAILURE TO COMPLY WITH THE RULES AND REGULATIONS OF THE DEPARTMENT OR WITH THE TERMS OR CONDITIONS OF THIS PERMIT SHALL VOID THE AUTHORITY GIVEN TO THE PERMITTEE BY THE ISSUANCE OF THE PERMIT.
- THIS PERMIT IS ISSUED PURSUANT TO THE CLEAN STREAMS LAW, ACT OF JUNE 22, 1937, P.L. 1987 AS AMENDED 35 P.S. 4691.1 ET SEQ. AND/OR THE DAM SAFETY AND ENCROACHMENTS ACT OF NOVEMBER 26, 1978, P.L. 1378, AS AMENDED, 32 P.S. 1693.1 ET SEQ. ISSUANCE OF THIS PERMIT SHALL NOT RELIEVE THE PERMITTEE OF ANY RESPONSIBILITY UNDER ANY OTHER LAW.

DEPARTMENT OF ENVIRONMENTAL RESOURCES

PERMIT ISSUED DATE 12/21/88 BY Joseph A. Feola
Joseph A. Feola
Regional Water Quality Manager

TITLE _____



pennsylvania

DEPARTMENT OF ENVIRONMENTAL
PROTECTION

CERTIFIED MAIL NO. 7001 2510 0006 1769 5860
RETURN RECEIPT NO. 9590 9402 2927 7094 0157 74

Patrice Proctor
Valley Township
P. O. Box 467 890 W Lincoln Highway
Coatesville, PA 19320-0467

Re: WQM Permit - Sewage
Valley View Business Park Pump Station
Permit No. WQG02150710 A-2
Authorization ID No. 1293899
Valley Township, Chester County

Dear Ms. Proctor:

Your Water Quality Management (WQM) permit amendment is enclosed. You must comply with all Standard and Special Conditions attached to this Permit. Construction must be done in accordance with the permit application and all supporting documentation. Please review the permit conditions and the supporting documentation submitted with your application before starting construction.

Please note that you are responsible for securing all other required permits, approvals and/or registrations associated with the project, if applicable, under Chapters 102 (erosion and sedimentation control), 105 (stream obstructions and encroachments) and 106 (floodplains) of DEP's regulations. Construction may not proceed until all other required permits have been obtained.

Any person aggrieved by this action may appeal the action to the Environmental Hearing Board (Board), pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. § 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter 5A. The Board's address is:

Environmental Hearing Board
Rachel Carson State Office Building, Second Floor
400 Market Street
P.O. Box 8457
Harrisburg, PA 17105-8457

TDD users may contact the Environmental Hearing Board through the Pennsylvania Relay Service, 800-654-5984.

Appeals must be filed with the Board within 30 days of receipt of notice of this action

Ms. Patrice Proctor

- 2 -

unless the appropriate statute provides a different time. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

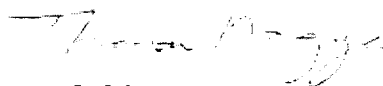
A Notice of Appeal form and the Board's rules of practice and procedure may be obtained online at <http://ehb.courtapps.com> or by contacting the Secretary to the Board at 717-787-3483. The Notice of Appeal form and the Board's rules are also available in braille and on audiotape from the Secretary to the Board.

IMPORTANT LEGAL RIGHTS ARE AT STAKE. YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD AT 717-787-3483 FOR MORE INFORMATION. YOU DO NOT NEED A LAWYER TO FILE A NOTICE OF APPEAL WITH THE BOARD.

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST BE FILED WITH AND RECEIVED BY THE BOARD WITHIN 30 DAYS OF RECEIPT OF NOTICE OF THIS ACTION.

During construction or upon completing construction, please contact Reza H. Chowdhury, E.I.T. at 484.250.5197 or rchowdhury@pa.gov so that an inspection of the facilities may be conducted at DEP's discretion.

Sincerely,



Thomas L. Magge
Environmental Program Manager
Clean Water Program

Enclosures

cc: Mr. Reading – All County Partnership
Mr. Dobinsky – Montrose Environmental Group Company
Mr. McAdams – Operations Section
Chester County Health Department (w/o enclosure)
File



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

WQG-02
WATER QUALITY MANAGEMENT
GENERAL PERMIT FOR SEWER EXTENSIONS AND PUMP STATIONS
PERMIT NUMBER WQG02150710 A-2

| | |
|--|---|
| A. PERMITTEE (Name and Address): Valley Township PO Box 467 890 W Lincoln Highway Coatesville, PA 19320-0467 CLIENT ID# 81247 | B. PROJECT/FACILITY (Name): Valley View Business Park Pump Station C. LOCATION (County, Municipality): Valley Township, Chester County |
| D. This General Permit approves the construction and operation of: <input type="checkbox"/> SEWER EXTENSION <input checked="" type="checkbox"/> PUMP STATION Average Annual flow of 11,775 GPD, Hydraulic Design Capacity 47,100 GPD. | |
| E. APPROVAL GRANTED BY THIS GENERAL PERMIT IS SUBJECT TO THE FOLLOWING: 1 All construction, operations and procedures shall be in accordance with the <i>Domestic Wastewater Facilities Manual</i> Transfers: In the event the permittee plans to transfer ownership of the facility to another entity, the permittee and the transferee shall submit an application for such transfer to DEP. If the transfer is approved by DEP, the transferee is subject to the terms and conditions of this General Permit 2 The attached conditions apply to this General Permit and are hereby made part of same | |
| F. THE AUTHORITY GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING FURTHER QUALIFICATIONS: 1 If there is a conflict between the NOI or its supporting documents and amendments and the attached conditions, the attached conditions shall apply. 2 Failure to comply with the rules and regulations of DEP or with the terms or conditions of this General Permit shall void the authority given to the permittee by the issuance of this General Permit. 3 This General Permit is issued pursuant to the Clean Streams Law, Act of June 22, 1937 P.L. 1987, as amended 35 P.S. §691.1 et seq. Issuance of this General Permit shall not relieve the permittee of any responsibility under any other law. | |
| PERMIT ISSUED: 100V 1 3 2008 | BY: <u>Thomas Page</u> TITLE: <u>Clean Water Program Manager</u> |

WQG-02
WATER QUALITY MANAGEMENT
GENERAL PERMIT FOR SEWER EXTENSIONS AND PUMP STATIONS
PERMIT CONDITIONS

General

1. DEP considers the licensed professional engineer whose seal is affixed to the design documents to be fully responsible for the adequacy of all aspects of the facility's design.
2. The approval is specifically made contingent on the permittee acquiring all necessary property rights, by easement or otherwise, providing for the satisfactory construction, operation, maintenance and replacement of all sewers or sewerage structures in, along or across private property with full rights of ingress, egress and regress.
3. If, at any time, the sewer extension and/or pump station covered by this General Permit creates a public nuisance, including but not limited to, causing malodors or causing environmental harm to waters of the Commonwealth, DEP may require the permittee to adopt appropriate remedial measures to abate the nuisance or harm.
4. The approval of the plans, and the authority granted in this permit, if not specifically extended, shall cease and be null and void 2 years from the issuance date of this permit unless construction or modification of the facilities covered by this permit has begun on or before the second anniversary of the permit date.
5. This permit does not relieve the permittee of its obligations to comply with all federal, interstate, state or local laws, ordinances and regulations applicable to the facilities.
6. This General Permit does not give any real or personal property rights or grant any exclusive privileges, nor shall it be construed to grant or confirm any right, easement or interest in, on, to, or over any lands which belong to the Commonwealth.
7. No discharge is authorized from these facilities unless approved by an NPDES Permit.

Construction

8. A permit or approval is required under Chapter 102 for most earth disturbance activities. A permit or registration under Chapter 105 is required for stream obstructions, crossings, etc. The permittee must secure the necessary permits, approvals or registrations under Chapters 102 and 105 prior to beginning construction.
9. Prior to beginning any construction or excavation, the locations of all utility lines must be identified through notification to the PA One Call system (www.paonecall.org). The notification shall not be less than three nor more than 10 working days in advance of beginning the construction or excavation.
10. The local waterways conservation officer of the Pennsylvania Fish and Boat Commission (PFBC) shall be notified when the construction of any stream crossing and/or outfall is started and completed. A written permit must be secured from the PFBC if there is any use of explosives in any waterways and the permittee shall notify the local waterways conservation officer when explosives are to be used.
11. Manhole inverts shall be formed to facilitate the flow of the sewage and to prevent the stranding of sewage solids. The whole manhole structure shall be built to prevent undue infiltration, entrance of street wash or grit and provide safe access to facilitate manhole maintenance activities.
12. The facilities shall be constructed under the supervision of a Pennsylvania licensed Professional Engineer in accordance with the approved reports, plans and specifications.
13. A Pennsylvania licensed Professional Engineer shall certify that construction of the permitted facilities was completed in accordance with the application and design plans submitted to DEP, using "Post Construction Certification" (3800-PM-WSFR0179a). It is the permittee's responsibility to ensure that a Professional Engineer is on-site to provide the necessary oversight and/or inspections to certify the facilities. The certification must be submitted to DEP before the facility is placed in operation. If requested, "as-built" drawings, photographs (if available) and a description of any DEP-approved deviations from the application and design plans must be submitted to DEP within 30 days of certification. Construction must be completed within two years of permit issue date.

Operation and Maintenance

-
- 14 The permittee shall maintain sewer extension and/or pump station operation and maintenance (O&M) manuals at the facility and ensure proper O&M of the permitted facility. The permittee shall file the O&M manuals with DEP upon request
 - 15 Stormwater from roofs, foundation drains, basement drains or other sources shall not be admitted directly to the sewer extension or pump station
 - 16 The sewer extension shall have adequate foundation support as soil conditions require. Trenches shall be back-filled to ensure that sewers will have proper structural stability, with minimal settling and adequate protection against breakage. Concrete used in connection with these sewers shall be protected from damage by water, freezing, drying or other harmful conditions until cured.
 - 17 The approved sewer extensions and/or pump stations shall be maintained in good condition, kept free of deposits by flushing or other cleaning methods and repaired when necessary.
 - 18 The sewer extension and/or pump station shall be properly operated and maintained so that the facility will perform as designed
 19. The attention of the permittee is called to the highly explosive nature of certain gases generated by the digestion of sewage solids when these gases are mixed in proper proportions with air and to the highly toxic character of certain gases arising from such digestion or from sewage in poorly ventilated compartments or sewers. Therefore, at all places throughout the facilities where hazard of fire, explosion or danger from toxic gases may occur, the permittee shall post conspicuous permanent and legible warnings. The permittee shall instruct all employees concerning the aforesaid hazards, first aid and emergency methods of meeting such hazards and shall make all necessary equipment and material accessible
 - 20 There shall be no physical connection between a public water supply system and a sewer or appurtenance to it which would permit the passage of any sewage or polluted water into the potable water supply. No water pipe shall pass through or come in contact with any part of the sewer extension and/or pump station.
 - 21 Collected screenings, slimes, sludge and other solids shall be handled and disposed of in compliance with Title 25 Pa. Code, Chapters 271, 273, 275, 283 and 285 (related to permits and requirements for land filling, land application, incineration and storage of sewage sludge), Federal Regulations 40 CFR Part 257 and the Federal Clean Water Act and its amendments.

7. OPERATING EXPENSES

Statement of Revenues & Expenditures
Valley Township
For Period Ending 12/31/2019
SEWER FUND

| ACCOUNT DESCRIPTION | CURRENT YEAR BUDGET | YEAR-TO-DATE ACTUAL | PRIOR YEAR BUDGET | YEAR-TO-DATE ACTUAL |
|--|---------------------|---------------------|---------------------|---------------------|
| 08.332.1000 RESTITUTION | | 99,575.32 | | |
| 08.341.0000 Interest Earnings | 8,000.00 | 3,191.70 | 8,500.00 | 8,346.27 |
| 08.350.0400 PA DCED GRANT | | | 50,000.00 | |
| 08.354.0400 PA DCED GRANT | 50,000.00 | | | |
| 08.364.1000 Sewerage Charges | | | 2,670,000.00 | 2,770,573.75 |
| 08.364.1100 CONNECTION FEES | 5,000.00 | 972.92 | | |
| 08.364.1200 SEWERAGE CHARGES | 2,640,000.00 | 2,663,203.34 | | |
| 08.364.1209 Connection Fees | | | 10,000.00 | 3,829.22 |
| 08.364.1210 SEWERAGE PENALTY CHARGES | 55,250.00 | 64,336.75 | | |
| 08.364.1240 Conveyance fees | 15,000.00 | 15,444.15 | 14,000.00 | 20,976.41 |
| 08.364.1900 Miscellaneous | | | | 0.10 |
| 08.391.2000 INSURANCE COMPENSATION FOR LOSS | | | | 65,900.00 |
| 08.392.0810 Interfund Transfer - From CSB SF MM | | 237,623.54 | | |
| 08.392.0830 TRANSFER FROM PLGIT SEWER ACCT | | 35,116.77 | | |
| Totals for : | | | | |
| 08 (- 08) | 2,773,250.00 | 3,119,464.49 | 2,752,500.00 | 2,869,625.75 |
| Total Revenues | 2,773,250.00 | 3,119,464.49 | 2,752,500.00 | 2,869,625.75 |
| 08.427.4300 Sewage Treatment Costs | | 237,882.94 | | |
| 08.429.1100 SALARIES - WAGES SECRETARIES | | | 31,065.00 | 56,809.41 |
| 08.429.1120 Salary - Administration | 40,045.00 | 44,201.80 | | |
| 08.429.1400 Salary - Public Works | 28,000.00 | 10,358.88 | | |
| 08.429.1800 Salary - Overtime | 8,400.00 | 8,665.21 | | |
| 08.429.2100 OFFICE SUPPLIES | | 489.04 | 3,000.00 | 1,564.41 |
| 08.429.2150 | | | | |

Statement of Revenues & Expenditures
Valley Township
For Period Ending 12/31/2019
SEWER FUND

| ACCOUNT DESCRIPTION | CURRENT YEAR BUDGET | YEAR-TO-DATE ACTUAL | PRIOR YEAR BUDGET | YEAR-TO-DATE ACTUAL |
|--------------------------------------|------------------------|------------------------|----------------------|------------------------|
| Postage | 3,000.00 | 1,451.49 | | |
| 08.429.2200 | | | | |
| BANK CHARGES | | | 45.00 | |
| 08.429.2270 | | | | |
| Sanitation Supplies | 2,300.00 | 1,647.80 | | |
| 08.429.2300 | | | | |
| TELEPHONE | | | 3,800.00 | 3,138.64 |
| 08.429.2390 | | | | |
| Diesel Fuel for Emergency Generators | 900.00 | 823.03 | | |
| 08.429.2391 | | | | |
| Propane for Emergency Generators | 1,600.00 | 234.64 | | |
| 08.429.3100 | | | | |
| SOLICITOR FEES | | 203.50 | | |
| 08.429.3109 | | | | |
| ENGINEERING | | | 30,000.00 | 34,016.25 |
| 08.429.3110 | | | | |
| Audit Services | 3,423.00 | 5,812.67 | | |
| 08.429.3130 | | | | |
| Engineering | 25,000.00 | 21,148.25 | | |
| 08.429.3140 | | | | |
| LEGAL FEES | | 138.75 | | |
| 08.429.3200 | | | | |
| LEGAL | | | | 92.50 |
| 08.429.3210 | | | | |
| Telephone | 3,150.00 | 3,182.32 | | |
| 08.429.3300 | | | | |
| AUDIT | | | 4,800.00 | 32,817.24 |
| 08.429.3400 | | | | |
| FACILITY & OFFICE EXPENSE | | | 47,895.00 | |
| 08.429.3410 | | | | |
| BENEFIT ALLOCATION | | | 64,805.00 | |
| 08.429.3420 | | | | |
| Printing | 2,800.00 | 300.00 | | |
| 08.429.3610 | | | | |
| ELECTRICITY | 16,500.00 | 15,874.49 | | |
| 08.429.3720 | | | | |
| Maint & Repair Contracted Svc | 34,689.00 | 68,700.47 | | |
| 08.429.3800 | | | | |
| Sewage Treatment Costs | 2,600,000.00 | 2,728,345.98 | | |
| 08.429.4300 | | | | |
| SEWAGE TREATMENT COSTS | | | 2,338,000.00 | 3,183,866.04 |
| 08.429.4500 | | | | |
| ELECTRICITY | | | 15,100.00 | 17,198.06 |
| 08.429.4600 | | | | |
| MAINTENANCE & REPAIRS | | | 35,000.00 | 72,992.61 |
| 08.429.4610 | | | | |

Statement of Revenues & Expenditures
Valley Township
For Period Ending 12/31/2019
SEWER FUND

| ACCOUNT DESCRIPTION | CURRENT YEAR BUDGET | YEAR-TO-DATE ACTUAL | PRIOR YEAR BUDGET | YEAR-TO-DATE ACTUAL |
|--|------------------------|------------------------|----------------------|------------------------|
| ROAD CREW SALARIES | | | 65,770.00 | 37,568.12 |
| 08.429.4620 | | | | |
| I&I | | | 25,000.00 | 625.00 |
| 08.429.4630 | | | | |
| UPGRADE TO SYSTEM - PA DCED GRANT PROJECTS | | | 50,000.00 | |
| 08.429.4700 | | | | |
| SUPPLIES & EQUIPMENT | | | 6,000.00 | 4,348.51 |
| 08.429.4900 | | | | |
| MISCELLANEOUS | | | 950.00 | |
| 08.429.6100 | | | | |
| CAPITAL CONST. PA DCED GRANT | 110,500.00 | | | |
| 08.482.4100 | | | | |
| Judgements & Damages | | 2,000.00 | | |
| 08.491.0000 | | | | |
| REFUND OF PRIOR YEARS REVENUES | | 1,058.20 | | |
| 08.492.0100 | | | | |
| Interfund Transfer to Gen Fund - Benefit Allocati | 60,406.00 | | | |
| 08.492.0800 | | | | |
| INTERFUND TRANSFER - SEWER FUND - NEW BANK ACCT | | 272,740.31 | | |
| Totals for : | | | | |
| 08 (- 08) | 2,940,713.00 | 3,425,259.77 | 2,721,230.00 | 3,445,036.79 |
| | | | | |
| Total Expenditures | 2,940,713.00 | 3,425,259.77 | 2,721,230.00 | 3,445,036.79 |
| | | | | |
| Excess of Revenues over Expenditures for Report | -167,463.00 | -305,795.28 | 31,270.00 | -575,411.04 |

8. FUTURE CAPITAL PROJECTS

There are no scheduled capital improvement projects at this time. Below is a list of future potential projects that have not been formalized by the Township.

- Rock Run Pump Station Bypass Pump
- SCADA System for all Pump Stations
- Hayti Basin: Clean & Televis
- Hayti Basin: Inflow & Infiltration and Structural Repairs
- Rock Run Basin: Inflow & Infiltration Inspection and Repairs
- Westwood Basin: Inflow & Infiltration Inspection and Repairs
- Round Hill Pump Station #1 Muffin Monster
- Install Meters and Data Logger at Country Ridge Pump Station
- Install Meters and Data Logger at Highlands Corporate Center Pump Station
- Install Data Logger at Hillview Pump Station

9. LIST OF ASSETS AND COSTS

MASTER ASSET LIST - SEWER

| LOCATION | ASSET | CODE | YEAR | QUANTITY | UNITS | ORIGINAL COST |
|----------------------------------|---|--------|------|----------|-------|---------------|
| Beacon Hill | 8" SDR 35 | 361.21 | 1994 | 7,743 | LF | \$ 200,484.14 |
| | Doghouse Manholes | 361.23 | 1994 | 2 | EA | \$ 7,710.99 |
| | Drop Manholes | 361.23 | 1994 | 2 | EA | \$ 8,409.69 |
| | Manholes | 361.23 | 1994 | 42 | EA | \$ 116,126.64 |
| | 4" PVC Laterals | 363.20 | 1994 | 4,131 | LF | \$ 92,317.87 |
| Country Club Valley | 10" DIP | 361.21 | 1990 | 123 | LF | \$ 4,677.08 |
| | 10" SDR 35 | 361.21 | 1990 | 1,844 | LF | \$ 66,138.08 |
| | 6" SDR 35 | 361.21 | 1990 | 207 | LF | \$ 4,605.85 |
| | 8" SDR 35 | 361.21 | 1990 | 10,543 | LF | \$ 244,897.80 |
| | Manholes | 361.23 | 1990 | 68 | EA | \$ 126,717.89 |
| | 4" PVC Laterals | 363.20 | 1990 | 5,492 | LF | \$ 99,643.81 |
| Country Ridge | 4" SDR 35 Force Main | 360.21 | 1990 | 1,956 | LF | \$ 24,100.72 |
| | 8" SDR 35 | 361.21 | 1990 | 7,873 | LF | \$ 170,748.70 |
| | Country Ridge PS - Electrical Work | 354.30 | 1990 | - | | \$ 13,818.58 |
| | Country Ridge PS - Generator/Propane | 355.30 | 1990 | - | | \$ 21,546.90 |
| | Country Ridge PS - Paving | 354.30 | 1990 | - | | \$ 2,814.14 |
| | Country Ridge PS - Pump St. & Valve | 354.30 | 1990 | - | | \$ 50,880.75 |
| | Country Ridge PS Property - Parcel ID# 28-9-82.5 | 353.30 | 1990 | - | | \$ 1.00 |
| | Manholes | 361.23 | 1990 | 38 | EA | \$ 53,197.67 |
| | 4" PVC Laterals | 363.20 | 1990 | 1,856 | LF | \$ 17,119.56 |
| Hillview Phase 1 | 1-1/2" PVC SCH-40 Laterals | 363.20 | 2004 | 700 | LF | \$ 21,693.64 |
| | 4" SDR 21 Force Main | 360.21 | 2004 | 1,200 | LF | \$ 27,279.90 |
| | 8" SDR 35 | 361.21 | 2004 | 11,299 | LF | \$ 588,875.21 |
| | Drop Manholes | 361.23 | 2004 | 7 | EA | \$ 36,272.70 |
| | Isolation Valves | 361.21 | 2004 | 22 | EA | \$ 19,248.07 |
| | Manholes | 361.23 | 2004 | 63 | EA | \$ 259,158.91 |
| | 6" PVC Laterals | 363.20 | 2004 | 8,151 | LF | \$ 337,063.46 |
| | 2" SDR 21 Force Main | 360.21 | 2004 | 550 | LF | \$ 17,481.89 |
| Hillview Phase 2 | 4" SDR 21 Force Main | 360.21 | 2005 | 1,440 | LF | \$ 37,752.80 |
| | 8" SDR 35 | 361.21 | 2005 | 12,810 | LF | \$ 608,661.19 |
| | Drop Manholes | 361.23 | 2005 | 1 | EA | \$ 8,969.58 |
| | Hillview PS | 354.30 | 2005 | - | | \$ 392,983.46 |
| | Manholes | 361.23 | 2005 | 76 | EA | \$ 351,529.98 |
| | 6" PVC Laterals | 363.20 | 2005 | 11,895 | LF | \$ 519,047.81 |
| Highlands Corp. Center | 3" PVC Force Main | 360.21 | 1988 | 1,895 | LF | \$ 51,350.26 |
| | 8" SDR 35 | 361.21 | 1988 | 8,030 | LF | \$ 665,009.57 |
| | Manholes | 361.23 | 1988 | 34 | EA | \$ 54,844.19 |
| | Highlands Corp. Center PS#1 | 354.30 | 1988 | - | | \$ 48,199.24 |
| | Highlands Corp. Center PS#1 - Site Improvements | 354.30 | 1988 | - | | \$ 25,103.77 |
| | Highlands Corp. Center PS#1 Property- Parcel ID# 38-2-387.1 | 353.30 | 1988 | - | | \$ - |
| Lincoln Highway Extension | 8" DIP | 361.21 | 1990 | 45 | LF | \$ 1,365.84 |
| | 8" VCP | 361.21 | 1990 | 4,431 | LF | \$ 111,383.75 |
| | Manholes | 361.23 | 1990 | 18 | EA | \$ 24,080.93 |
| London Tract | 8" SDR 35 | 361.21 | 2008 | 6 | LF | \$ 298.55 |
| | 2" SDR 21 Force Main | 360.21 | 2008 | 865 | LF | \$ 21,520.83 |
| | 1.5" SDR 21 Laterals | 363.20 | 2008 | 532 | LF | \$ 10,588.75 |
| | Force Main Cleanout & Tie In Manhole | 360.23 | 2008 | 4 | EA | \$ 20,732.97 |
| | Curb Boxes and Valves | 360.21 | 2008 | 14 | EA | \$ 11,610.47 |
| Meadowbrook | 8" SDR 35 | 361.21 | 2003 | 6,219 | LF | \$ 180,457.30 |
| | Manholes | 361.23 | 2003 | 32 | EA | \$ 93,300.37 |
| | 6" PVC Laterals | 363.20 | 2003 | 1,320 | LF | \$ 76,253.00 |
| | Stream Crossing | 361.21 | 2003 | 1 | EA | \$ 8,623.72 |
| Oakcrest Phase 1 | 8" SDR 35 | 361.21 | 2005 | 7,007 | LF | \$ 186,162.94 |
| | Manholes | 361.23 | 2005 | 39 | EA | \$ 121,207.76 |
| | 6" PVC Laterals | 363.20 | 2005 | 3,240 | LF | \$ 83,827.88 |
| Oakcrest Glencrest Rd | 8" SDR 35 | 361.21 | 2005 | 1,289 | LF | \$ 96,470.83 |
| | Manholes | 361.23 | 2005 | 8 | EA | \$ 44,252.15 |
| | 2" Force Main | 360.21 | 2005 | 1,030 | LF | \$ 47,398.02 |
| | 1.5" Force Main | 360.21 | 2005 | 365 | LF | \$ 14,461.06 |
| | 6" PVC Laterals | 363.20 | 2005 | 105 | LF | \$ 14,356.84 |

MASTER ASSET LIST - SEWER

| LOCATION | ASSET | CODE | YEAR | QUANTITY | UNITS | ORIGINAL COST |
|---------------------------|---|--------|------|----------|-------|---------------|
| Oakcrest Phase 2 | 8" SDR 35 | 361.21 | 2005 | 2,416 | LF | \$ 90,912.35 |
| | Manholes | 361.23 | 2005 | 16 | EA | \$ 56,688.48 |
| | 6" PVC Laterals | 363.20 | 2005 | 1,860 | LF | \$ 59,933.32 |
| Hayti | 10" Asbestos Cement | 361.21 | 1972 | 6,933 | LF | \$ 135,569.66 |
| | 15" Asbestos Cement | 361.21 | 1972 | 106 | LF | \$ 2,901.85 |
| | 8" Asbestos Cement | 361.21 | 1972 | 26,704 | LF | \$ 417,741.50 |
| | Manholes | 361.23 | 1972 | 154 | EA | \$ 95,111.90 |
| | Hayti Basin Sewer Rehab | 361.21 | 2010 | - | | \$ 224,592.00 |
| | 4" Laterals | 363.20 | 1972 | 5,759 | LF | \$ 41,714.32 |
| Rock Run | 12" Asbestos Cement | 361.21 | 1972 | 742 | LF | \$ 17,411.11 |
| | 8" Asbestos Cement | 361.21 | 1972 | 10,094 | LF | \$ 157,904.53 |
| | Manholes | 361.23 | 1972 | 61 | EA | \$ 38,169.91 |
| | 6" CIP Force Main - Original Installation (partially abandoned) | 360.21 | 1972 | 917 | LF | \$ 17,931.25 |
| | 10" HDPE Force Main - Replacement | 360.21 | 1997 | 1,834 | LF | \$ 190,699.34 |
| | 10" DIP Force Main - Replacement | 360.21 | 2003 | 350 | LF | \$ 18,820.86 |
| | Rock Run PS Replacement - 10" DIP Force Main | 360.21 | 2004 | 724 | LF | \$ 255,729.80 |
| | Rock Run PS Replacement - Structural | 354.30 | 2004 | - | | \$ 310,396.80 |
| | Rock Run PS Replacement - Mechanical | 354.30 | 2004 | - | | \$ 357,873.40 |
| | Rock Run PS Property - Parcel ID# 38-2M-126 & 38-2M-126.1 | 353.30 | 2004 | - | | \$ - |
| | 4" Laterals | 363.20 | 1972 | 2,426 | LF | \$ 17,570.22 |
| Westwood | 15" Asbestos Cement | 361.21 | 1972 | 5,991 | LF | \$ 164,009.37 |
| | 18" Asbestos Cement | 361.21 | 1972 | 62 | LF | \$ 1,939.78 |
| | 8" Asbestos Cement | 361.21 | 1972 | 32,366 | LF | \$ 506,314.46 |
| | Manholes | 361.23 | 1972 | 172 | EA | \$ 107,626.63 |
| | 4" Laterals | 363.20 | 1972 | 7,277 | LF | \$ 52,710.65 |
| | Westwood Basin Sewer Rehab - Excavated work | 361.21 | 2013 | - | | \$ 88,050.00 |
| | Westwood Basin Sewer Rehab - Trenchless work | 361.22 | 2014 | - | | \$ 52,870.00 |
| Round Hill | 2" DI Force Main | 360.21 | 2008 | 1,230 | LF | \$ 44,451.09 |
| | 4" DI Force Main | 360.21 | 2008 | 905 | LF | \$ 23,863.13 |
| | 6" PVC Laterals | 363.20 | 2008 | 2,513 | LF | \$ 168,375.49 |
| | 8" SDR 35 | 361.21 | 2008 | 3,809 | LF | \$ 111,120.32 |
| | Manholes | 361.23 | 2008 | 17 | EA | \$ 66,471.01 |
| | Roud Hill PS#1 & PS#2 - Control Building Installation | 354.30 | 2008 | - | | \$ 106,533.60 |
| | Roud Hill PS#1 & PS#2 - Excavation & Site Work | 354.30 | 2008 | - | | \$ 123,354.69 |
| | Roud Hill PS#1 & PS#2 - Mechanical Equipment Installed | 354.30 | 2008 | - | | \$ 95,319.54 |
| | Roud Hill PS#1 & PS#2 - On-Site Electrical Work | 354.30 | 2008 | - | | \$ 140,175.79 |
| | Roud Hill PS#1 & PS#2 - Precast Concrete | 354.30 | 2008 | - | | \$ 28,035.16 |
| | Roud Hill PS#1 & PS#2 - Structures Installed | 354.30 | 2008 | - | | \$ 16,821.09 |
| | 12" SDR 35 | 361.21 | 2008 | 196 | LF | \$ 52,485.94 |
| Terry Funeral Home | 4" PVC Laterals | 363.20 | 2005 | 35 | LF | \$ 5,698.02 |
| Timberlane | Manholes | 361.23 | 2005 | 5 | EA | \$ 16,387.76 |
| | 8" SDR 35 | 361.21 | 2005 | 890 | LF | \$ 37,840.83 |
| | 4" PVC Laterals | 363.20 | 2005 | 1,425 | LF | \$ 61,081.65 |
| Valley Crossing | 8" SDR 35 | 361.21 | 1993 | 7,950 | LF | \$ 173,629.39 |
| | Drop Manholes | 361.23 | 1993 | 1 | EA | \$ 3,779.21 |
| | Manholes | 361.23 | 1993 | 45 | EA | \$ 96,790.65 |
| | 4" PVC Laterals | 363.20 | 1993 | 4,340 | LF | \$ 76,216.55 |
| Valley Farm | 4" Insertion Valve | 360.21 | 2007 | 1 | EA | \$ 24,269.47 |
| | 4" SDR 21 Force Main | 360.21 | 2007 | 340 | LF | \$ 16,179.64 |
| | 8" SDR 35 | 361.21 | 2007 | 4,600 | LF | \$ 175,388.21 |
| | Manholes | 361.23 | 2007 | 31 | EA | \$ 132,938.62 |
| | 6" PVC Laterals | 363.20 | 2007 | 1,500 | LF | \$ 66,077.19 |
| Valley Springs | 8" SDR 35 | 361.21 | 1988 | 11,217 | LF | \$ 191,451.73 |
| | 10" SDR 35 | 361.21 | 1988 | 5,200 | LF | \$ 246,961.40 |
| | Drop Manholes | 361.23 | 1988 | 11 | EA | \$ 23,972.07 |
| | Manholes | 361.23 | 1988 | 58 | EA | \$ 78,280.06 |
| | 4" PVC Laterals | 363.20 | 1988 | 3,760 | LF | \$ 53,815.06 |

MASTER ASSET LIST - SEWER

| LOCATION | ASSET | CODE | YEAR | QUANTITY | UNITS | ORIGINAL COST |
|-------------------------------------|-------------------------------|--------|------|----------|-------|-------------------------|
| Valley View Business Park | | | | | | |
| | 2" & 6" Air Release Chamber | 360.21 | 2008 | 4 | EA | \$ 29,453.79 |
| | 2" SDR 21 Force Main | 360.21 | 2008 | 6,185 | LF | \$ 132,914.59 |
| | 6" Air Release Chamber | 360.21 | 2008 | 1 | EA | \$ 4,325.63 |
| | 6" SDR 26 Force Main | 360.21 | 2008 | 6,425 | LF | \$ 146,264.20 |
| | 8" SDR 35 | 361.21 | 2008 | 1,338 | LF | \$ 51,884.11 |
| | Manholes | 361.23 | 2008 | 7 | EA | \$ 18,223.86 |
| Woodland Pointe | | | | | | |
| | 8" SDR 35 | 361.21 | 2008 | 1,250 | LF | \$ 10,000.85 |
| | Manholes | 361.23 | 2008 | 5 | EA | \$ 62,575.32 |
| | 4" PVC Laterals | 363.20 | 2008 | 300 | LF | \$ 3,478.28 |
| Round Hill - Robinson/Oaklyn | | | | | | |
| | 6" PVC Laterals | 363.20 | 2008 | 350 | LF | \$ 55,576.52 |
| | 8" DIP | 361.21 | 2008 | 146 | LF | \$ 14,250.35 |
| | 8" SDR 35 | 361.21 | 2008 | 3,312 | LF | \$ 232,762.23 |
| | Manholes | 361.23 | 2008 | 14 | EA | \$ 80,715.20 |
| Spruce Street | | | | | | |
| | 1.5" HDPE Force Main | 360.21 | 2017 | 450 | LF | \$ 29,660.40 |
| Bulk Meter Pits | | | | | | |
| | Charles Street Bulk Meter Pit | 365.20 | 1970 | 1 | EA | \$ 4,929.50 |
| | Valley Road Bulk Meter Pit | 365.20 | 1970 | 1 | EA | \$ 4,929.50 |
| ROWs | | | | | | |
| | ROWs - Original Basins | 353.20 | 1973 | 23 | EA | \$ 3,367.92 |
| Grand Total | | | | | | \$ 13,389,107.55 |

| | | |
|-------------------------------------|-----------------|-----------|
| Manholes | 1,031 | EA |
| Force Mains and Low Pressure Sewers | 28,661 | LF |
| GRAVITY PIPING | | |
| 6" SDR 35 | 207 | LF |
| 8" Asbestos Cement | 69,164 | LF |
| 8" DIP | 191 | LF |
| 8" SDR 35 | 109,601 | LF |
| 8" VCP | 4,431 | LF |
| 10" Asbestos Cement | 6,933 | LF |
| 10" DIP | 123 | LF |
| 10" SDR 35 | 7,044 | LF |
| 12" Asbestos Cement | 742 | LF |
| 12" SDR 35 | 196 | LF |
| 15" Asbestos Cement | 6,097 | LF |
| 18" Asbestos Cement | 62 | LF |
| GRAVITY PIPING GRAND TOTAL | 204,791 | LF |
| | 39 Miles | |

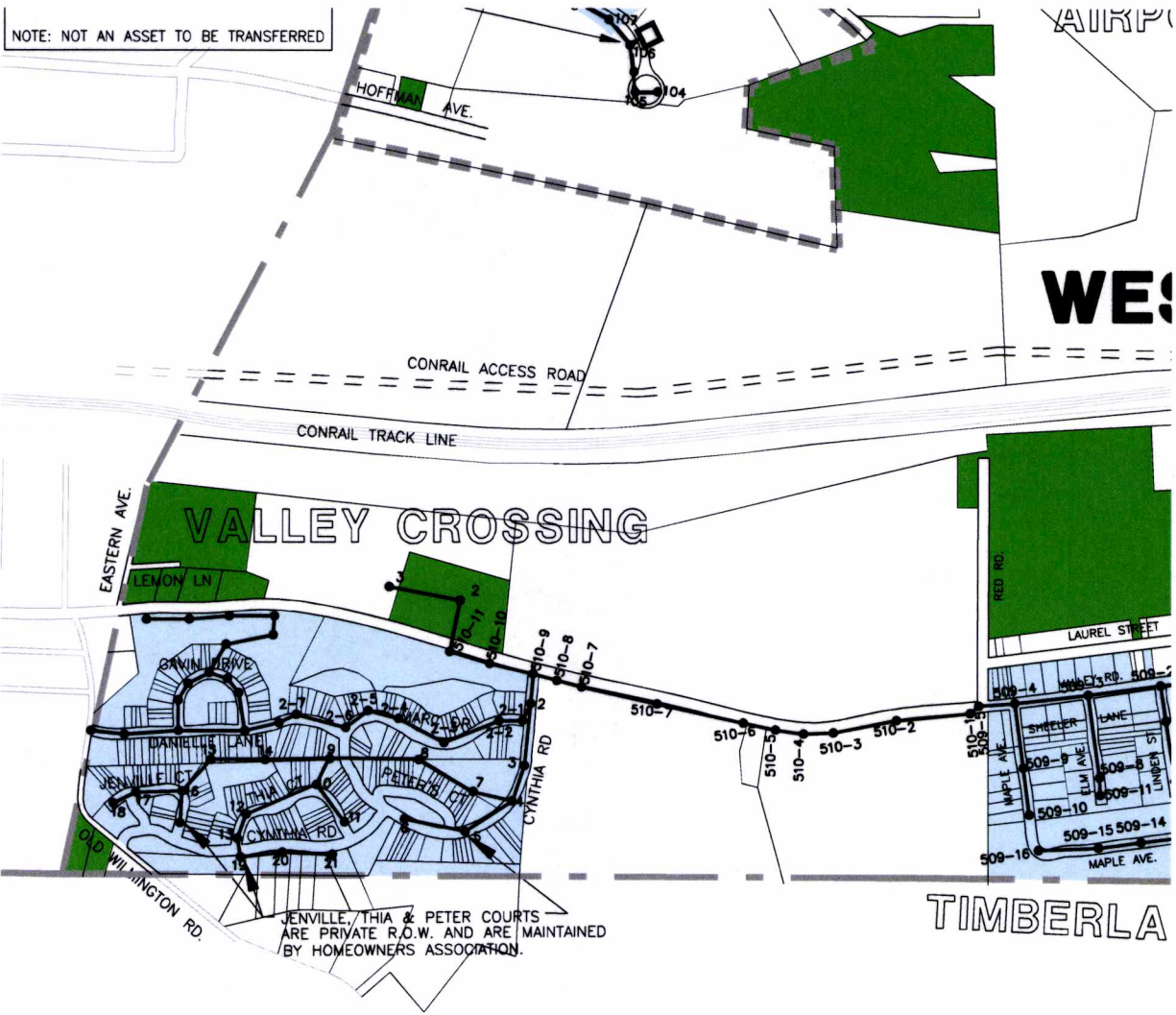
APPENDICES

APPENDIX A

SYSTEM MAPPING

- **A1 – Sanitary Sewer System Map (EX-1)**

U:\Accounts\VI.TWP\TWP24026 - Sewer and Water Engineering Assessments\PROJ RESOURCES\Background\MAPS\Sanitary Sewer System.dwg PLOTTED: 5/25/2020 3:48 PM, BY: Adrian Goldberg PLOTSTYLE: PAIBase Half Size.ctb



APPENDIX B

- **Uniform System of Accounts - Section 300**
- **PA ACT 12 of 2016**

WASTEWATER UTILITY PLANT ACCOUNTS

| | <u>.1</u> | <u>.2</u> |
|--|----------------------------|----------------------------|
| | Intangible <u>Plant</u> | Collection <u>Plant</u> |
| 351. Organization | 351.1 | XXXXXXXXXX |
| 352. Franchises | 352.1 | XXXXXXXXXX |
| 353. Land and Land Rights | XXXXXXXXXX | 353.2 |
| 354. Structures and Improvements | XXXXXXXXXX | 354.2 |
| 355. Power Generation Equipment | XXXXXXXXXX | 355.2 |
| 360. Collection Sewers - Force | XXXXXXXXXX | 360.2 |
| 361. Collection Sewers - Gravity | XXXXXXXXXX | 361.2 |
| 362. Special Collecting Structures | XXXXXXXXXX | 362.2 |
| 363. Services to Customers | XXXXXXXXXX | 363.2 |
| 364. Flow Measuring Devices | XXXXXXXXXX | 364.2 |
| 365. Flow Measuring Installations | XXXXXXXXXX | 365.2 |
| 366. Reuse Services | XXXXXXXXXX | XXXXXXXXXX |
| 367. Reuse Meters and Meter Installations | XXXXXXXXXX | XXXXXXXXXX |
| 370. Receiving Wells | XXXXXXXXXX | XXXXXXXXXX |
| 371. Pumping Equipment | XXXXXXXXXX | XXXXXXXXXX |
| 374. Reuse Distribution Reservoirs | XXXXXXXXXX | XXXXXXXXXX |
| 375. Reuse Transmission and Distribution System | XXXXXXXXXX | XXXXXXXXXX |
| 380. Treatment and Disposal Equipment | XXXXXXXXXX | XXXXXXXXXX |
| 381. Plant Sewers | XXXXXXXXXX | XXXXXXXXXX |
| 382. Outfall Sewer Lines | XXXXXXXXXX | XXXXXXXXXX |
| 389. Other Plant and Misc. Equipment | 389.1 | 389.2 |
| 390. Office Furniture and Equipment | XXXXXXXXXX | XXXXXXXXXX |
| 391. Transportation Equipment | XXXXXXXXXX | XXXXXXXXXX |
| 392. Stores Equipment | XXXXXXXXXX | XXXXXXXXXX |
| 393. Tools, Shop and Garage Equipment | XXXXXXXXXX | XXXXXXXXXX |
| 394. Laboratory Equipment | XXXXXXXXXX | XXXXXXXXXX |
| 395. Power Operated Equipment | XXXXXXXXXX | XXXXXXXXXX |
| 396. Communication Equipment | XXXXXXXXXX | XXXXXXXXXX |
| 397. Miscellaneous Equipment | XXXXXXXXXX | XXXXXXXXXX |
| 398. Other Tangible Plant | XXXXXXXXXX | XXXXXXXXXX |

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| <u>.3</u> | <u>.4</u> | <u>.5</u> | <u>.6</u> | <u>.7</u> |
|--------------|-----------------|------------------|---------------------|--------------|
| System | Treatment | Reclaimed | Reclaimed | General |
| Pumping | and | Water | Water | |
| <u>Plant</u> | <u>Disposal</u> | <u>Treatment</u> | <u>Distribution</u> | <u>Plant</u> |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX |
| 353.3 | 353.4 | 353.5 | 352.6 | 353.7 |
| 354.3 | 354.4 | 354.5 | 354.6 | 354.7 |
| 355.3 | 355.4 | 355.5 | 355.6 | XXXXXXXXXX |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | 366.6 | XXXXXXXXXX |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | 367.6 | XXXXXXXXXX |
| 370.3 | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX |
| 371.3 | XXXXXXXXXX | 371.5 | 371.6 | XXXXXXXXXX |
| XXXXXXXXXX | XXXXXXXXXX | 374.5 | XXXXXXXXXX | XXXXXXXXXX |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | 375.6 | XXXXXXXXXX |
| XXXXXXXXXX | 380.4 | 380.5 | XXXXXXXXXX | XXXXXXXXXX |
| XXXXXXXXXX | 381.4 | 381.5 | XXXXXXXXXX | XXXXXXXXXX |
| XXXXXXXXXX | 382.4 | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX |
| 389.3 | 389.4 | 389.5 | 389.6 | XXXXXXXXXX |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | 390.7 |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | 391.7 |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | 392.7 |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | 393.7 |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | 394.7 |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | 395.7 |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | 396.7 |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | 397.7 |
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXX | 398.7 |

WASTEWATER UTILITY PLANT ACCOUNTS

The wastewater utility plant accounts have been designed utilizing an account matrix. The matrix employs a list of object accounts which in effect act as control accounts. The object accounts are further segregated by the matrix into classifications by functions or subaccount. The instructions for segregating the object accounts to the function subaccount are contained in Accounting Instruction 32. Listed below are the object account descriptions.

351. Organization

This account shall include all fees paid to federal or state governments for the privilege of incorporation and expenditures incident to organizing the corporation, partnership or other enterprise and putting it into readiness to do business. A sample of items to be included in this account are listed below.

1. Actual cost of obtaining certificates authorizing an enterprise to engage in the public utility business.
2. Fees and expenses for incorporation.
3. Fees and expenses for mergers or consolidations.
4. Office expenses incident to organizing the utility.
5. Stock and minute books and corporate seal.

Note A:--This account shall not include any discounts upon securities issued or assumed; nor shall it include any costs incident to negotiating loans, selling bonds or other evidences of debt, or expenses in connection with the authorization, issuance and sale of capital stock.

Note B:--Exclude from this account and include in the appropriate expense account the cost of preparing and filing papers in connection with the extension of the term of incorporation unless the first organization costs have been written off. Where charges are made to this account for expenses incurred in mergers, consolidations or reorganizations, amounts previously included herein or in similar accounts in the books of the companies concerned shall be excluded from this account.

352. Franchises

A. This account shall include amounts paid to the federal government, to a state or to a political subdivision thereof in consideration for franchises, consents or certificates, running in perpetuity or for a specified term of more than one year, together with necessary and reasonable expenses incident to procuring such franchises, consents or certificates of permission and approval, including expenses of organizing and merging separate corporations, where statutes require solely for the purpose of acquiring franchise.

WASTEWATER UTILITY PLANT ACCOUNTS

B. If a franchise or certificate is acquired by assignment, the charge to this account in respect thereof shall not exceed the amount paid therefor by the utility to the assignor, nor shall it exceed the amount paid by the original grantee, plus the expense of acquisition to such grantee. Any excess of the amount actually paid by the utility over the amount specified shall be charged to account 426 - Miscellaneous Nonutility Expenses.

C. When any franchise has expired, the book cost thereof shall be credited hereto and charged to account 426 - Miscellaneous Nonutility Expenses, or to account 110.1 - Accumulated Amortization of Utility Plant in Service, as appropriate.

D. Records supporting this account shall be kept so as to show separately the book cost of each franchise.

Note:--Annual or other periodic payments under franchises shall not be included herein but in the appropriate expense account.

353. Land and Land Rights

This account shall include the cost of land and land rights used in connection with wastewater collection, pumping, treatment and disposal, reclaimed water treatment and distribution and general plant operations (See Accounting Instruction 24). A sample of items to be included in this account are listed below:

1. Bulkheads buried, not requiring maintenance or replacement.
2. Cost, first, of acquisition including mortgages and other liens assumed (but not subsequent interest thereon).
3. Condemnation proceedings, including court and counsel costs.
4. Consents and abutting damages, payment for.
5. Conveyancers' and notaries' fees.
6. Fees, commissions, and salaries to brokers, agents, and others in connection with the acquisition of the land or land rights.
7. Leases, cost of voiding upon purchase to secure possession of land.
8. Removing, relocating, or reconstructing property of others, such as buildings, highways, railroads, bridges, cemeteries, churches, telephone and power lines, etc., in order to acquire quiet possession.
9. Retaining walls unless identified with structures.
10. Special assessments levied by public authorities for public improvements on the basis of benefits for new

WASTEWATER UTILITY PLANT ACCOUNTS

- roads, new bridges, new sewers, new curbing, new pavements, and other public improvements, but not taxes levied to provide for the maintenance of such improvements.
11. Surveys in connection with the acquisition, but not amounts paid for topographical surveys and maps where such costs are attributable to structures or plant equipment erected or to be erected or installed on such land.
 12. Taxes assumed, accrued to date of transfer of title.
 13. Title, examining, clearing, insuring and registering in connection with the acquisition and defending against claims relating to the period prior to the acquisition.
 14. Appraisals prior to closing title.
 15. Cost of dealing with distributees or legatees residing outside of the state or county, such as recording power of attorney, recording will or exemplification of will, recording satisfaction of state tax.
 16. Filing satisfaction of mortgage.
 17. Documentary stamps.
 18. Photographs of property at acquisition.
 19. Fees and expenses incurred in the acquisition of sewer rights, and grants.
 20. Cost of fill to extend bulkhead line over land under water, where riparian rights are held, which is not occasioned by the erection of a structure.
 21. Sidewalks and curbs constructed by the utility on public property.
 22. Labor and expenses in connection with securing rights of way, where performed by company employees and company agents.

354. Structures and Improvements

This account shall include the cost in place of structures and improvements used in connection with wastewater collection, pumping, treatment and disposal, reclaimed water treatment and distribution and general plant operations (See Accounting Instruction 25). A sample of items to be included in this account are listed below:

1. Architects' plans and specifications including supervision.
2. Boilers, furnaces, piping, wiring, fixtures, and machinery for heating, lighting, signaling, ventilating and air conditioning systems, plumbing, vacuum cleaning systems, incinerator and smoke pipe, flues, etc.

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3. Bulkheads, including dredging, riprap fill, piling, decking, concrete fenders, etc., when exposed and subject to maintenance and replacement.
4. Commissions and fees to brokers, agents, architects and others.
5. Conduit (not to be removed) with its contents.
6. Damages to abutting property during construction.
7. Drainage systems.
8. Elevators, cranes, hoists, etc., and the machinery for operating them.
9. Excavation, including shoring, bracing, bridging, refill and disposal of excess excavated material, cofferdams around foundations, pumping water from cofferdam during construction, test borings.
10. Fences and fence curbs (not including protective fences isolating items of equipment, which should be charged to the appropriate equipment account).
11. Fire protection systems when forming a part of a structure.
12. Flagpole.
13. Floor covering (permanently attached).
14. Foundations and piers for machinery, constructed as a permanent part of a building or other item listed herein.
15. Grading and clearing when directly occasioned by the building of a structure.
16. Intrasite communication system, poles, pole fixtures, wires and cables.
17. Landscaping, lawns, shrubbery, etc.
18. Leases, voiding upon purchase, to secure possession of structures.
19. Leased property, expenditures on.
20. Lighting fixtures and outside lighting systems.
21. Marquee, permanently attached to building.
22. Painting, first cost.
23. Permanent paving, concrete, brick, flagstone, asphalt, etc., within the property lines.
24. Partitions, including movable.
25. Permits and privileges.
26. Power boards for services to a building.
27. Refrigerating systems for general use.
28. Retaining walls except when identified with land.
29. Roadways.
30. Roofs.
31. Scales, connected to and forming a part of a structure.
32. Water and wastewater systems, for general use.
33. Sidewalks, culverts, curbs and streets constructed by the utility on its property.

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34. Sprinkling systems.
35. Stacks -- brick, steel, or concrete, when set on foundation forming part of general foundation and steelwork of a building.
36. Steel inspection during construction.
37. Storage facilities constituting a part of a building.
38. Storm doors and windows.
39. Temporary heating during construction (net cost).
40. Temporary water connection during construction (net cost).
41. Temporary shanties and other facilities used during construction (net cost).
42. Topographical maps.
43. Vaults constructed as part of a building.
44. Watchmen's sheds and clock systems (net cost when used during construction only).
45. Water meters and supply system for a building or for general company purposes.
46. Water supply piping, hydrants and wells.
47. Yard surfacing, gravel, concrete, or oil (First cost only).
48. Tunnels, intake and discharge when constructed as part of a structure including sluice gates and those constructed to house.

355. Power Generation Equipment

A. This account shall include the cost installed of any equipment used for the production of power principally used in pumping operations.

B. Subaccounts shall be maintained hereunder for the cost of equipment used for each type of power generating equipment.

360. Collecting Sewers - Force

This account shall include all sewers which are used to lift sewage from a low elevation to a higher elevation. The force sewer will include that pipe between the discharge outlet of the lift station and the receiving manhole.

361. Collecting Sewers - Gravity

This account shall include the installed cost of all gravity collecting sewers, interceptor, branch, trunk, lateral including service wye, and manholes and lampholes. Manholes shall be included as a separate unit of property.

362. Special Collecting Structures

Inverted siphon shall be included in this account but so

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distinctly noted; also any other special designed structures unusual to the wastewater system should be included herein but specifically noted as to what they do.

363. Services to Customers

This account shall include the installed cost of service sewers, from collection sewer to the customer's property or curb line. A sample of items to be included in this account are listed below:

1. Jointing and jointing material.
2. Manhole or clean-out.
3. Municipal inspection and permits
4. Pavement disturbed.
5. Protection of street openings.
6. Tapping saddle.
7. Service connection wye shall be included in account 363 instead of account 361 when company owns service sewers to customers property line.

364. Flow Measuring Devices

A. This account shall include the cost of flow measuring and recording equipment and initial testing used for measuring the quantity of wastewater or wastewater effluent delivered by customers, whether actually in service or held in reserve.

B. When flow measuring equipment is permanently retired from service, the amount at which it is included herein shall be credited to this account.

C. The records covering flow measuring equipment shall be so kept that the utility can furnish information as to the number of devices of each type and size in service and in reserve, as well as the location of each device included in this account.

365. Flow Measuring Installations

A. This account shall include the cost of labor employed, materials used and expenses incurred in connection with the original installation of customers' flow measuring equipment. A sample of items to be included in this account are listed below:

1. Floats, connections, flumes, or wires.
2. Special manhole, boxes, or other separate housing.

B. When a flow measuring installation is permanently retired from service, the cost thereof shall be credited to this account.

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366. Reuse Services

A. This account shall include the cost installed of reclaimed water service pipes and accessories leading to the customers' premises.

B. A complete reclaimed water service begins with the connection on the main and extends to but does not include the connection with the customer's meter. A stub service extends from the main to the property line, or the curb stop (curb stop cock).

C. Services which have been used but have become inactive shall be retired from utility plant in service immediately if there is no prospect for future use.

Items

1. Corporation stops or tees.
2. Gate valves and boxes.
3. Goose necks.
4. Jointing and jointing material.
5. Municipal inspection or permits.
6. Pavements disturbed.
7. Pipes.
8. Placing pipes and accessories.
9. Protection of street openings.
10. Service or curb boxes.
11. Service or curb stops (curb stop cocks).
12. Tapping main.
13. Tapping saddle.

367. Reuse Meters and Meter Installations

A. This account shall include the cost of meters, devices and appurtenances attached thereto, used for measuring the quantity of reclaimed water delivered to users, whether actually in service or held in reserve. It shall also include the cost of labor employed, materials used and expenses incurred in connection with the original installation of a customer's meters and devices and appurtenances attached thereto.

B. When a meter and/or meter installation is permanently retired from service, the amount at which it is included herein shall be credited to this account.

C. The records covering meters shall be so kept that the utility can furnish information as to the number of meters of each type and size in service and in reserve as well as the location of each meter included in this account.

D. A sample of items to be included in this account are listed

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below:

1. Meters, including badging and initial testing.
2. Remote meter registers.
3. Installation labor (first installation only).
4. Meter coupling.
5. Meter bars.
6. Meter yokes.
7. Meter fittings, connections and shelves.
8. Meter vaults or boxes.
9. Stops.

Note A:--This account shall not include meters for recording the output of a supply or treatment plant, or those located on mains. It includes only those meters to record reclaimed water delivered to customers, including company use and for those used elsewhere in the system if a type available for general use.

Note B:--The utility shall maintain a statistical record to show separately the number of each type and size of meter or group of types and sizes as carried in the continuing property record. Underlying records shall be kept so that the utility can determine readily for each such classification the number of company-owned meters in service (subdivided between active and inactive) and the number of meters carried herein but not in service, the latter to include meters undergoing repairs; and the number of meters in service owned by customers.

370. Receiving Wells

This account shall include the cost of constructing wells at pumping stations or at other junction points along the collecting system, used for intercepting wastewater for clearing and screening, transfer to a pumping well or otherwise further convey it along the collecting system to the treatment plant or point of final discharge. This account shall include any chemical feed apparatus and holding basins associated with the receiving well.

371. Pumping Equipment

This account shall include the cost installed of pumping equipment driven by electric power or diesel engines. A sample of items to be included in this account are listed below:

1. Motors or engines for driving pumps.
2. Pumps, including settings, gearing, shafting and belting.
3. Sewage piping within station, including valves.
4. Auxiliary equipment for motors and pumps such as oiling systems, cooling systems, condensers, etc.

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5. Electrical power lines and switching.
6. Foundations, frames, and bed plates.
7. Hoist units.

374. Reuse Distribution Reservoirs

This account shall include the cost in place of reservoirs, tanks and appurtenances used in storing reclaimed water for distribution. A sample of items to be included in this account are listed below:

1. Bridges and culverts.
2. Clearing land.
3. Dams.
4. Embankments.
5. Fences.
6. Foundations.
7. Gates and gate houses.
8. Landscaping.
9. Lighting systems.
10. Piping system within reservoirs.
11. Retaining walls.
12. Roads and paths.
13. Rust-proofing apparatus.
14. Sewer drain or storm sewer.
15. Spillways and channels.
16. Standpipes.
17. Tanks.
18. Towers.
19. Valves.

375. Reuse Transmission and Distribution System

A. This account shall include the cost installed of reclaimed water transmission and distribution mains and appurtenances. A sample of items to be included in this account are listed below:

1. Air chambers.
2. Blow-offs and overflows.
3. Bridges and culverts.
4. Electrolysis control equipment.
5. Gauges and recorders.
6. Jointing and jointing material.
7. Manholes.
8. Meters and appurtenances.
9. Municipal inspection or permits.
10. Pavement disturbed, including cutting and replacing pavement, pavement base and sidewalks.
11. Pipes.
12. Fire mains.
13. Fire Hydrants.

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B. Records supporting this account shall be so kept as to show separately the cost of mains of different sizes and types and of each tunnel, bridge, or river crossing.

380. Treatment and Disposal Equipment

This account shall include the cost installed of apparatus equipment and other facilities used for the treatment of wastewater, disposal of sewage wastes and the treatment of effluent for reuse. A sample of items to be included in this account are listed below:

1. Aeration chambers.
2. Chemical equipment.
3. Disinfection facilities.
4. Filters.
5. Imhoff tank.
6. Land fill equipment and appurtenances.
7. Monitoring equipment.
8. Oxidation pond or lagoon.
9. Sedimentation equipment.
10. Septic tank.
11. Screen unit.
12. Sludge system.
13. Trucks, tractors, or other equipment used primarily for sludge or other waste disposal.
14. Package mechanical treatment plant.
15. Sedimentation basin.
16. Sludge digestion equipment.
17. Sludge filtration or dewatering equipment.

381. Plant Sewers

This account shall include the cost installed of plant yard piping and appurtenances, and facilities required to dispose of treatment plant liquid effluent into the outfall sewer line. A sample of items to be included in this account are listed below:

1. Unit to unit sections of yard piping.
2. Valves and vaults.
3. Pipe tunnels and galleries.
4. Filter and filter backwash piping.

382. Outfall Sewer Lines

This account shall include the installed cost of sewer line carrying effluent from treatment facility to point of discharge. Includible in this account would be headwall or outlet.

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389. Other Plant and Miscellaneous Equipment

This account shall include the cost installed of all other intangible, collection system pumping, treatment and disposal, reclaimed water treatment and reclaimed water distribution plant not provided for in the foregoing accounts.

390. Office Furniture and Equipment

A. This account shall include the cost of office furniture and equipment owned by the utility and devoted to utility service, and not permanently attached to buildings, except the cost of such furniture and equipment which the utility elects to assign to other plant accounts on a functional basis. A sample of items to be included in this account are listed below:

1. Book cases and shelves.
2. Desk, chairs, and desk equipment.
3. Drafting room equipment.
4. Electronic data processing equipment.
5. Filing, storage and other cabinets.
6. Floor covering.
7. Library and library equipment.
8. Mechanical office equipment such as accounting machines, typewriters, etc.
9. Safes.
10. Tables.

B. If the utility has equipment includible in this account at more than one location, separate records shall be maintained for each location.

391. Transportation Equipment

This account shall include the cost of transportation vehicles used for utility purposes. A sample of items to be included in this account are listed below:

1. Airplanes.
2. Automobiles.
3. Bicycles.
4. Electrical vehicles.
5. Motor trucks.
6. Motorcycles.
7. Repair cars or trucks.
8. Tractors and trailers.
9. Other transportation vehicles.

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392. Stores Equipment

A. This account shall include the cost of equipment used for the receiving, shipping, handling and storage of materials and supplies.

B. If the utility has equipment includible in this account at more than one location, separate records shall be maintained for each location. A sample of items to be included in this account are listed below:

1. Chain falls.
2. Counters.
3. Cranes (portable).
4. Elevating and stacking equipment (portable).
5. Hoists.
6. Lockers.
7. Scales.
8. Shelving.
9. Storage bins.
10. Trucks, hand and power driven.
11. Wheelbarrows.

393. Tools, Shop and Garage Equipment

This account shall include the cost of tools, implements, and equipment used in construction, repair work, general shops and garages and not specifically provided for or includible in other accounts. A sample of items to be included in this account are listed below:

1. Air compressors.
2. Anvils.
3. Automobile repair shop equipment.
4. Battery charging equipment.
5. Belts, shafts and countershafts.
6. Boilers.
7. Cable pulling equipment.
8. Concrete mixers.
9. Drill presses.
10. Derricks.
11. Electric equipment.
12. Engines.
13. Forges.
14. Furnaces.
15. Foundations and settings specially constructed for and not expected to outlast the equipment for which provided.
16. Gas producers.
17. Gasoline pumps, oil pumps and storage tanks.
18. Greasing tools and equipment.

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19. Hoists.
20. Ladders.
21. Lathes.
22. Machine tools.
23. Motor driven tools.
24. Motors.
25. Pipe threading and cutting tools.
26. Pneumatic tools.
27. Pumps.
28. Riveters.
29. Smithing equipment.
30. Tool racks.
31. Vises.
32. Welding apparatus.
33. Work benches.

394. Laboratory Equipment

A. This account shall include the cost installed of laboratory equipment used for general laboratory purposes and not specifically provided for or includible in other departmental or functional plant accounts. A sample of items to be included in this account are listed below:

1. Autoclaves.
2. Barometers.
3. Cameras.
4. Centrifuge.
5. Distilling apparatus.
6. Furnaces.
7. Microscopes.
8. Ovens.
9. Pitometers.
10. Rain gauges.
11. Refrigerators.
12. Scales.
13. Sterilizers.
14. Stop watches.
15. Testing machines.
16. Therometers.
17. Voltmeters.
18. Other bacteriological, electric, chemical hydraulic or research equipment.

B. If the utility has equipment includible in this account at more than one location, separate records shall be maintained for each location.

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395. Power Operated Equipment

This account shall include the cost of power operated equipment used in construction of repair work exclusive of equipment includible in other accounts. Include, also, the tools and accessories acquired for use with such equipment and the vehicle on which such equipment is mounted. A sample of items to be included in this account are listed below:

1. Air compressors, including driving unit and vehicle.
2. Back filling machines.
3. Boring machines.
4. Bulldozers.
5. Cranes and joists.
6. Diggers.
7. Engines.
8. Pile drivers.
9. Pipe cleaning machines.
10. Pipe coating or wrapping machines.
11. Tractors - Crawler type.
12. Trenchers.
13. Other power operated equipment.

Note:--It is intended that this account include only such large units as are generally self-propelled or mounted on moveable equipment.

396. Communication Equipment

This account shall include the cost installed of telephone, telegraph and wireless equipment for general use in connection with utility operations. A sample of items to be included in this account are listed below:

1. Antennae.
2. Booths.
3. Cables.
4. Distribution boards.
5. Extension cords.
6. Gongs.
7. Handsets, manual and dial.
8. Insulators.
9. Intercommunicating sets.
10. Loading coils.
11. Operators desks.
12. Poles and fixtures used wholly for telephone and telegraph wires.
13. Radio transmitting and receiving sets.
14. Remote control equipment and lines.
15. Sending keys.
16. Storage batteries.

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17. Switchboards.
18. Teleautograph circuit connections.
19. Telegraph receiving sets.
20. Telephone and telegraph circuits.
21. Testing instruments.
22. Towers.
23. Underground conduit used wholly for telephone or telegraph wires and cable wires.

397. Miscellaneous Equipment

This account shall include the cost of equipment, apparatus, etc., used in utility operations, and which is not includible in any other account. A sample of items to be included in this account are listed below:

1. Hospital and infirmary equipment.
2. Kitchen equipment.
3. Recreation equipment.
4. Radios.
5. Restaurant equipment.
6. Soda fountains.
7. Operator's cottage furnishings.
8. Electric signs advertising the corporate name or symbol, plant or facility name, or otherwise serving only the general purpose of acquainting the public with the facilities and services of the utility.
9. Other miscellaneous equipment.

Note:--Miscellaneous equipment of the nature indicated above wherever practicable shall be included in the utility plant accounts on a functional basis.

398. Other Tangible Plant

This account shall include the cost of tangible utility plant not provided for elsewhere.

§ 1329. Valuation of acquired water and wastewater systems.

(a) Process to establish fair market value of selling utility.--Upon agreement by both the acquiring public utility or entity and the selling utility, the following procedure shall be used to determine the fair market value of the selling utility:

(1) The commission will maintain a list of utility valuation experts from which the acquiring public utility or entity and selling utility will choose.

(2) Two utility valuation experts shall perform two separate appraisals of the selling utility for the purpose of establishing its fair market value.

(3) Each utility valuation expert shall determine fair market value in compliance with the Uniform Standards of Professional Appraisal Practice, employing the cost, market and income approaches.

(4) The acquiring public utility or entity and selling utility shall engage the services of the same licensed engineer to conduct an assessment of the tangible assets of the selling utility. The assessment shall be incorporated into the appraisal under the cost approach required under paragraph (3).

(5) Each utility valuation expert shall provide the completed appraisal to the acquiring public utility or entity and selling utility within 90 days of execution of the service contract.

(b) Utility valuation experts.--

(1) The utility valuation experts required under subsection (a) shall be selected as follows:

(i) one shall be selected by the acquiring public utility or entity; and

(ii) one shall be selected by the selling utility.

(2) The utility valuation experts shall not:

(i) derive any material financial benefit from the sale of the selling utility other than fees for services rendered; or

(ii) be an immediate family member of a director, officer or employee of either the acquiring public utility, entity or selling utility within a 12-month period of the date of hire to perform an appraisal.

(3) Fees paid to utility valuation experts may be included in the transaction and closing costs associated with acquisition by the acquiring utility or entity. Fees eligible for inclusion may be of an amount not exceeding 5% of the fair market value of the selling utility or a fee approved by the commission.

(c) Ratemaking rate base.--The following apply:

(1) The ratemaking rate base of the selling utility shall be incorporated into the rate base of:

(i) the acquiring public utility during the acquiring public utility's next base rate case; or

(ii) the entity in its initial tariff filing.

(2) The ratemaking rate base of the selling utility shall be the lesser of the purchase price negotiated by the acquiring public utility or entity and selling utility or the fair market value of the selling utility.

(d) Acquisitions by public utility.--The following apply:

(1) If the acquiring public utility and selling utility agree to use the process outlined in subsection (a), the acquiring public utility shall include the following as an attachment to its application for commission approval of the acquisition filed pursuant to section 1102 (relating to enumeration of acts requiring certificate):

(i) Copies of the two appraisals performed by the utility valuation experts under subsection (a).

(ii) The purchase price of the selling utility as agreed to by the acquiring public utility and selling utility.

(iii) The ratemaking rate base determined pursuant to subsection (c) (2).

(iv) The transaction and closing costs incurred by the acquiring public utility that will be included in its rate base.

(v) A tariff containing a rate equal to the existing rates of the selling utility at the time of the acquisition and a rate stabilization plan, if applicable to the acquisition.

(2) The commission shall issue a final order on an application submitted under this section within six months of the filing date of an application meeting the requirements of subsection (d) (1).

(3) If the commission issues an order approving the application for acquisition, the order shall include:

(i) The ratemaking rate base of the selling utility, as determined under subsection (c) (2).

(ii) Additional conditions of approval as may be required by the commission.

(4) The tariff submitted pursuant to subsection (d) (1) (v) shall remain in effect until such time as new rates are approved for the acquiring public utility as the result of a base rate case proceeding before the commission. The acquiring public utility may collect a distribution system improvement charge during this time, as approved by the commission under this chapter.

(5) The selling utility's cost of service shall be incorporated into the revenue requirement of the acquiring public utility as part of the acquiring utility's next base rate case proceeding. The original source of funding for any part of the water or sewer assets of the selling utility shall not be relevant to determine the value of said assets.

(e) Acquisitions by entity.--An entity shall provide all the information required by subsection (d) (1) to the commission as an attachment to its application for a certificate of public convenience filed pursuant to section 1102.

(f) Postacquisition projects.--The following apply:

(1) An acquiring public utility's postacquisition improvements that are not included in a distribution improvement charge shall accrue allowance for funds used during construction after the date the cost was incurred until the asset has been in service for a period of four years or until the asset is included in the acquiring public utility's next base rate case, whichever is earlier.

(2) Depreciation on an acquiring public utility's postacquisition improvements that have not been included in the calculation of a distribution system improvement charge shall be deferred for book and ratemaking purposes.

(g) Definitions.--The following words and phrases when used in this section shall have the meanings given to them in this section unless the context clearly indicates otherwise:

"Acquiring public utility." A water or wastewater public utility subject to regulation under this title that is acquiring a selling utility as the result of a voluntary arm's-length transaction between the buyer and seller.

"Allowance of funds used during construction." An accounting practice that recognizes the capital costs, including debt and equity funds that are used to finance the construction costs of an improvement to a selling utility's assets by an acquiring public utility.

"Entity." A person, partnership or corporation that is acquiring a selling utility and has filed or whose affiliate has

filed an application with the commission seeking public utility status pursuant to section 1102.

"Fair market value." The average of the two utility valuation expert appraisals conducted under subsection (a)(2).

"Ratemaking rate base." The dollar value of a selling utility which, for postacquisition ratemaking purposes, is incorporated into the rate base of the acquiring public utility or entity.

"Rate stabilization plan." A plan that will hold rates constant or phase rates in over a period of time after the next base rate case.

"Selling utility." A water or wastewater company located in this Commonwealth, owned by a municipal corporation or authority that is being purchased by an acquiring public utility or entity as the result of a voluntary arm's-length transaction between the buyer and seller.

"Utility valuation expert." A person hired by an acquiring public utility and selling utility for the purpose of conducting an economic valuation of the selling utility to determine its fair market value.

(Apr. 14, 2016, P.L.76, No.12, eff. 60 days)

2016 Amendment. Act 12 added section 1329.

Execution Version

**SANITARY SEWER
ASSET PURCHASE AGREEMENT**

By and Between

Valley Township, Chester County

As Seller

and

Pennsylvania-American Water Company

As Buyer

Dated as of December 17, 2019

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SANITARY SEWER ASSET PURCHASE AGREEMENT

THIS SANITARY SEWER ASSET PURCHASE AGREEMENT ("Agreement"), dated as of December 17, 2019 (the "Effective Date"), is made and entered into by and between Valley Township, Chester County, a body corporate and politic, organized and existing under the laws of the Commonwealth of Pennsylvania (the "Seller"), and Pennsylvania-American Water Company (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 Valley 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 Valley Township, Pennsylvania and limited portions of East Fallowfield, Sadsbury and West Caln (the "Service Area"); 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 ascribed to it 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 0.

“**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 described in 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 provided for 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.

“**Customer Sewer Laterals**” has the meaning specified in Section 2.02(k).

“**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 228 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 listed in 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), 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, 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 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; *provided, however,* that **“Losses”** shall 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 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, such Easement is unrecorded or 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.

“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 disclosed 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.

“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 shall not include any permit issued and related to the Stormwater System Assets.

“**Service Area**” has the meaning set forth 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.

“System” has the meaning specified in the recitals to this Agreement and shall include the Acquired Assets and exclude 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 has applied and has been 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 used in the operation of the System, including without limitation (i) good and marketable fee simple title to the Real Property described and identified on Schedule 4.09 hereof, and (ii) all Easements, including without limitation those identified on Schedule 4.09;

(b) all sanitary wastewater related 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 run the System;

(c) all contracts, licenses, and leases to which Seller is a party, including without limitation, all construction contracts, surety bonds, operation and maintenance agreements, management agreements, reserved capacity agreements (including the rights set forth in Section 7.14 hereof), 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 listed on Schedule 4.10 hereof;

(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 listed or described on Schedule 4.12; and

(i) all goodwill of the System.

SELLER MAKES NO EXPRESS OR IMPLIED REPRESENTATIONS OR WARRANTIES OF ANY KIND WHATSOEVER REGARDING THE VALUE OF ANY OF THE ACQUIRED ASSETS OR THE SYSTEM, OR 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.

Section 2.02. Excluded Assets.

Notwithstanding anything herein to the contrary, the Acquired Assets shall 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;

(j) the rights which accrue or will accrue to Seller under this Agreement and any related agreement, exhibit or schedule; and

(k) any and all connecting facilities 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 (the "Customer Sewer Laterals").

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 satisfactory 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 shall be good and marketable and insured by the Title Company, at the Title Company's filed rates, as a 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.

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 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 provided herein, 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 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 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 fifty percent (50%) by Buyer and fifty percent (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 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 AND ADDITIONAL PURCHASE PRICE

Section 3.01. Purchase Price.

The purchase price for the Acquired Assets is Thirteen Million Nine Hundred Fifty Thousand Dollars (\$13,950,000) (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), to Seller by wire transfer of immediately available funds the Purchase Price (remaining after the payments required in Section 3.01(a)) 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.

(c) In addition to the Purchase Price, Buyer shall pay Seller up to Seventy Thousand Dollars (\$70,000) as reimbursement for engineering and legal fees incurred related to this transaction to one or more accounts that Seller designates and provides to Buyer at least three (3) Business Days before the Closing Date.

Section 3.02. Fair Consideration.

The consideration provided for 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 fifty percent (50%) by Buyer and fifty percent (50%) by Seller. The terms hereof survive Closing.

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 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 hereof.

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, 2015, 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 identifies 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 property owners 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 and otherwise described 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 specifically disclosed 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 in 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.

(i) Schedule 4.12 lists or describes 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 material 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 contains 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 specified in 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 listed in 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.

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 shall 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 hereof. 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. Buyer acknowledges that other than as expressly set forth in this Agreement or any related agreement, Seller expressly disclaims any warranty of income potential, operating expenses, costs of operation, or uses or fitness for a particular purpose of any Acquired Assets or the System.

Section 5.09. Scheduled Matters.

Buyer acknowledges that: (a) the inclusion of any matter on any Schedule shall not be deemed 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 insured 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 Buyer's 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) 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.

(b) Notice of Objections. Within forty five (45) days of Buyer's receipt from the Seller (or the Abstractor) of the information described in subsection (a) above, 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." In the event that 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.

(c) If during the process of Abstractor's review and investigation of the Chester County land records, Seller determines, based on the Abstractor's investigation, 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 shall be 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.

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 specifically identified in 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 rates then in effect at Closing, as set forth on Schedule 7.03(a) (the "Base Rate") as Buyer's effective sanitary wastewater rates, provided that the rates reflected on Schedule 7.03(a) (at Closing) shall not be lower than those in effect on the date 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. Buyer (i) acknowledges that certain Seller customers pay a flat rate, as set forth on Schedule 7.03(a) and (ii) absent an order to the contrary from a Governmental Authority, Buyer shall continue to charge such customers the flat rate then in effect (whether it is the flat rate as set forth on Schedule 7.03(a) or a flat rate set by the PaPUC from time to time after the second anniversary of Closing).

(b) Except for the remaining tapping fees set forth on Schedule 7.03(b), Buyer shall apply, at and after Closing, its then-existing miscellaneous fees and charges, rules and regulations for wastewater service as set forth in the Buyer's tariff within the Service Area. At and after Closing, Buyer shall charge and collect the remaining tapping fee of \$382.92 at the time of permit issuance for each remaining EDU as set forth on Schedule 7.03(b).

(c) 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 fifty percent (50%) by Buyer and fifty percent (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 of 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 the 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 provided in Section 7.10, Buyer shall extend sewer lines and provided 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 area 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 monthly report to the person designed by Buyer, disclosing any and all material compliance or operational deficiencies that occurred during the previous month.

ARTICLE VIII.

INDEMNIFICATION

Section 8.01. Survival.

All representations and warranties contained in this Agreement shall 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") shall 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") shall 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 shall survive 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 shall have been given to the Party against whom such indemnity may be sought before such time, and (y) nothing contained in this Section 8.01 shall limit in any way any rights a Party may have to bring claims grounded in fraud, intentional misrepresentation or willful misconduct, which rights shall 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 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 to this Agreement or an Affiliate of a party to this Agreement or a representative of the foregoing (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 shall 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 shall 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, *provided*, that 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, to 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 provided in this Agreement, the Indemnified Party may, subject to Section 8.04(b), pay, compromise, 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, 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 provided 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") shall be asserted by the Indemnified Party giving the Indemnifying Party prompt notice thereof. The failure to give such prompt notice shall 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 Direct Claim in reasonable detail and shall 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 \$750,000 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) shall 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) shall 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 shall not be limited by this Section 8.05(c)) up to the aggregate amount of 5% of Purchase Price (the "Liability Cap"), which shall represent 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 shall not be subject to the Liability Cap, but shall be 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 shall be 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 shall 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, shall be 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) shall limit any Person'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, and (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, the Authority and others having business relationships with Seller and the System.

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 provided in such representations and warranties) as if then made. Following the Effective Date, 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 execution of this Agreement, or as required by Law, except as otherwise expressly provided herein, Seller shall file all applications and reports that are required to be filed by Seller with any Governmental Authority 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 shall be 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 hereof without notice to and the consent of Buyer, which consent shall not be unreasonably withheld and Buyer shall provide such consent to Seller within seven (7) 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 provided herein, 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 provided 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 shall 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 or 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 shall 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 shall obtain 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 shall 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., Valley 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;

(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; and

(j) 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 provided in Section 12.03; and

(f) 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 occurred 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, if the Party seeking termination pursuant to this clause (b)(ii) is not then in material breach of any of its representations, warranties, covenants or agreements contained in this Agreement;

(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 hereof.

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 shareholders, directors, officers, agents, or representatives to the other Party or its employees, directors, officers, agents 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 shall be in writing, shall state specifically that they are being given pursuant to this Agreement and shall be addressed as follows:

in the case of Seller:

Valley Township

890 West Lincoln Highway,
P.O. Box 467
Coatesville, PA 19320
Attention: Manager

with a copy to:

Valley Township
890 West Lincoln Highway,
P.O. Box 467
Coatesville, PA 19320
Attention: Solicitor

in the case of Buyer:

Pennsylvania-American Water Company
852 Wesley Drive
Mechanicsburg, PA 17055
Attn: President

with a copy to:

Pennsylvania-American Water Company
852 Wesley Drive
Mechanicsburg, PA 17055
Attn: General Counsel

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 shall remain in full force and effect and shall in no way be 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 shall 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.

Except as hereinafter provided, this Agreement is not intended to and shall not be construed to create upon any Person other than the Parties any rights or remedies hereunder.

Section 15.09. 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.

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 shall 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 shall be 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; 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 facsimile transmission. Such Party is deemed to have executed and delivered this Agreement on the date it sent such 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.

VALLEY TOWNSHIP, CHESTER COUNTY

PENNSYLVANIA-AMERICAN WATER COMPANY

By: Patrice L Proctor
Printed: PATRICE L PROCTOR
Its: CHAIRMAN

By: _____
Printed: _____
Its: _____

ATTEST:

ATTEST:

By: Janis A Rambo
Printed: JANIS A RAMBO
Title: TOWNSHIP SECRETARY

By: _____
Printed: _____
Title: _____

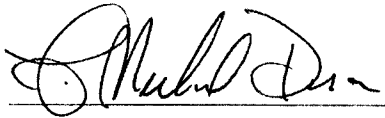
IN WITNESS WHEREOF, the Parties have executed, or caused to be executed by their duly authorized Representatives, this Agreement as of the Effective Date.

VALLEY TOWNSHIP, CHESTER COUNTY []


By: _____
Printed: _____
Its: _____

ATTEST:

By: _____
Printed: _____
Title: _____

By: 
Printed: F. Michael Doren
Its: President

ATTEST:

By: 
Printed: Emily T. Hicko
Title: Asst. Secy.

December 17, 2019

**SANITARY SEWER
ASSET PURCHASE AGREEMENT**

By and Among

Valley Township, Chester County

As Seller

and

Pennsylvania-American Water Company

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 2.02(h)

Excluded Assets

None.

Schedule 4.05

Required Governmental Consents

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 transfer of WQM Permits:
 - Original Rock Run PS and Township-Wide Sewer System Permitting, Permit No. 1569495 (1969-1970)
 - Hillview PS DEP WQM Permit, Permit No. 1503404 (2003)
 - Rock Run PS, WQM Permit for complete reconstruction, Permit No. 1597414 (1998)
 - Rock Run PS, WQM Permit Amendment for Re-Rate #2, Permit No. 1502419-A-3 (2010)
 - Valley View Business Park Temporary PS, WQG Permit, Permit No. WQG02150710 (2007)
 - Valley View Business Park Temporary PS, DEP Planning approval for Re-Rate #1, Permit No. WQG02150710A1 (2010)
 - Valley View Business Park Temporary PS, WQM Permit Amendment for Re-Rate #1 (2010)
 - Round Hill PS #1&2, DEP WQM Permit, Permit No. 1506413 (2006)
 - Valley Suburban Center PS DEP WQG Permit, Permit No. WQG02150618 (2006)

Schedule 4.06

Seller 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

Real Property

- 755 Fox Chase Road (Highlands Corp. Center P.S. #1) - 38020387010E
 - Deed Rec. Date - 4/1/1994
 - Deed Book – 3772
 - Deed Page – 1127
- 1069 William Way (Rock Run Pump Station) - 3802M0126010E
- 104 N Mount Airy Road (Country Ridge P.S.) - 2809 0082050E
 - Deed Rec. Date - 7/1/1992
 - Deed Book – 3508
 - Deed Page – 35

*Easements**

- Highlands Corp Center P.S. #2
 - Easement on Parcel (3801 00031000)
- Coatesville Country Club P.S.
 - Easement on Parcel (2809 00950000)
- Round Hill P.S. #1
 - Easement on Parcel (3801 00230000)
- Round Hill P.S. #2
 - Easement on Parcel (3801 00230000)

*To be updated as more information is obtained.

Schedule 4.10

Equipment and Machinery

1. Rock Run Pump Station – Cummins Model DGDK-5636759 Serial No. L030576414
2. Country Ridge Pump Station
3. Highlands Corporate Center Pump Station #1
4. Round Hill Pump Station #1 – Cummins 25 kW diesel generator
5. Round Hill Pump Station #2 - Cummins 25 kW diesel generator
6. Hillview Pump Station* - Kohler Model 125RZG Serial No. 0789914

**The Hillview Pump Station has not yet been dedicated to the Township but is expected to be prior to Settlement.*

Schedule 4.11

Environmental Compliance

2018

- Easement behind 1061 Front Street – Collapsed sewer main replaced

2017

- 909 Wagontown Road – Manhole blockage immediately cleared by emergency response services
- 23 Country Club Road
- Intersection Winged Foot Drive and Pine Valley Drive
- 72 Gap Road
- 165 Glencrest Road – Homeowner grinder pump pressure lateral causing sewage to leak and pool; Repaired on 2017-11-06

2016

- Front Street – Manhole blockage immediately cleared by emergency response services

2015

- West Lincoln Highway – Manhole blockage immediately cleared by emergency response services

Schedule 4.12

Authorizations, Licenses and Permits

1. [Commonwealth of Pennsylvania Department of Environmental Resources Water Quality Management Permit for Sanitary Sewer Collection System, Nos. _____, _____, _____]. [TO BE CONFIRMED/PROVIDED BY MUNICIPALITY AT LATER DATE]
2. Pennsylvania Department of Environmental Protection approval of Act 537 Official Sewage Facilities Plan
3. Chester County Health Department – Post closing notice
4. PaPUC
 - a. Approval of transaction
 - b. Approval of consent to assignment and amendments to Wastewater Service Agreements
5. Original Rock Run PS and Township-Wide Sewer System Permitting, Permit No. 1569495 (1969-1970)
6. DEP Township-Wide Act 537 Plan approval letter (2010)
7. HCC PS #1&2, DEP Planning Amendment approval to re-route PS#2 (2002)
8. Hillview, DEP Planning Module approval (including the PS) (2002)
9. Hillview PS DEP WQM Permit, Permit No. 1503404 (2003)
10. Rock Run PS, WQM Permit for complete reconstruction, Permit No. 1597414 (1998)
11. Rock Run PS, DEP Planning Approval for Re-Rate #1, Permit No. 1502419-A-2 (2006)
12. Rock Run PS, Corrective Action Plan approval (2008)
13. Rock Run PS, DEP Planning Approval Email for Re-Rate #2; DEP indicates in the email that approval of the Twp-wide Act 537 Plan also serves as planning approval for Re-Rate #2 (2010)
14. Rock Run PS, WQM Permit Amendment for Re-Rate #2, Permit No. 1502419-A-3 (2010)
15. Valley View Business Park Temporary PS, DEP Planning Module approval (including the PS) (2007)
16. Valley View Business Park Temporary PS, WQG Permit, Permit No. WQG02150710 (2007)
17. Valley View Business Park Temporary PS, DEP Planning approval for Re-Rate #1, Permit No. WQG02150710A1 (2010)
18. Valley View Business Park Temporary PS, WQM Permit Amendment for Re-Rate #1 (2010)
19. Round Hill, DEP Planning Module approval (including PS #1 & 2) (2006)
20. Round Hill PS #1&2, DEP WQM Permit, Permit No. 1506413 (2006)
21. Valley Suburban Center, DEP Planning Module approval (including the PS) (2006)
22. Valley Suburban Center PS DEP WQG Permit, Permit No. WQG02150618 (2006)

Schedule 4.13

Assigned Contracts

| Agreements | | | |
|--|--|-------------------------|--|
| Name of Contract | Parties to Contract | Date of Contract | Subject |
| Sewage Conveyance Agreement | City of Coatesville Authority and Valley Township | January 7, 1992 | Conveyance of sanitary sewer |
| Addendum to Sewage Conveyance Agreement | City of Coatesville Authority and Valley Township | July 18, 1995 | Amends January 7, 1992 contract |
| Sewage Treatment Agreement | City of Coatesville Authority and Valley Township | January 7, 1992 | Treatment of sewer flows |
| Addendum to Sewage Treatment Agreement | City of Coatesville Authority and Valley Township | September 16, 1997 | Amends January 7, 1992 |
| Second Amendment to Sewage Treatment Agreement | Pennsylvania-American Water Company and Valley Township | December 14, 2004 | Amends Sewage Treatment Agreement and expands capacity |
| Agreement for Undergrade Sanitary Sewer Forcemain Occupation | Consolidated Rail Corporation and Valley Township | August 25, 1998 | Use of Conrail's property |
| Sewage Conveyance Agreement | Pennsylvania-American Water Company and Valley Township | March 3, 2012 | Conveyance of sanitary sewer |
| Sewer Main Extension Agreement | Pennsylvania-American Water Company, DHLP-Oakcrest, L.P. and Valley Township | March 7, 2006 | Sewer service supply contract |
| Sewer Conveyance Agreement | Pennsylvania-American Water Company and Valley Township | January 5, 2009 | Conveyance of sanitary sewer |
| Agreement | Valley Township and Sadsbury Township | November 15, 2011 | Assignment of 2800 West Lincoln Hwy as sewage customer |
| Sewage Conveyance Agreement | City of Coatesville Authority and Valley Township | 1992 | West Caln Connection |

Schedule 4.14

Litigation Involving Seller

- Orleans RH PA-IL, LP v. Valley Township and the Board of Supervisors of Valley Township; Orleans filed a complaint in the Chester County Court of Common Pleas on April 18, 2017, docket number 2017-04086-MJ
- Valley Township and the Board of Supervisors of Valley Township v. Orleans RH PA-IL, LP; Township filed a complaint in the Chester County Court of Common Pleas on June 15, 2017, docket number 2017-06089-CT
 - Status: These cases are now the subject of a fully executed settlement agreement by all parties, with easements and deeds of dedication to be approved and accepted by Valley Township per the settlement terms, following court approval of a joint stipulation.
- Devon Services, LLC v. Valley Township and Valley Township Board of Supervisors, Chester County Court of Common Pleas Civil Action No. 18-04349. The matter was commenced by Writ on May 2, 2018. A Complaint was filed on August 28, 2019.
- Devon Services, LLC v. Valley Township and Valley Township Board of Supervisors, Chester County Court of Common Pleas Civil Action No. MD-1389-18. A Petition to Appoint a Board of Viewers was filed on May 27, 2018.
 - Status: Both of the above matters were consolidated under Civil Action No. 18-04349 on October 1, 2019. These cases involve remaining infrastructure and road dedication matters following bank foreclosure on a development alternatively known as Pleasant Valley Woods and the London Tract. The development contains 14 fully built and occupied homes. The possible dedication of a street known as Burgundy Lane, with related sanitary sewer, storm sewer, and SWM facilities is the subject of the litigation, as well as reimbursement of professional fees.

Schedule 4.16(a)

Exception to Title to Acquired Assets

- The Seller notes the following exceptions to title: (i) missing easements; and (ii) exceptions identified on any title commitment obtained by the Buyer.

Schedule 4.16(b)

Sufficiency

- The Seller does not represent or warrant sufficiency with respect to: (i) missing easements; and (ii) exceptions identified on any title commitment obtained by the Buyer.

Schedule 4.17

Pending Development Plans

| Development | DEP Status | Total EDU's | Actual Projected New Connections | | | | | Total in 5 years | 5-10 Year Projection | Agreements Yes/No | |
|---|------------|--------------|----------------------------------|-----------|-----------|-----------|-----------|------------------|----------------------|-------------------|------|
| | | | 2018 | 2019 | 2020 | 2021 | 2022 | | | | 2023 |
| Oakcrest Phase I & Glencrest Road | Approved | 133 | 4 | 2 | 2 | 2 | 2 | 2 | 14 | - | No |
| Oakcrest Phase II | Approved | 53 | 12 | - | - | - | - | - | 12 | - | No |
| Highlands Corp Center Ph I, II, III | Approved | 90 | - | - | 6 | 5 | - | - | 11 | - | No |
| Valley Suburban Center | Approved | 340 | - | - | 50 | 48 | 40 | 40 | 178 | 162 | Yes |
| Valley Farm & Mt. Airy Road | Approved | 81 | - | - | - | - | - | - | - | 25 | No |
| Valley View - Park Lot 5 (Bone Tract) | Approved | 8 | - | 8 | - | - | - | - | 8 | - | Yes |
| Laurence Professional Center | Exempt | 2 | - | - | 2 | - | - | - | 2 | - | No |
| Valley View Bus - Park Lot 6 (Bone Tract) | Exempt | 8 | - | - | - | 8 | - | - | 8 | - | Yes |
| Valley View Bus - Amycel (Bone Tract) | Exempt | 31 | - | 31 | - | - | - | - | 31 | - | Yes |
| Valley View - Townhouses (Bone Tract) | Exempt | 115 | - | - | - | - | - | - | - | - | Yes |
| Valley View Bus - Park Lot 9 (Bone Tract) | Exempt | 1 | - | - | - | 1 | - | - | 1 | - | Yes |
| Airport Expansion | Exempt | 111 | - | 1 | 1 | 1 | 1 | 1 | 5 | 106 | No |
| Rainbow Village | Exempt | 30 | - | - | - | - | - | - | - | - | No |
| Heagy Tract | Exempt | 250 | - | - | - | - | - | - | - | - | No |
| Green Trees | Exempt | 80 | - | - | - | - | - | - | - | - | No |
| Zarelli Apartment Building | Exempt | 22 | - | - | - | - | - | - | - | - | No |
| Valley Township Municipal Complex | Exempt | 1 | - | 1 | - | - | - | - | 1 | - | No |
| Spruce Street Residences | Exempt | 4 | - | - | 2 | - | - | - | 2 | 2 | No |
| Total EDU | | 1,360 | 16 | 43 | 63 | 65 | 43 | 43 | 273 | 295 | |

Schedule 4.18

Land Development and Financial Security Agreements

[to be updated as needed.]

| Agreement | Required Public Improvements | Amount of Financial Security | Technical Specifications | Required EDUs |
|---|------------------------------|------------------------------|--------------------------|---------------|
| Valley Suburban Center | | | | 340 |
| Valley View – Park Lot 5 (Bone Tract) | | | | 8 |
| Valley View Business – Park Lot 6 (Bone Tract) | | | | 8 |
| Valley View Business – Amycel (Bone Tract) | | | | 31 |
| Valley View – Townhouses (Bone Tract) | | | | 115 |
| Valley View Business – Parki Lot 9 (Bone Tract) | | | | 2 |

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 WQM Permits:
 - Original Rock Run PS and Township-Wide Sewer System Permitting, Permit No. 1569495 (1969-1970)
 - Hillview PS DEP WQM Permit, Permit No. 1503404 (2003)
 - Rock Run PS, WQM Permit for complete reconstruction, Permit No. 1597414 (1998)
 - Rock Run PS, WQM Permit Amendment for Re-Rate #2, Permit No. 1502419-A-3 (2010)
 - Valley View Business Park Temporary PS, WQG Permit, Permit No. WQG02150710 (2007)
 - Valley View Business Park Temporary PS, DEP Planning approval for Re-Rate #1, Permit No. WQG02150710A1 (2010)
 - Valley View Business Park Temporary PS, WQM Permit Amendment for Re-Rate #1 (2010)
 - Round Hill PS #1&2, DEP WQM Permit, Permit No. 1506413 (2006)
 - Valley Suburban Center PS DEP WQG Permit, Permit No. WQG02150618 (2006)

Schedule 5.11

Buyer Litigation

[None.]

Schedule 7.03(a)

Rates

As of the date of this Agreement, Seller's rates are as follows:

Flat Rate Customers: \$220.00 per quarter

Metered Customers: \$179.00 for the first 10,000 gallons of metered water usage quarterly, and \$11.20 for each additional 1,000 gallons quarterly or fraction thereof.

Schedule 7.03(b)

Tapping Fees

Following is a summary of developers that purchased SEWER TREATMENT CAPACITY from Valley Township as part of the "2nd Amendment to the PAWC Sewage Treatment Agreement" dated December 14, 2004.

1. Developments that have completed construction and made all purchased connections as of October 2019:

| Developments | ONSITE EDU | OFFSITE EDU |
|--------------|---------------|------------------------------------|
| Oakcrest | 171 | See Glencrest Rd below |
| Round Hill | 201 | See Robinson Ave & Oaklyn Ln below |
| Risbon | 9 | |
| London Tract | 14 | |
| Valley Farm | 60 | See North Mt. Airy Rd below |
| Total | 455 | |

2. Developments that have NOT made all purchased and allocated capacity connections as of October 2019:

| Developments | ALLOCATED EDU | CONNECTED EDU | REMAINING EDU | REMAINING TAPPING FEE ¹ (\$382.92/EDU) |
|--|------------------|------------------|------------------|---|
| Valley Suburban Center | 340 | 0 | 340 | \$130,192.80 |
| Valley View Business Park ² (aka Bone Tract) | 450 | 36 | 414 | \$158,528.88 |
| Subtotal | 790 | 36 | 754 | \$288,721.68 |

| | | | |
|--|------------|-----------|------------|
| Glencrest Rd ³ (existing residences) | 17 | 7 | 10 |
| Robinson Ave & Oaklyn Ln ³ (existing residences) | 29 | 28 | 1 |
| North Mt. Airy Rd ³ (existing residences) | 21 | 0 | 21 |
| Total (Developments + Exist. Residences) | 857 | 71 | 786 |

Notes:

¹ The remaining tapping fee due to Valley Township (\$382.92) is the difference between the Township's current tapping fee (\$972.92) and the amount paid by the developers in 2004 for treatment capacity (\$590.00).

² A. Existing connections are for Lots 4 and 5. Lots 6, 7, 8, and 9 remain to be connected.
 B. The developer has offered 250 of the remaining EDUs for purchase by 3rd parties.
 C. The "Connected EDUs" include 6 EDUs that have been purchased by 3rd parties: 2 EDUs for Little Anthony's Pizza, 2 EDUs for the Keesey residential properties on W. Lincoln Hwy (which has not yet connected), and 2 EDUs for the DOS Hangar at the Chester County Airport.

³ The purchased allocation in the 2nd Amendment included capacity for potential existing residences. No payments were made by the existing residential property owners so those property owners are charged the full tapping fee (including capacity and connection parts) at the current fee in-place at the time of connection.

Exhibit A

Bill of Sale

Exhibit B

Assignment and Assumption Agreement

Agreement to Provide Valuation Consulting Services
Between

AUS Consultants

And

Pennsylvania America Water Company
For the Appraisal of

Valley Township, Pennsylvania's Water Distribution and Sanitary
Sewer Systems

As of the most recent period (Third Quarter 2019)

Agreement for Valuation Consulting Services

This Agreement for Valuation Consulting Services (“Agreement”) is by and between AUS Consultants, a New Jersey corporation (“Supplier”) and Pennsylvania-American Water Company, a Pennsylvania corporation (“PA-American”) and is entered into as of August 23, 2019. In consideration of the covenants hereinafter contained, and intending to be legally bound, the Parties hereto agree to as follows:

Section 1. Description of Services:

Supplier is being engaged to act as a Utility Valuation Expert, as such term is defined in Pennsylvania Act 12 of 2016, amending Chapter 13 of the Pennsylvania Public Utility Code and the First and Second Implementation Orders entered by the Public Utility Commission at Docket No. M-2016-2543193 (collectively, “Act 12”). Supplier is being engaged with respect to the proposed acquisition by PA-American of the water distribution and sanitary sewer systems’ assets currently owned by Valley Township, Pa. Upon the issuance of a notice to proceed by PA-American for each appraisal phase, Supplier shall prepare and produce the following appraisals and/or studies suitable for the Project, including if requested (collectively, the “Services”):

1. An Appraisal (Valuation study) consistent with the 2018-2019 (and 2020-2021 when available) Uniform Standards of Appraisal Practices (USPAP) as of the date requested by PA-American and consistent with the requirements of Act 12.
2. If applicable, provide expert witness testimony and documentation for the Valuation studies as required by Act 12.
3. If requested by PA-American, updates to the Valuation studies as of the date requested by PA-American.
4. Provide the documentation required by Act 12 with respect to the Services and the fees charged by Supplier pursuant to this Agreement.
5. If requested by PA-American, perform such other services as are consistent with Supplier’s engagement as a Utility Valuation Expert.

Section 2. Duration:

Unless amended, the Project subject to this Agreement is anticipated to be approximately two years in duration and will be performed for the period beginning upon the issuance of a notice to proceed by PA-American and continuing through August 23, 2021. Supplier acknowledges and agrees that it shall not and shall have no obligation to provide the Services until such time as PA-American has issued a notice to proceed. To the extent Act 12 imposes any requirements with respect to the timing for the completion of the Services, the commencement date for such Services shall not be deemed to be any earlier than the date PA-American issues the notice to proceed.

Proprietary and Confidential

This Agreement and information contained therein is not for use or disclosure outside of PA-AMERICAN, its Affiliates, and third-party representatives, and Supplier except under written agreement by the contracting parties or as may be required by applicable law or regulation.

Section 3. Effective & Expiration Dates:

This Agreement shall be effective as of the date set forth in the first paragraph hereof (“Effective Date”) and shall continue until the earlier to completion on the Project or August 23, 2021 (“Expiration Date”) unless earlier terminated as set forth in this Agreement.

Section 4. Personnel to Perform the Services:

Jerome C. Weinert, Principal and Director, shall be in charge of the Services on behalf of Supplier. Supplier shall call upon additional experienced professional staff as required. In the event that this Project or Agreement should not continue for any reason, or should PA-American replace the need for Supplier, PA-American shall give notice as soon as feasibly possible for Supplier to re-deploy their resources elsewhere without any penalty to PA-American.

Both parties recognize the importance of maintaining a continuity of Supplier’s personnel on this Project. Supplier agrees that any of its employees, staff, professionals, experts, partners, and/or other personnel: (a) identified as the “Project Team” identified in Section 6 of this Agreement, and/or (b) assigned to this Project subsequent to the execution of this Agreement, shall continue to be staffed on this Project throughout the entire length of time Project Services are provided under this Agreement. Further, said personnel shall be used in the same capacities in which they are initially intended as of the execution date of this Agreement, or as of the date they are assigned to the Project subsequent to execution date of this Agreement, so long as they continue to be employed by Supplier, or so long as PA-American continues to desire their services.

Should Supplier terminate its relationship and/or employment with said personnel, or if said personnel terminates the relationship with Supplier and/or resigns from employment with Supplier, to the extent that Supplier, for any reason, enters into non-compete or similar agreement(s) and/or arrangement (s) with any of its employees, staff, professionals, experts, partners, and/or other personnel, Supplier agrees to immediately release said personnel from non-compete or similar agreement(s) and/or arrangement(s) with respect to being able to work for PA-American in any capacity PA-American sees fit.

Should any or all of Suppliers employees, staff, professionals, experts, partners, and/or other personnel staffed on this Project leave the employ of Supplier during the terms of this Agreement, Supplier agrees to immediately notify PA-American and suggest alternative personnel to be staffed on the Project. In no event shall any Supplier employee, staff, professional, expert, partner, and/or other personnel be assigned to this Project (whether identified in this Section 4, or identified elsewhere subsequent to the execution of this Agreement) without the express written permission and approval by PA-American. Further, PA-American reserves the right to terminate the Services of any of Supplier employee, staff, professional, expert, partner, and/or other personnel working on this Project at any time, and for any reason, without penalty.

Section 5. Location:

Supplier’s (AUS Consultants’) offices in Harrisburg, Pennsylvania, Mt. Laurel, New Jersey, Greenfield, Wisconsin and various PA-American Company’s sites as may be required.

Proprietary and Confidential

This Agreement and information contained therein is not for use or disclosure outside of PA-AMERICAN, its Affiliates, and third-party representatives, and Supplier except under written agreement by the contracting parties or as may be required by applicable law or regulation.

Section 6. Prices:

Supplier fees for the Services are as follows:

| Appraisal Activity | Preliminary Appraisal | Appraisal completion to a Section 1329 Compliant Appraisal | Total Appraisal | Expenses (not to exceed) |
|---|------------------------------|---|------------------------|---------------------------------|
| | Fees | Fees | Fees | Expense |
| Appraisal | | | | |
| Water Distribution System | \$13,900 | \$11,300 | \$25,200 | \$500 |
| Sanitary Sewer System | 13,900 | 11,300 | 25,200 | 500 |
| Inspection Expenses | | | | \$3,200 |
| Appraisal updates per system | | \$2,500 | \$2,500 | \$400 |
| Pre-filed Direct testimony related to the above described Valuation studies | | | | |
| Water Distribution System | | \$2,000 | \$2,000 | \$500 |
| Sanitary Sewer System | | 2,000 | 2,000 | 500 |

| Valuation Activity performed by AUS Consultants staff following the filing of the PUC Application | Hourly Rates plus expenses |
|--|-----------------------------------|
| Jerome C. Weinert | \$250 |
| David Sheffer | 175 |
| David Weiler | 175 |
| Michael Diedrich | 225 |
| Elizabeth A. Weinert | 150 |
| Earl Robinson | 200 |
| Susan Macchia | 50 |

The expenses in the above tables are for travel and living, report production and shipping.

Supplier recognizes that its fees for the Project are subject to disclosure pursuant to Act 12 and so that Pa-American can include such fees as part of the transaction and closing costs associated with the proposed acquisition of the Project. Supplier further recognizes that its fees shall not exceed five percent (5%) of the fair market value of the assets to be acquired as part of the Project unless such fees are approved by the Pennsylvania Public Utility Commission (“PUC”). Supplier agrees that its fees shall comply with the requirements of Act 12.

Proprietary and Confidential

This Agreement and information contained therein is not for use or disclosure outside of PA-AMERICAN, its Affiliates, and third-party representatives, and Supplier except under written agreement by the contracting parties or as may be required by applicable law or regulation.

Section 7. Payment:

Payment all undisputed amounts shall be made within 60 days upon PA-American being invoiced each month for all work completed during the prior month, or partial payment upon being invoiced should this appraisal engagement be suspended.

All payment terms are Net 60.

Section 8. Non-Disclosure:

A. The Parties agree as follows:

1. In connection with the Project, PA-American may find it beneficial to disclose to Supplier certain confidential or proprietary information in written, oral or other tangible or intangible forms, which may include, but is not limited to, discoveries, ideas, concepts, know-how, techniques, designs, specifications, drawings, blueprints, tracings, diagrams, models, samples, flow charts, data, computer programs, disks, diskettes, tapes, marketing plans, customer names and other technical, financial or business information (individually and collectively, "Information"). All Information which is disclosed by PA-American to Supplier, whether provided in tangible or intangible form, including, but not limited to, electronic mail or other electronic communications, shall be deemed to be confidential or proprietary. Further, if Information is provided orally, including Information conveyed to an answering machine, voice mail box or similar medium, it shall too be deemed to be confidential or proprietary.
2. Supplier shall:
 - a. Hold such Information in confidence with the same degree of care with which Supplier protects its own confidential or proprietary Information, but no less than reasonably prudent care;
 - b. Restrict disclosure of the Information solely to its employees, contractors and agents with a need to know such Information, advise those persons of their obligations hereunder with respect to such Information, and assure that such persons are bound by obligations of confidentiality no less stringent than those imposed in this Agreement;
 - c. Use the Information only as needed for the purposes of the Project;
 - d. Except for the purposes of the Project, not copy, distribute, or otherwise use such Information or knowingly allow anyone else to copy, distribute, or otherwise use such Information; any and all copies shall bear the same notices or legends, if any, as the originals; and,
 - e. Upon request, promptly return to PA-American all Information that is in tangible form; as to Information that was disclosed or is stored in intangible form, including, but not limited to electronic mail or other electronic communications, upon request by the PA-American, Supplier shall certify in writing within five (5) business days to PA-American that all such Information has been destroyed or, if the Information was recorded on an erasable storage medium, that Supplier has used reasonable efforts to erase all such Intangible Information.

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3. Except for customer Information, Supplier shall have no obligation to preserve the confidential or proprietary nature of any Information which:
 - a. Was already known to the Supplier free of any obligation to keep it confidential at the time of its disclosure by PA-American as evidenced by Supplier's written records prepared prior to such disclosure; or
 - b. is or becomes publicly known through no wrongful act of Supplier; or
 - c. is rightfully received from a third person having no direct or indirect secrecy or confidentiality obligation to PA-American with respect to such Information; or
 - d. is independently developed by an employee, contractor or agent of Supplier or a third party not associated with the Project and who did not have any direct or indirect access to the Information, as evidenced by the Supplier's written records; or
 - e. is approved for release by written authorization by PA-American; or,
 - f. it is required to disclose pursuant to a written request or demand of a duly empowered government agency or a court of competent jurisdiction, provided due notice and an adequate opportunity to intervene is given to PA-American, unless such notice is prohibited by such written request or demand, in which case, the Supplier shall disclose only such Information as is required and shall use reasonable efforts to obtain confidential treatment for any Information that is so disclosed.
4. Any Information relating to the Project that is disclosed by PA-American to Supplier shall remain confidential for five (5) years from the date of termination of the Agreement. Notwithstanding anything to the contrary herein, Customer Information shall remain confidential indefinitely and shall never be disclosed or used without the prior written approval of an authorized representative of PA-American. "Customer Information" includes, but is not limited to, customer name, address, phone number, information concerning a customer's calling patterns, unlisted customer numbers, any other information associated with a customer or with persons in the household of a customer, and any information available to PA-American and/or its suppliers by virtue of PA-American's relationship with its customers as a provider of telecommunications, Internet, information or other services, including, but not limited to, the quantity, technical configuration, location, type, destination, amount of use of telecommunications or other services subscribed to, and information contained on the telephone bills of PA-American's customers pertaining to telephone exchange service, telephone toll service or other services received by a customer of PA-American.
5. Any disclosed Information by PA-American shall be deemed the property of PA-American, who shall retain exclusively rights to such Information. Nothing contained in this Agreement shall be construed as granting or conferring any patent, copyright, trademark or other proprietary rights by license or otherwise in any such Information to Supplier, except for the right to use such Information in accordance with this Agreement.

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6. NOTWITHSTANDING ANYTHING IN THIS AGREEMENT TO THE CONTRARY, PA-AMERICAN MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY NATURE WHATSOEVER WITH RESPECT TO ANY INFORMATION FURNISHED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR WARRANTIES AGAINST INFRINGEMENT.
7. In the event Supplier discloses, disseminates, or releases any confidential or proprietary Information received from PA-American, except as expressly permitted herein, such disclosure, dissemination, or release shall be deemed a material breach of this Agreement. In the event of such breach, PA-American may demand prompt return of all confidential and proprietary Information previously provided to Supplier and terminate this Agreement. The provisions of this Section are in addition to any other legal rights or remedies PA-American may have in law or in equity.
8. This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Pennsylvania, irrespective of its choice of law principles. Both Parties agree to comply with all laws, including, but not limited to, laws and regulations regarding the export of information outside the United States. Supplier shall not knowingly transmit, directly or indirectly, in whole or in part, any Information of PA-American or export, directly or indirectly, any product or Information in contravention of the laws of the United States or the laws of any other country governing the aforesaid activities. Supplier shall not transfer any Information received hereunder or any product made using such Information to any country prohibited from receiving such data or product by the U.S. Department of Commerce Export Administration Regulations without first obtaining a valid export license. In the event Supplier violates the foregoing, Supplier shall defend, indemnify, and hold harmless PA-American from and against any claim, loss, liability, expense or damage including fines or legal fees, incurred PA-American with respect to the export or re-export activities contrary to the foregoing. Notwithstanding any other provision of this Agreement, this Section shall survive any termination or expiration of this Agreement.

Section 9. Ownership of Paid-For Development, Use and Reservation of Rights:

PA-American shall be the exclusive owner of all right, title, and interest in and to all Paid-For Development (defined below), including, without limitation, all Intellectual Property Rights therein and thereto. Supplier shall assign or have assigned to PA-American and hereby assigns to PA-American all Intellectual Property Rights in and to the Paid-For Development. "Paid-For Development" shall mean any and all Items to the extent produced or developed by or on behalf of Supplier or its employees, agents, or direct or indirect contractors or suppliers (and whether completed or in-progress), or forming part of any deliverable, pursuant to this Agreement (including, without limitation under any statement of work, exhibit, order or other document under, subordinate to, or referencing this Agreement or the Project) (collectively "Agreements") for the development of which PA-American has been charged monies in one or more of the Agreements ("Development Fees"). Paid-For Development shall always exclude all Excluded Materials, but shall include

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(without limitation) any modifications, alterations or updates of any Excluded Materials (“Enhancements”) that otherwise fall within the definition of Paid-For Development (“Paid-For Enhancements”). PA-American’s ownership of Paid-For Enhancements shall be subject to Supplier’s underlying rights and ownership in Supplier’s Excluded Materials.

“**Items**” shall mean any or all inventions, discoveries, ideas, (whether patentable or not), and all works and materials, including but not limited to products, devices, computer programs, source codes, designs, files, specifications, texts, drawings, processes, data or other information or documentation in preliminary or final form, and all Intellectual Property rights in or to any of the foregoing.

“**Excluded Materials**” shall mean: i) Supplier’s Pre-Existing Materials; ii) Supplier’s Independently Developed Materials; and iii) Supplier’s Mere Reconfigurations.

“**Supplier’s Pre-Existing Materials**” shall mean those Items owned by Supplier to the extent and in the form that they both existed prior to the date Supplier began any work under this Agreement and were created without any use of any PA-American Items. Supplier’s Pre-Existing Materials shall not, however, include Paid-For Enhancements thereto.

“**Supplier’s Independently Developed Materials**” shall mean those Items that have been developed by Supplier, or on Supplier’s behalf, both i) without use of any PA-American Items; and ii) independently of any work performed under any Agreements.

“**Supplier’s Mere Reconfigurations**” means those specific reconfigurations of Supplier’s pre-existing software performed by Supplier, or on Supplier’s behalf, but only to the extent that such reconfiguration is an alteration to such software which is strictly required to permit Supplier’s software to function on PA-American’s network or service platform. In no event shall Supplier’s Mere Reconfigurations include enhancements, modifications, or updates that are not contained in Supplier’s Pre-Existing Materials and that add any features, functionality, or capabilities.

“**Intellectual Property Rights**” means all patents (including all reissues, divisions, continuations, and extensions thereof) and patent applications, trade names, trademarks, service marks, logos, trade dress, copyrights, trade secrets, mask works, rights in technology, know-how, rights in content (including but not limited to performance and synchronization rights), or other intellectual property rights, protected under the laws of any governmental authority having jurisdiction.

Section 10. Right to Terminate:

PA-American has the right to terminate this Agreement, in its entirety or any portion thereof, at any time without penalty. Should PA-American terminate this Agreement at any time, Supplier shall be entitled to keep and collect all fees billed to PA-American prior to the termination date which are not the subject of a dispute between the parties. Further, Supplier shall be entitled to charge, and PA-American agrees to pay for all properly performed Services as of the termination date in accordance with the rates set forth in Section 6 or, in the case of a fixed fee, a prorata share of the monthly billing during the month in which the Agreement was terminated. Said prorata share shall be

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calculated by dividing the total number of days worked by Supplier during the month in which the Agreement is terminated, by the total number of calendar days in the month in which the Agreement was terminated.

Section 11. Invoices/Billing Information:

The Supplier agrees to submit invoices in paper and or electronic form with appropriate references to the PA-American Point of Contact identified in Section 12.

Section 12. Project Manager/Point of Contact/Legal Counsel:

The project manager and/or point of contact of Supplier shall be:

Jerome C. Weinert
Principal and Director
AUS Consultants
Suite 201
8555 West Forest Home Avenue
Greenfield, Wisconsin 53228
E-Mail: weinertj@auswest.net
414-529-5755 (office)
414-529-5750 (fax)
414-698-8371 (cell)

The point of contact for PA-American shall be:

Scott D. Fogelsanger, Senior Business - Development Manager
Pennsylvania-American Water Company
852 Wesley Drive,
Mechanicsburg, PA 17055
717-550-1509 (office)
717-875-2282 (cell)
Email: Scott.Fogelsanger@amwater.com

The Legal Counsel contact for PA-American shall be:

Andrew L. Swope, Vice President, General Counsel
Pennsylvania-American Water Company
852 Wesley Drive
Mechanicsburg, PA 17055
717-550-1560 (office)
717-574-2691 (cell)
Email: Andrew.Swope@amwater.com

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Section 13. Signatures:

AUS Consultants (Supplier)

Jerome C. Weinert

Jerome C. Weinert
August 23, 2019

Pennsylvania American Water Company

Bernie J. Grundusky
August 23, 2019

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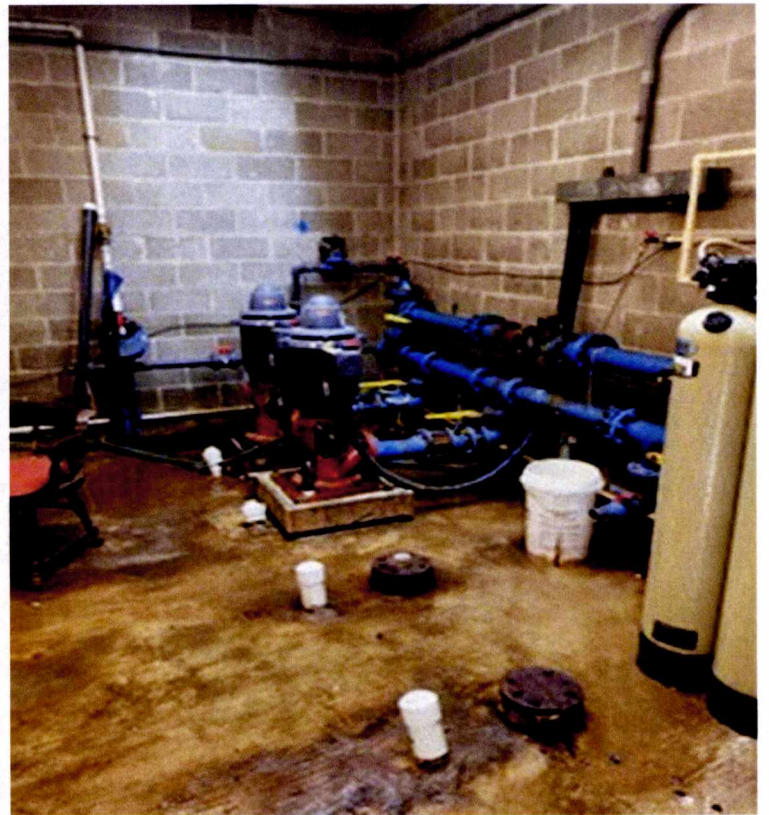
**PA American Water
Valley Township Site Visit 6-17-20**



Valley Springs Water Tank



Mineral Springs Water Treatment Plant



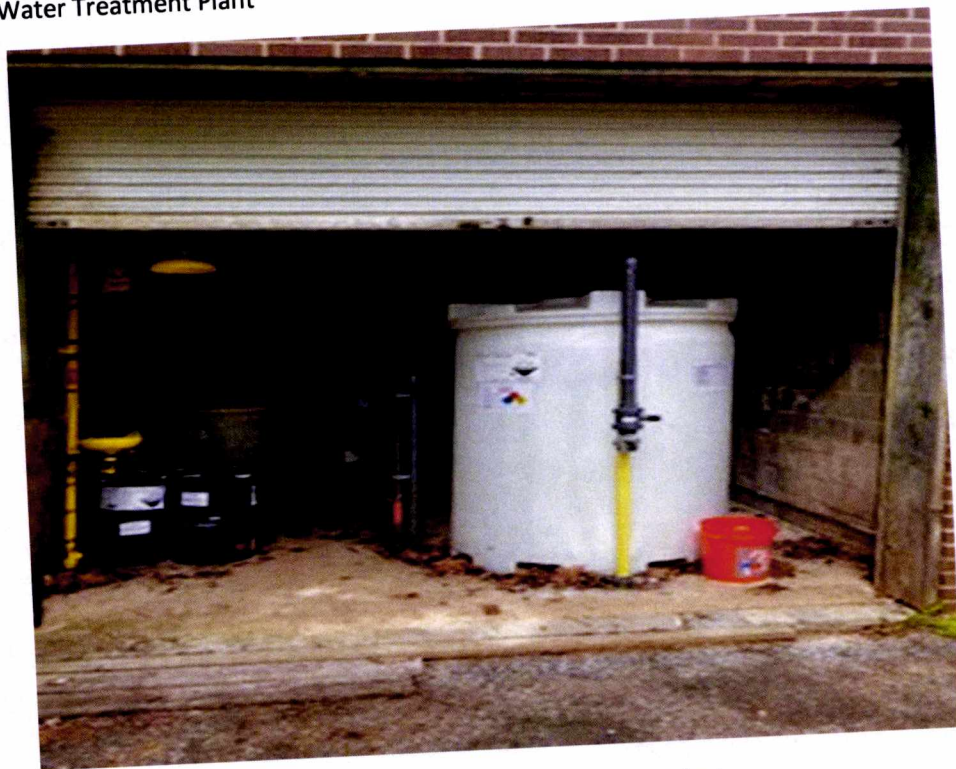
Mineral Springs Water Treatment Plant

**PA American Water
Valley Township Site Visit 6-17-20**



Mineral Springs Water Treatment Plant

Mineral Springs Water Treatment Plant



Mineral Springs Water Treatment Plant

**PA American Water
Valley Township Site Visit 6-17-20**



Round Hill #1 Sewer Pump House



Round Hill #1 Sewer Pump House

**PA American Water
Valley Township Site Visit 6-17-20**



Round Hill #2 Sewer Pump Station



Round Hill #2 Sewer Pump Station

**PA American Water
Valley Township Site Visit 6-17-20**



Highland Corporate Center Sewer Pump Station

**PA American Water
Valley Township Site Visit 6-17-20**



Country Ridge Sewer Pump Station



Country Ridge Sewer Pump Station

**PA American Water
Valley Township Site Visit 6-17-20**



Hill View Sewer Pump Station

**PA American Water
Valley Township Site Visit 6-17-20**



Rock Run Sewer Pump Station



Rock Run Sewer Pump Station



Rock Run Sewer Pump Station