# STATE OF NEW HAMPSHIRE BEFORE THE NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION 

## DIRECT TESTIMONY OF

JAY W. SHUTT, P.E. ON BEHALF OF

AQUARION WATER COMPANY OF NEW HAMPSHIRE, INC.
DW 08-098

AUGUST 28, 2008

Jay W. Shutt
Q. Please state your full name and business address.
A. My name is Jay W. Shutt.

My business address is 3769 Columbus Pike, P. O. Box 8016, Delaware, Ohio 43015.

## Q. By whom are you employed and in what capacity?

A. I am President and Chief Executive Officer of Floyd Browne Group, Inc.

## Q. On whose behalf are you testifying in this proceeding?

A. I am testifying on behalf of Aquarion Water Company of New Hampshire, Inc. ("Aquarion").

## Q. What is the business of Floyd Browne Group, Inc.?

A. Floyd Browne Group, Inc. is a professional engineering, scientific and environmental management consulting firm which provides a broad range of services related to water treatment, storage and distribution, wastewater collection and treatment, hazardous waste management, remediation, solid waste management, geoscientific investigation and construction management.

Floyd Browne Group, Inc. provides management, valuation and rate consulting services for municipal and investor-owned utilities. In addition, Floyd Browne Group, Inc. previously owned and operated a privatized water treatment plant in Lee County, North Carolina and currently operates the Bellefontaine, Ohio wastewater treatment plant. As a -1-

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result, we are directly involved in the financial aspects of utility operations on a day-today basis.
Q. Please describe yoür educational training and involvement with professional associations.
A. I received a Bachelor of Science degree in Agricultural Engineering and a Master of Science degree in Engineering from the Ohio State University, Columbus, Ohio in 1973 and 1974 respectively. I received a Master of Business Administrative degree from the University of Dayton, Dayton, Ohio in 1979.

I am a Registered Professional Engineer in Ohio. I am a member of the American Water Works Association where under the auspice of the Water Utility Council, I served as Chairman of the Risk Management Technical Advisory Group and sat on its Technical Advisory Group from 1987 through 1994. I am an Associate Member of the National Association of Water Companies ("NAWC") and serve on its Water Technology committee; I am also associate member of the Ohio Chapter of NAWC. I am a former President of the American Council of Engineering Companies of Ohio.

## Q. Please describe your professional experience.

A. From 1974 to 1981, I was employed by Floyd Browne Associates, Ltd. where my assignments included engineering studies, design, environmental assessments; cost estimates, evaluation of financial requirements, and estimation of user charges, for water,

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wastewater and stormwater facilities. These assignments included water and wastewater facilities projects for numerous communities in Ohio and Indiana. I was employed by Indiana Cities Water Corporation ("Indiana Cities") from 1981 to 1987, where as Vice President Engineering and Vice President and General Manager, my assignments included cost of service studies, reproduction cost new less depreciation studies, assistance with depreciation analyses and preparation for and testimony at various rate proceedings. My assignments also included negotiation of wholesale water sales and purchase agreements. In addition, I was responsible for development and implementation of the Company's capital and major maintenance programs. While at Indiana Cities my assignments included engineering support for sister utilities in Ohio and Missouri.

From 1987 to 1992, I was employed as Vice President of Operations for Aquarion Water Company of Connecticut's Eastern Division (formerly Bridgeport Hydraulic Company), Bridgeport, Connecticut, where my assignments included annual updates of fire service rates, facilities valuation studies, and development of various miscellaneous, nonconsumption rates and fees. The valuation studies were related to property tax issues and facility asset purchase issues and involved use of the Handy-Whitman and Engineering News-Record (ENR) indices to determine reproduction costs and estimate original costs when such records were not available.

Since 1992, I have been employed as President of Floyd Browne Group, Inc. I have prepared studies of the reproduction cost new less depreciation of the utility properties of

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Indiana Cities Water Corporation and of Indiana American Water Company. I have developed a utility capacity fee system for the City of Delaware, Ohio which is based upon the concept of new customers "buying-in" to a share of the utility's current value. The Handy-Whitman and ENR indexes were used to determine the current value of the Delaware utilities. In 1996 I prepared a depreciation study for Aquarion Water Company of Connecticut's Eastern Division (formerly Bridgeport Hydraulic Company). In 2007 I prepared a depreciation study for Aquarion Water Company of Connecticut. In 2008 I prepared a depreciation study for Aquarion Water Company of Massachusetts. I have also prepared a Cost of Service Study for the Ohio-American Water Company.

## Q. Have you previously testified in regulatory proceedings involving utilities?

A. Yes I have. I have testified on rate making matters before the Connecticut Department of Public Utility Control, before what was then known as the Public Service Commission of Indiana, before the Indiana Utility Regulatory Commission and before the Public Utilities Commission of Ohio. My testimony before the Indiana Commission concerned, among other things, the reproduction cost new (" RCN ") and reproduction cost new less depreciation ("RCNLD") of Indiana Cities Water Corporation's utility property and the RCNLD of Indiana-American Water Company's utility property. My testimony before the Public Utilities Commission of Ohio concerned cost of service. My previous testimony before the Connecticut Department of Public Utility Control has related to operational issues, non-consumptive rates, and depreciation studies. I have also testified before the Connecticut State Legislature on various utility regulatory issues.

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## Q. What is your experience in performing depreciation studies of the type you have performed for Aquarion?

A. While employed by Indiana Cities, I worked directly with an outside consultant to prepare a depreciation study of the type I have performed for Aquarion Water Company of New Hampshire. Under the consultant's guidance, I compiled the necessary data and performed the analyses necessary to determine depreciation rates.

The aspects of the depreciation study related to evaluating the physical condition and useful life of water facilities are the same as those employed in the performance of replacement cost new less depreciation studies and utility capacity fee studies which were mentioned earlier in my testimony. Each of these types of studies involves identifying utility plant by vintage year, evaluating the useful life of the facilities and calculating the depreciated value of the utility plant.

In 1996, I performed a detailed depreciation study and provided Direct Testimony relative to Aquarion Water Company of Connecticut's Eastern Division's (formerly Bridgeport Hydraulic Company) depreciation rates under Docket No. 96-01-26.

In 2004, I was retained by Aquarion to provide an opinion on the appropriateness of adopting uniform depreciation rates for all of the Company's divisions.

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In 2007, I performed a detailed depreciation study and provided Direct Testimony relative to Aquarion Water Company of Connecticut's depreciation rates under Docket No. 07-05-19.

In 2008, I performed a detailed depreciation study and provided Direct Testimony relative to Aquarion Water Company of Massachusetts' depreciation rates under D.P.U. 08-27.
Q. What is the scope of your testimony in this proceeding?
A. Floyd Browne Group, Inc. was retained by Aquarion to conduct a study of the depreciation rates of the Company's utility plant in service as of March 31, 2008.

## Q. Are you personally familiar with the properties of Aquarion?

A. Yes, I am. As a part of my current assignment, I have examined the utility property used to provide service for Aquarion's water system which included a review of the original cost of the property and property's vintage and condition.

I also examined utility plant additions and retirements through March 2008. I have discussed with Company employees the nature of the property to the extent that I deemed necessary. Finally, I have made site visits to selected facilities to gain a first hand understanding of their use and usefulness to the Company and its customers and the

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overall condition and maintenance level to augment my understanding gained through other methods.
Q. Are you sufficiently familiar with the Aquarion utility property to render an opinion on the appropriateness of adopting uniform depreciation rates for each of its water systems?
A. Yes. I am able to provide such an opinion based on my knowledge of the property, the Company's capital improvement and replacement policies, and my engineering training and experience. When combined with my engineering knowledge and experience and through the use of the procedures discussed in this testimony, I am able to render an opinion as to the depreciation rates for Aquarion's utility property as of March 31, 2008.

## Q. Please describe your assignment.

A. I was asked to prepare a depreciation study of all utility property for the Company's water system and recommend annual depreciation rates. The results of the depreciation study are contained in my Report on Depreciation Rates which is identified as Attachment JWS-1.
Q. Would you briefly define what you mean by depreciation and explain a few of the basic fundamentals associated with depreciation?
A. The dictionary defines depreciation as a loss in value. A valuation expert may use market value, replacement cost, reproduction cost, or even sentimental value as different

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approaches to establishing value of any given property. A study of the history of depreciation as applied to regulated public utility property reveals a narrowing of the meaning of depreciation to the allocation of cost concept.

Depreciation expense also includes a provision for removal costs or salvage proceeds, which take place upon retirement. Annual depreciation expense consists of two components: (1) the recovery of the original capital cost and (2) the recovery, or credit, for net salvage proceeds associated with the property item. For some categories of utility property, removal cost exceeds any salvage proceeds.

Depreciation expense, therefore, is the process of allocating the cost of a depreciable asset over its productive life. Many of the assets used by the Company are long-lived. The costs associated with these assets, when they have been used up, are considered an expense of doing business.
Q. Are parts of the water utility system, such as mains, meters or services, depreciated on an individual basis or are they handled as a group?
A. Depreciation rates for water utility property are based on group depreciation procedures. Under the group method of depreciation, all property of similar nature, such as all water mains or all meters, is depreciated at a uniform annual rate. The rate would apply to all property in the account, regardless of its actual age.

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## Q. What is the basis of the Company's present depreciation rates?

A. The present depreciation rates were established in docket DW 99-057, the Company's last rate proceeding before it was acquired by Aquarion Water Company. Those rates were based upon a depreciation study applicable to utility plant at December 31, 1998.
Q. Do you propose that the Commission approve the application of the depreciation rates recommended in your report?
A. Yes.

## Q. What depreciation method do you propose?

A. The Calculated Accumulated Depreciation method of depreciation should be used. This method is based on the recovery of the original cost, less depreciation and net salvage, over the estimated service life of each account of property. The Calculated Accumulated Depreciation method is a well accepted method for recovering the total depreciable cost over the service life of the property and when coupled with amortization of any depreciation reserve variance reflects changes in depreciation rates caused by revisions in total and remaining service lives. It is also consistent with the method used in previous depreciation studies of the Company's property.

## Q. Please explain the Calculated Accrued Depreciation method.

A. The Calculated Accrued Depreciation method is based on recovering the original investment, less the depreciation reserve, plus net salvage over the estimated service life of the property in question.

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## Q. Please identify the document identified as Attachment JWS-1.

A. Attachment JWS-1 is my report entitled Aquarion Water Company of New Hampshire Report on Depreciation Rates, August, 2008.

## Q. Would you briefly describe and discuss the contents of this exhibit?

A. Yes. Section 1 of the report provides a general discussion and some background information on Aquarion and a brief summary of certain factors which affect the service lives of the property and the annual depreciation rates. These include technical and economical factors which affect the service lives and net salvage of Company property.

Section 2 of Attachment JWS-1 contains some general definitions relating to depreciation and descriptions of the analysis procedures used in the study.

Section 3 of Attachment JWS-1 explains the service life study procedures more fully. Service lives were determined for individual plant accounts using the following approaches:

1. A service life analysis was conducted through computer processing by analyzing the history of additions, retirements, and plant balances over a select period of years for accounts where there have been sufficient retirements for study. The method used in this process is known as the Simulated Plant-Record Analysis Method. The Simulated Plant-Record Analysis compares the actual history of a utility plant account with the series of Iowa curves and identifies the curve or curves which best fit the data. The method also estimates the average service life of the facilities included in that utility plant account. The Iowa curves are a family of retirement -10-
patterns and average service lives which collectively reflect the patterns of retirements for utility property.
2. For each account evaluated, specific factors with respect to current and anticipated technological changes, obsolescence, physical condition and other elements unique to the account were reviewed.

Section 4 of Attachment JWS-1 contains an account-by-account discussion of the factors considered for recommended depreciation rates. Section 5 of Attachment JWS-1 contains a summary of the proposed depreciation rates recommended in the study. The proposed rates were applied to the adjusted account balances at March 31, 2008 for comparison with present rates.

## Q. Could you please explain how the actual computation was made in determining depreciation rates using the Calculated Accrued Depreciation method?

A. Annual depreciation, using the Calculated Accrued Depreciation method, was computed by first determining the straight line annual depreciation accrual rate based on the estimated average service life, applying that rate to the account balance and adding in a net salvage adjustment percentage to arrive at the annual accrual amount for each plant account. Next the calculated accrued depreciation was determined by multiplying each vintage year's surviving balance by an accrued depreciation ratio taken from the appropriate Iowa Curve table for that vintage year's percent of the account's estimated average age. These vintage year calculated accruals are then summed and a net salvage adjustement percentage added to determine the entire account's calculated accrued depreciation. The account's calculated accrued depreciation is then compared to the book depreciation reserve to determine the

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reserve variance. A ten year amortization of any reserve variance is added to the previously calculated annual accrual amount to determine the total proposed annual depreciation expense. A table showing the depreciation rate development for each account is shown in Attachment JWS-1, Table 5-1.

## Q. Were there particular factors that are unique to the Company that you used in developing its depreciation rates?

A. Yes. The service lives have been determined on the basis of studies of past retirement history for the major accounts, and on the basis of the Company's replacement programs.
Q. Did you consider the past service life history of the property?.
A. Yes. I have considered the past service life history for all accounts where there has been retirement activity, including the retirement characteristics and service life resulting from past retirements. I used the Simulated Plant-Record Analysis Method for this analysis. Section 4 of Attachment JWS-1 describes this analysis and provides a sample illustration of actual accounts included.
Q. Are the results of these methods indicative for all accounts?
A. No. They can only be used where there have been sufficient retirements to provide enough history for analysis. For certain accounts, the retirements have been limited, the life results cover a wide range, or the Index of Variation was high. For these accounts, I have also relied upon the present service lives and/or typical industry service lives to estimate the average and remaining lives.

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Q. Where average service lives are indicated by the past history, is this service life always appropriate to use for present and future depreciation purposes?
A. No. With each account or each class of equipment, it is necessary to consider the conditions which have resulted in retirements and determine whether or not these same conditions prevail presently or are expected to prevail in the future. The past history is only one of several kinds of information requircd in order to detcrminc an appropriate average service life or remaining life.

## Q. Why are both positive and negative numbers shown in the Estimated Salvage or

 Retirement cost columns of Table 5-1 of Attachment JWS-1?A. The positive numbers represent a positive salvage value meaning that when the property is retired from utility service its remaining value can be captured by selling it. A good example of this is selling retired water meters for their scrap metal value. On the other hand, there is often a cost associated with removing utility property from service. A typical example would be a water main that, while the bulk of the pipe is abandoned in place, there is a cost of excavation to disconnect the retired pipe from the active portion of the water and from service lines, fire hydrants, etc. The cost of the excavation, backfill and pavement repairs can be quite significant at current prices in comparison to the pricing levels when the water main was originally installed, in many cases 60 to 100 or more years ago.

## Q. Why is it important that proper net salvage factors be included in the Company's depreciation rates?

A. The reason is that the Company has incurred and is expected to incur removal costs of retired property which, for several accounts, has not been adequately reflected in the depreciation rates. Should this situation continue for a period of time, there would tend to

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be a deficiency in the depreciation reserve. Eventually, future customers would be burdened with costs that should have been paid by present day customers through depreciation rates.
Q. How should an accumulation of the negative net salvage portion of the allowed depreciation expense over a period of years be viewed in relation to the utility's recorded negative net salvage (or retirement) cost for that same period?
A. If the Calculated Annual Depreciation method is used to establish the depreciation rates including the negative net salvage portion of the allowed depreciation expense, the negative net salvage expense will accumulate in roughly equal amounts each year since the method is a form of straight-line depreciation. However, the actually experienced negative net salvage (or retirement) cost is not expected to occur in a uniform, straight-line manner. Rather, the actually experienced costs would be expected to follow the retirement pattern represented by one of the Iowa type curves. The Iowa curves discussed in my Report of Depreciation Rates are not linear. Therefore, one would not expect to see a close correlation in the pattern of the accumulation of booked net salvage expense and actually experienced net salvage cost.

Depending upon the shape of the Iowa type curve that the particular utility plant follows, over any given period of years, the booked net salvage expense could either significantly exceed or significantly lag behind the net salvage costs. By the end of the life of the utility property in question, the booked expense and the actual cost would be expected to coincide. The point of allowed depreciation expenses, including the net negative salvage portion of the expense, is to spread the depreciation cost uniformly over the life of the utility plant rather than to charge the cost to the customers in the year that an actual retirement event occurs. It is believed by most regulators that this approach is the fairest way to distribute the

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## Q. Wouid you summarize your recommended depreciation rates?

A. Yes. A summary of my depreciation recommendations is contained in Attachment JWS-1, Table 5-1. The proposed depreciation rates result in a total annual expense of $\$ 938,623$ based on the property in service March 31, 2008.

## Q. Can you summarize the effect of the proposed rates and your conclusions as to the basis for these rates?

A. Yes. The proposed rates reflect the service lives for each utility plant account for the composite utility plant in service. The proposed rates are based upon the best estimates of anticipated service lives, along with consideration of the expected net salvage or removal costs, where applicable. The proposed rates are considered reasonable for the capital cost recovery of the water system investment and removal costs.

## Q. In summary, what is your recommendation regarding the service lives which you have presented in the report?

A. I recommend the continuation of the Calculated Accrued Depreciation method of determining annual depreciation rates and amortization of the reserve variance over ten years consistent with prior Commission policies resulting in the proposed rates shown in the report. These changes will, in my opinion, provide an equitable and reasonable capital recovery for the investment in the water system plant than the present depreciation rates. The proposed rates will ensure that such recovery is more consistent with the services provided than under the present rates.

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1 Q. Does this conclude your testimony?
2 A. Yes.

## Aquarion Water Company of New Hampshire

Estimated Survivor Curve, Net Salvage, Original Cost, Calculated Annual and Accrued Depreciation As Applied to Plant Investment as of March 31


Table 5-2

## Aquarion Water Company of New Hampshire

 Comparison of Current and Proposed Depreciation Rates

STATE OF NEW HAMPSHIRE PUBLIC UTILITY COMMISSION

JAY W. SHUTT, being first duly sworn, deposes and states:

That he is the Jay W. Shutt whose direct testimony accompanies this Affidavit, that said direct testimony is a true and accurate statement of his answers to the questions contained herein, and that he adopts those answers as his sworn testimony in this proceeding.


SWORN TO and SUBSCRIBED before me this 22nd day of August.


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# AQUARION WATER COMPANY OF NEW HAMPSHIRE REPORT ON DEPRECIATION RATES 

AUGUST, 2008

JAY W. SHUTT, PE
FLOYD BROWNE GROUP

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## AQUARION WATER COMPANY OF NEW HAMPSHIRE

## Report on Depreciation Rates

## General

This report contains a description of the depreciation study of the property and plant of the Aquarion Water Company of New Hampshire as of March 31, 2008. The Aquarion Water Company of New Hampshire, an Aquarion subsidiary, is the public water supply company for approximately 8,770 customer accounts in Hampton, North Hampton and Rye.

The present depreciation rates were established in the Company's rate proceeding, DW 99-057, based upon a depreciation study applicable to utility plant at December 31, 1998. Table 5-2 includes a tabulation of the present depreciation rates for each utility plant account.

This depreciation study includes an evaluation of historical service lives experienced by the Company for various types of plant property and equipment, a consideration of the cost of removal and salvage proceeds associated with property retirements, and the preparation of recommended depreciation rates for the various accounts.

Depreciation expenses are a regular and fundamental part of the cost of providing utility services. The annual depreciation expense charged against income over the service life of the property is a mechanism by which the capital investments in physical assets are recovered by water utilities. The depreciation rate also provides recognition of net salvage costs. These costs--salvage proceeds less the cost of retirement--are also
provided for in the annual depreciation expense rate.
In accordance with the policy of the New Hampshire Public Utility Commission, the recommended amortization of the variance between the book and accumulated depreciation and the calculated accrued depreciation is based on a ten-year amortization period for each property group. The calculated accrued depreciation represents that portion of the depreciable cost which will not be allocated to expense through future depreciation accruals, if current forecasts of service life characteristics and net salvage materialize and are used as a basis for depreciation accounting. The calculated accrued depreciation provides a measure of the book accumulated depreciation. The use of this measure is recommended in the amortization of book accumulated depreciation variances to insure complete recovery of capital over the life of the property.

The Company is being subjected to a number of factors which have a direct bearing on depreciation rates and expense. Older pumps, motors, valves, instrumentation and other operating mechanisms are being replaced and modernized. Older style meters are being supplanted with newer and more efficient meters. Switchgear and instrumentation are being upgraded with computerized systems and hydrants and water mains are being replaced. Some of the water plant facilities may be physically sound but may need replacement for a variety of reasons such as requirements of the Safe Drinking Water Act. Thus, a variety of factors may influence the remaining life of a particular piece of equipment. The requirements for improvements in water quality, safety and reliability, including technical and economic obsolescence, all have an impact on the service lives and remaining lives of the Company's property.

The historical retirement experience of the Company has been used as a guide to
the average service life. Wherever possible a statistical analysis of the retirement history of the asset account was performed to provide an estimate of the average service live. For some accounts, insufficient retirement history data was available to support a statistical analysis because total retirements have been only a small portion of the plant in service. In such cases, the service lives proposed have been developed with reference to industry and regulatory authority standards.

Section 2 of the report discusses and defines basic depreciation terms and analysis procedures used for this Study. Section 3 details the service life studies that were used and the depreciation computation procedures. Section 4 provides a discussion of the specific factors which were taken into consideration in developing the depreciation rates for each asset account or subaccount. Section 5 contains a summary of the study results and proposed rates. The Appendix contains printouts of the various information and studies used as a guide in preparing the proposed rates.

## SECTION 2 DEPRECIATION DEFINITIONS AND PROCEDURES

For water utility rate making purposes, the principal associated with the cost of capital expenditures which will provide service over a number of years is recovered as an annual charge termed depreciation expense. The annual expense is accumulated in a depreciation reserve. Upon retirement, the cost of the asset is charged to the depreciation reserve thus reducing the original cost and the amount of the reserve by an equal amount. The annual depreciation expense is modified according to whether or not it is expected that the retirement of the asset will result in a positive salvage amount, or if it will result in additional cost to be incurred to effect the retirement, or negative salvage.

Public water utility depreciation practices are typically based on group accounting methods. A single depreciation rate is applied to like items, either an entire account or by subaccount, rather than determining a separate rate for each individual asset. Average service lives, or average remaining lives, are determined for the group for depreciation purposes. The use of groups and averages means that some assets in the group will be retired before the average life and others after the average life.

## Basis of Study

The purpose of the depreciation study was to determine the annual depreciation accrual rates applicable to the cost of utility plant in service at March 31, 2008, and to measure the adequacy of Accumulated Depreciation. For most accounts, the straight line whole life method using attained ages and estimated survivor curves was the basis for the calculation of annual and accrued depreciation. For some accounts, the annual and accrued depreciation amounts were based on the age of the property and the selected
amortization period.

## Simulated Plant-Record Method

A common method of analysis of past service life history involves the use of the Simulated Plant-Record method (SPR). This method does not require detailed dated retirement information but instead uses gross additions by years, actual plant balances and a set of standard utility mortality curves. The gross addition and plant balance information is almost always available so that the SPR procedure can be used where detailed records are lacking, or where abstracting the detailed data is costly and time consuming.

There are two procedures that can be used under the SPR, one involving the simulated balances and the other the simulated retirements. The simulated retirement method is subject to considerable variations (annual retirements can vary substantially from year to year depending on the construction budget of the utility) and is not used extensively. In the simulated balances method, a mortality or retirement curve is applied to the gross additions to determine the simulated balances. The simulated balances are compared with the actual plant balances (usually for a span of 5, 10 or more years) using the least squares method of computation. Many curves and service lives are applied until the curve(s) with the best fit (smallest least squares total) is determined. As shown in Appendix A of the report, tables are produced which list the various curves ranked according to fit.

The tabulation also shows an Index of Variation which is a measure of how consistently the simulated balances match the actual balances. The following table shows the relative rating of the two indexes:

| Index of Variation (IV) | Rating |
| :---: | :---: |
| $<13$ | Excellent |
| 13 to 20 | Good |
| 20 to 40 | Fair |
| $>40$ | Poor |

Another qualitative measure of the Simulated Plant-Record analysis is the Retirements Experience Index (REI). The REI is the percent of the property retired from the oldest vintage in the test year by the end of the test year. A low REI indicates that the data may not contain enough history to uncover the life characteristics of the property being studied. The following ratings are suggested by depreciation experts:

| REI | Rating |
| :---: | :---: |
| $>75 \%$ | Excellent |
| $50 \%$ to $75 \%$ | Good |
| $33 \%$ to $50 \%$ | Fair |
| $17 \%$ to $33 \%$ | Poor |
| $0 \%$ to $17 \%$ | Valueless |

## Net Salvage

Net salvage is defined as the salvage, proceeds realized upon retirement, less any cost of removal incurred. For example, an automobile costing $\$ 24,000$ and traded in or sold for $\$ 6,000$ would have 25 percent net salvage factor (as there is no cost of removal). Similarly, a building costing $\$ 250,000$ and removed upon retirement at a cost of $\$ 25,000$ would have a negative 10 percent net salvage. The net salvage costs are related to the
original cost of the plant retired. The net salvage costs are present day costs while the original costs of property retired were frequently incurred 50 or more years ago, at much lower costs levels. For these reasons, it is not uncommon to have the cost of removal (primarily current labor costs) be a significant percentage of the cost of the plant retired. This information was used as a guide for the proposed service lives and remaining lives and net salvage factors.

## Iowa Survivor Curves

The lowa Curves used extensively in the depreciation study practice were developed during the 1930's at lowa State University. The Curves are a family of retirement patterns and average service lives which collectively reflect the patterns of retirements for utility property.

There are three basic types of curves, $R, L$ and $S$. The $R$ family of curves designates patterns where the maximum rate of retirements occurs to the right or after the average service life. The $S$ family denotes peak retirements at the average service life and the $L$ set of curves reflect the peak retirements to the left or earlier than the average service life. There are several other types of curves which have been developed to reflect a single one time retirement of the property and the straight line or uniform rate of retirement over the service life history. The curves are designated within each of the three basic sets from zero to six. Where retirements occur at a fairly uniform rate over the service life, the zero curves such as L0 would be indicated. Where retirements occur at a rapid rate with very few retirements during the early and later years of service, the 6 type such as L6 curve would be indicated. Curves are normally designated by the curve type
and the years of service such as an R2-40 year curve.
Assuming an R1-40 year service life, the remaining life of the new property at the end of the year when it is installed would be 39.5 years (at December 31, property installed at a given year is considered to have an age of 0.5 years). At 10.5 years, there would be 92 percent of the original property surviving and a remaining life of 32.5 years. Thus, the total life at that point is 43 years for the surviving property ( 10.5 plus 32.5 years). At age 50.5, there will be 32.6 percent of the original property surviving and 10 years remaining life for a total of 60.5 years. The utility survivor curves are like human mortality curves. When born, infants may have an expected life of 72 years on the average. At age 60, the remaining expectancy may be 20 years for a total of 80 years. At age 80, the expectancy may be 6 years for a total of 86 years. The humans who live longer than the average offset infant mortality and deaths of people prior to the age 72.

The lowa Curves used in service life studies using both the retirement rate and simulated plant-record methods, are used to calculate depreciation reserves, and are used to estimate remaining service life. The availability of computers has greatly enhanced the use of the curves in such studies. The original tables developed at lowa State University in the 1930's required several man-years of mechanical calculator computations. Similar tables can be generated by modern computers in a few minutes or less.

## SECTION 3

## SERVICE LIFE STUDIES AND DEPRECIATION COMPUTATION PROCEDURES

## Service Life Study Procedures

Several procedures were used to determine the service lives as the basis for computing the depreciation accrual rates in this study. The average service life was determined by individual account and was based primarily on three factors:

1. The specific history of additions and plant balances over a select period of years for group properties was studied through the use of actuarial methodologies (simulated plant-record analysis).
2. The depreciation rates used by other water utilities, various properties and the range of rates for several water utilities recommended by the NARUC were considered. The service lives presently used by the Company have also been considered.
3. Specific factors with respect to current and anticipated technological changes, obsolescence, physical condition and other elements unique to the property were evaluated. These included a review of present and prospective construction and replacement programs, consideration of terminal or replacement dates for certain types of property and the net salvage or cost of removal required to take equipment out of service.

## Simulated Plant-Record Method

The Simulated Plant-Record Method was applied to accounts where there was adequate retirement experience. The Simulated Plant-Record software allows making a
variety of studies looking at the retirement experience covering different spans of years. Original cost, retirement, transfer and adjustment data used in the depreciation study were obtained from the Company's continuing property records. Data used in the study extended through March 31, 2008. As discussed earlier, standard utility retirement curves known as the lowa Curves were used for the study.

Tabulations of simulated plant balance studies are included in Appendix A.

## Estimation of Net Salvage Percents

The estimates of net salvage were based primarily on judgment which considered a number of factors including a) data compiled for the years 1993 through 1998 and analyzed for a previous depreciation study in 1998, b) comparison of those findings to previous studies of other water companies, c) engineering and operational knowledge of retirement means and methods, and d) environmental regulatory requirements. Net salvage estimates are expressed as a percent of the original cost of plant retired. Recommended net salvage percentages for each plant account are included in Appendix B.

## Depreciation Computation Procedure

Proposed depreciation rates were computed after weighing all the facts with respect to the remaining service life, average service life, age and lowa curves based on historical data, comparison of typical industry rates, determination of net salvage, physical and functional aspects of the property and all other factors, including future expectations, which might also have a bearing on the remaining life of the property.

## Calculate Annual Depreciation Expense

Simulated Plant-Record studies and other service life analyses provide the
average years of service life and a representative retirement pattern by means of an lowa Curve selection. The first step in calculating the annual depreciation expense was to apply a straight line whole life approach. That is, assuming a uniform straight line depreciation percentage over the estimated average service life. After the average service life is determined, the annual depreciation rate can be computed by the following equation:

100\% / Average Service Life = Annual Accrual Rate (percent)
For example, assuming a 20 year average service life: $100 \% / 20=5 \%$
This annual depreciation percentage was then applied to each vintage year plant balance and summed to arrive at a total for the plant account.

The Net Salvage Adjustment as then added to arrive at the Annual Depreciation for each plant account. This adjustment is calculated by multiplying the Net Salvage Factor expressed as a percent of the original cost times the plant account's calculated total annual depreciation amount.

The calculations of the annual depreciation expense by plant account are included in Appendix B.

## Calculated Accrued Depreciation

The Calculated Accrued Depreciation for each depreciable property group represents that portion of the depreciable cost of the group which will not be allocated to expense through future depreciation accruals, if current forecasts of life characteristics are used as a basis for straight line depreciation accounting.

The accrued depreciation calculation consists of applying an appropriate ratio taken from the lowa Curve table to the surviving original cost of each vintage of each
account, based upon the attained age and the estimated survivor curve of each vintage. The vintage year accrued depreciation was calculated as follows:

Vintage Year Accrued Depreciation $=$ Ratio (based on vintage year percent of average age) $\times$ Vintage Year Surviving Balance

The vintage year accruals are added and a net salavage adjustment is added to arrive at the total calculated accrued depreciation for the plant account. The calculations of the accrued depreciation by plant account are included in Appendix B.

# SECTION 4 WATER SYSTEM REMAINING LIFE AND NET SALVAGE FACTORS 

## General

The annual depreciation accrual and the calculated accrued depreciation have been analyzed for each account. An analysis of the retirement history of the major accounts was conducted where there was adequate retirement activity and information available. Since the mathematical analyses are based only on historical data, which is sometimes limited, the results of the retirement analysis are not necessarily considered to be definitive. Judgments were applied considering other factors, including the present lives and lives used for other water systems.

The determination of the proposed depreciation expense is shown in Table 5-1. The annual depreciation expense proposed for the water system is $\$ 938,623$ as shown in Table 5-1. This amount represents a composite annual accrual rate of 2.61 percent on the total plant investment of $\$ 32,245,628$ plus an additional amortization of $\$ 97,396$ to correct the $\$ 973,963$ reserve variance.

Following is a brief discussion of the recommended average service and and the net salvage factors for each account.

## Source of Supply

## Account 303 - Miscellaneous Intangible Plant

There has been limited activity in this account and it is of relatively small dollar value. A 30 year amortization period is proposed for this account.

## Account 311 - Structures and Improvements

Data for all the various utility plant structures and improvement accounts (Accounts
$311,321,331$, and 341) were combined in order to accumulate adequate activity to support the use of statistical analysis. This was possible because the utility plant in these various accounts are very similar in age and general type of construction. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979 was also referenced for guidance. The lowa curve of best fit for Structures and Improvements per the statistical analysis is an R5-38 year curve. Figure 1 suggests an average service life of $35-40$ years. An R5-40 lowa Curve was selected to fall within the suggested range. Net salvage of minus 10 percent is proposed for the account to provide for the removal costs for concrete and other structures and to be consistent with prior practices.

## Account 314 - Wells and Springs

There has been limited activity in this account. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979 was referenced for guidance. The suggested average service life for Wells and Springs Plant is $25-35$ years. An R3-30 lowa Curve was selected to fall within the suggested range. Net salvage of minus 10 percent is proposed for the account to provide for the removal costs for properly sealing the retired wells and to be consistent with prior practices.

## Account 316 - Supply Mains

These lines convey the raw water from the raw water intake to the treatment facilities. The Simulated Plant-Record analysis did not produce meaningful results due to the limited activity in this account. Supply Mains are similar to transmission and
distribution mains so use of the R5-100 lowa Curve as indicated for transmission and distribution mains is proposed. A net salvage of minus 20 percent is proposed to also consistent with that proposed for transmission and distribution mains.

## Account 317 - Other Water Source Plant

This account contains the costs of various master planning studies. Since such studies typically use a 20 year planning horizon we can expect their value and usefulness to diminish over that time period. Therefore, a 20 year amortization is proposed.

## Pumping Plant

## Account 321 - Structures and Improvements

Data for all the various utility plant structures and improvement accounts (Accounts $311,321,331$, and 341 ) were combined in order to accumulate adequate activity to support the use of statistical analysis. This was possible because the utility plant in these various accounts are very similar in age and general type of construction. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979 was also referenced for guidance. The lowa curve of best fit for Structures and Improvements per the statistical analysis is an R5-38 year curve. Figure 1 suggests an average service life of $35-40$ years. An R5-40 lowa Curve was selected to fall within the suggested range. Net salvage of minus 10 percent is proposed for the account to provide for the removal costs for concrete and other structures and to be consistent with prior practices.

## Account 325 - Electric Pumping Equipment

The Simulated Plant-Record analysis was inconclusive but seemed to indicate an average service life higher than the 20 year life suggested by FIGURE 1 of Depreciation

Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979. The R1-35 lowa curve was selected for this account. A minus 20 percent net salvage factor is recommended for this account based on the complexity of removal of the various electrical apparatus, wiring, etc. which are associated with this type of equipment.

## Account 326 - Diesel Pumping Equipment

The Simulated Plant-Record analysis was inconclusive. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979 was referenced for guidance. The suggested average service life for Pumping Equipment is 20-25 years. Indications are, however, that the average life is somewhat longer at this utility. The R1-30 lowa curve was selected for this account. Net salvage of minus 10 percent is proposed for the account.

## Account 328-Other Pumping Equipment

The Simulated Plant-Record analysis was inconclusive. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979 was referenced for guidance. The suggested average service life for Other Pumping Equipment is 25 years. The R1-25 lowa curve was selected for this account. Net salvage of minus 10 percent is proposed for the account.

## Treatment Plant

## Account 331-Structures and Improvements

Data for all the various utility plant structures and improvement accounts (Accounts $311,321,331$, and 341 ) were combined in order to accumulate adequate activity to support the use of statistical analysis. This was possible because the utility plant in these
various accounts are very similar in age and general type of construction. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15,1979 was also referenced for guidance. The lowa curve of best fit for Structures and Improvements per the statistical analysis is an R5-38 year curve. Figure 1 suggests an average service life of $35-40$ years. An R5-40 lowa Curve was selected to fall within the suggested range. Net salvage of minus 10 percent is proposed for the account to provide for the removal costs for concrete and other structures and to be consistent with prior practices.

## Account 332 - Water Treatment Equipment

The retirement analysis indicates an average age of about 30 years. The Retirement Experience Index (REI) is $100 \%$ which is excellent but the Index of Variation score is only in the fair range. Balancing this Index of Variation score is the consistency with which various lowa Curves indicate an average service life in the 28 to 34 year range. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15,1979 was also referenced for guidance. Figure 1 suggests a range of $20-35$ years as the average service life for water treatment equipment. The simulated plant record indicated 28 to 34 year average service life is therefore consistent. Such a range is also indicated because the typical design period used when engineers design water treatment plants is 20 years. The average service life is likely to be somewhat longer than 20 years because after the 20 year design period a WTP is typically upgraded or expanded rather than being completely replaced. In recognition of the above factors a 30 year life is proposed. The R5-30 year curve was selected to fall within the range. Net salvage of minus 10 percent is proposed for the
account.

## Transmission and Distribution Plant

## Account 341-Structures and Improvements

Data for all the various utility plant structures and improvement accounts (Accounts $311,321,331$, and 341 ) were combined in order to accumulate adequate activity to support the use of statistical analysis. This was possible because the utility plant in these various accounts are very similar in age and general type of construction. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979 was also referenced for guidance. The lowa curve of best fit for Structures and Improvements per the statistical analysis is an R5-38 year curve. Figure 1 suggests an average service life of $35-40$ years. An R5-40 lowa Curve was selected to fall within the suggested range. Net salvage of minus 10 percent is proposed for the account to provide for the removal costs for concrete and other structures and to be consistent with prior practices.

## Account 342 - Distribution Reservoirs and Standpipes

The retirement analysis indicates the R5-61.4 Iowa Curve is the curve of best fit. The Retirement Experience Index (REI) is $100 \%$ which is excellent and the Index of Variation score of 11 is also excellent. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979 was also referenced for guidance. Figure 1 suggests a range of $30-60$ years as the average service life. Since Aquarion has a good track record of maintaining their water tanks a 60 year average service life is considered reasonable for the account. Therefore,
an R5-60 lowa Curve was selected. The net salvage is proposed at minus 20 percent based upon the cost of retirement caused by requirements for lead paint abatement.

## Account 343-Transmission and Distribution Mains

The Simulated Plant-Record analysis was inconclusive, but suggested an average service life in the range of 100 years. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979 was referenced for guidance. The suggested average service life for Transmission and Distribution Mains is 50-75 years. We will use an R3-100 curve. A net salvage factor of minus 20 percent is proposed because many transmission and distribution mains are installed under streets and roads and while the bulk of the length of pipe is abandoned in place it is still necessary to excavate in several locations to disconnect the retired main from the rest of the mains, fire hydrants, and service lines. The bulk of the retirement costs are due to the costs of compacted backfill and pavement repairs at the point of the excavations. Also, due to the relative long life of transmission and distribution mains the cost basis of the retired main is very low in comparison to the current cost basis for the required excavations and pavement repairs.

## Account 345 - Services

The Simulated Plant-Balance analysis was inconclusive due to an extremely high index of variation, but did indicate a higher than typical average service life. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979 was also referenced for guidance. Figure 1 suggests a range of $30-50$ years as the average service life. An R3-65 lowa Curve is proposed for this account to be consistent with prior practice and to recognize the indications of a fairly
long average service life. A net salvage factor of minus 20 percent is proposed because of the excavation, backfill and pavement repair costs typically associated with a service retirement as discussed under transmission and distribution mains.

## Accounts 346 and 347 - Meters and Meter Installations

Company records provided for this study were not segregated between Accounts 346 and 347 , therefore, the two accounts were treated as one for the purposes of this analysis. The Company has adopted a policy of replacing all $5 / 8$-inch, $3 / 4$-inch, 1 -inch and 2-inch meters every 10 years. The analysis of data shows an indicated composite average service life between 24 and 30 years. This is longer than the 10 year replacement policy might seem to indicate, but since this account also includes the larger, more expensive meters that are tested and repaired in place rather than being retired after 10 years, and since it also includes meter installations that are not replaced every 10 years it seems appropriate. An R1-25 year lowa Curve is proposed for use with both Account 346 and 347. Retired meters are sold for scrap metal and consequently there is a positive salvage value. Since the accounts were jointly analyzed, a net salvage factor of $5 \%$ is proposed to be applied to both Accounts 346 and 347 even though there is not likely to be a positive salvage value for meter installations.

## Account 348 - Hydrants

The simulated plant record analysis indicated a range of 46 to 65 years with the curve of best fit being an S3-49 curve. The Index of Variation was consistent across various lowa Curves in the fair range. An S3-50 lowa curve is proposed. A minus 20 percent net salvage factor is proposed for the account since excavation and pavement repair is often required at current cost levels versus the lower cost basis of the original
asset given its relatively long life.

## Account 349 - Other Transmission and Distribution Plant

This account contains the costs of various master planning studies. Since such studies typically use a 20 year planning horizon we can expect their value and usefulness to diminish over that time period. Therefore, a 20 year amortization is proposed.

## General Plant

## Account 390-Structures and Improvements

There has not been adequate activity in this account to support the use of statistical analysis. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979 was referenced for guidance. The suggested average service life for General Plant Structures and Improvements is $35-40$ years. An R1-35 lowa Curve was selected to fall within the suggested range and to be consistent with the prior practices. A minus 10 percent net salvage is proposed for this account.

## Account 391-Office Furniture and Equipment

The Simulated Plant Record Analysis showed a consistent estimated average service life of 13 years although the Index of Variation was very high. Therefore, caution is indicated. However, due to the extreme consistency of results pointing to a 13 year average service life it is proposed to be accepted. An R1-13 lowa Curve is proposed for this account.

## Account 391H/S - Computer Hardware \& Software

Retirements of computer hardware and software are mostly driven by rapid technology change which enables providing the company and its customers with more
and better information in a more timely fashion. As a part of this study data were collected on public utility commission approved computer hardware and software average service lives from five other states (Connecticut, Kentucky, Ohio, Tennessee, Pennsylvania, and Virginia). The approved hardware average service lives from this sample ranged from 4 to 8 years. The norm for non-regulated companies is to depreciate computer hardware and software using a 5 year average service life in accordance with Internal Revenue Service guidelines. A 5 year average service life for computer hardware and software is proposed. Zero net salvage is recommended since retired computers are of little value and there is no significant cost of retirement.

## Account 392 - Transportation Equipment

An lowa S6-8 curve is indicated as the curve of best fit by a Simulated PlantRecord analysis. Most other competing curves also indicate an 8 year average service life. Again there is a high Index of Variation, but consistency of results. An 8 year life seems reasonable given the mixture of vehicle types included in this account and the Company's vehicle replacement policies. An S6-8 lowa Curve is proposed for this account. A 10 percent net salvage is recommended for the account to reflect vehicle trade-in values.

## Account 393 - Stores Equipment

There has not been adequate activity in this account to support the use of statistical analysis. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979 was referenced for guidance. The suggested average service life for Stores Equipment is 20 years. A 20 year straight line amortization was selected to fall within the suggested range and to be
consistent with the prior practices.

## Account 394 - Tools, Shop and Garage Equipment

There has not been adequate activity in this account to support the use of statistical analysis. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979 was referenced for guidance. The suggested average service life for Tools, Shop \& Garage Equipment is 20 years. A 20 year straight line amortization was selected to fall within the suggested range and to be consistent with the prior practices.

## Account 395 - Laboratory Equipment

The Simulated Plant-Record analysis was inconclusive. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979 was referenced for guidance. The suggested average service life for Laboratory Equipment is $15-20$ years. A 15 year straight line amortization was selected to fall within the suggested range and to be consistent with the prior practices.

## Account 396 -Power Operated Equipment

Although the Simulated Plant-Record analysis results had poor index of variation scores, they consistently indicated an average service live in the 12 t0 14 year range. Based upon that consistency an R3-15 lowa Curve is proposed for this account.

## Account 397 - Communication Equipment

The Simulated Plant-Record analysis was inconclusive. FIGURE 1 of Depreciation Practices for Small Water Utilities, National Association of Regulatory Utility Commissioners, August 15, 1979 was referenced for guidance. The suggested average
service life for Communication Equipment is 10 years. A 10 year straight line amortization was selected to fall within the suggested range and to be consistent with the prior practices.

## Account 398 - Miscellaneous Equipment

The Simulated Plant-Record analysis was inconclusive. A 10 year straight line amortization was selected to be consistent with the prior practices.

## SECTION 5

## SUMMARY AND RECOMMENDATIONS

The goal of a depreciation study is to determine the annual depreciation expense that must be recognized in order to allow the utility to recover its original investment in a plant asset and any cost of retirement of that asset over the life of the asset. The process is fairly straightforward but it does involve a large amount of data and number crunching.

Fundamentally the process is to analyze the past history of a utility's plant additions and retirements to discern a pattern that can be used to predict the average life span that can be expected and the pattern of retirements as the assets reach the end of their used and useful lives.

The type of analysis that is typically used for water utilities is a curve fitting process. Back in the 1930 s a series of life curves were developed by researchers at lowa State. These curves predict what percentage of an asset will be retired in a given year of age. The process is to compare the actual past history of retirements to those predicted by the various lowa Curves. This is an iterative process facilitated by computer whereby the retirement pattern of each lowa Curve for every possible average service life is compared to the actual addition and retirement history of a given plant account or sub account. The validity of the lowa Curve and average service life prediction is tested in essentially two mathematical ways and by engineering judgment. The mathematical tests include a measure of the closeness of the actual annual data points to the standardized curve. This is measured by a statistical test called the sum of the squared differences which can also be reduced to an index called the Index of

Variation.
The second mathematical test is called the Retirement Experience Index. This is a measure of the percent of the predicted total life cycle represented by the actual plant account data. The less of the predicted total life cycle covered by the actual plant account data, the less likely that the true pattern has emerged and been detected.

The final test is one of engineering judgment. Given the nature of the plant in question, what type of retirement pattern makes sense? Some things tend to have relatively high failure rates early on - like computer hard drives - then settle down to a more gradual retirement rate. Other assets tend to have few retirements until well into their life expectancy - like water mains. In other words the blind mathematical analysis must be seasoned with a good dose of engineering knowledge and experience.

Once the most appropriate lowa Curve and average service life is determined and net salvage value is estimated, the next step is to calculate the annual depreciation accrual and calculated accrued depreciation of the assets in a plant account. This is done by applying the expected life ratios from the selected lowa Curve and average service life to plant balance and attained ages by vintage years and summing them to arrive at a total.

That last statement introduced one other element of the process and that is the salvage value or retirement cost that is either recovered or incurred at the time an asset is retired from service. If the utility can sell the retired asset it can recover part of its original investment - that is called salvage value. It is not necessary or appropriate to accrue depreciation expenses to cover that portion of the original cost. On the other hand, if additional costs are incurred at the time of retirement, public utility accounting
procedure is to recover that cost over the life of the asset so that those customers who have benefited from the asset pay the cost rather than future customers who will not benefit from the asset. Since the utility plant asset accounting process is based upon the original cost of the asset, the retirement costs or salvage values is expressed in terms of a percentage of the original cost. This can sometimes be confusing because, due to inflation, what appears to be a relatively small dollar amount in today's dollars can represent a significant percentage of the original cost - especially for long lived water utility assets.

The final step is to compare the calculated accrued depreciation to the book depreciation reserve of the account to determine the reserve variance that must be corrected. In accordance with the past policy of the New Hampshire Public Utility Commission, the variance between the book accumulated depreciation and the calculated accrued depreciation is proposed to be amortized over ten years for each plan account.

Revisions are proposed for the depreciation, service lives and net salvage factors for the Company. A schedule of depreciation rates is developed and shown in Table 5-1. The proposed annual depreciation expense, based on plant as of March 31, 2008, is $\$ 938,623$ with a composite rate of 2.61 percent of the total utility plant investment plus an additional 0.30 percent to amortize the Reserve Variance.

A comparison of the depreciation expense using the present and proposed rates is shown in Table 5-2.

The proposed rates are recommended as reasonable and necessary for the

Company to recover the costs associated with the investment in water system plant through depreciation expense.

APPENDIX A
SIMULATED PLANT RECORD ANALYSIS


```
Jun-26-08
    XXXXXXXXXXXXXX. (X) CURVE OVERLAP
95! X. (.) S5 38.1
90! X.
85! X
80! - X
70! x
65! X
55!
50! *
45! X
40!
35! X
30!
25!
20! X
15! 㹍
10! 
0!----!-----!----!-----!---XX\cdot++++++---!----!-----!----!-----!------------------------
00+ 10+ 20+ 30+ 40+ 50+ 60+ 70+ 80+ 90+100+110+120+130+140+150+
```



```
Jun-25-08
    XXXXXXXXXXXXXXXXXXXXX... (X) CURVE OVERLAP
95! XXX..
90! X
85! X.
80! X5! X
75! X X
65!
60!
55!
50!
45!
40! X
35!
30!
25!
20!
15!
```



```
5! . ** ++++
0!----!!----!----!----!----!----!--\cdots...****-++++++++++\cdots----!-----!------------------
00+ 05+10+ 15+ 20+ 25+ 30+ 35+40+45+ 50+ 55+ 60+ 65+ 70+ 75+
```



```
Jun-25-08
    XXXXXXXXXXXXXXXXXXXXXX... (X) CURVE OVERLAP
95! XXX.
90! X
85! X.
80! X
75! X
70!
65! X
60! *
55! ++
50! *
45! +
40! . X
35!
30! X
25! . +
```





```
5! . ** ++++
0!----!-----!-----!----!-----!----!----\cdots ...*****++++++++++---!-------------------------
00+10+ 20+ 30+ 40+ 50+ 60+ 70+ 80+ 90+100+110+120+130+140+150+
```



```
Jun-25-08
    XXX. (X) CURVE OVERLAP
95! *XXX.
90! XXXX
85! +XXX
80! ++XX*
75! ++XX*
70: +XX*
65! +XX*
60! XX*
55! XXX
50! \cdotXX
45! \cdots X++
40!
35!
30!
25!
20!
15!
10!
5! *XXX. t++++++++++t
0!----!-----!----!---- !-----!----!-----!----! !----! *XXXX*----!-----!-----!----!+++++++
00+ 05+ 10+ 15+ 20+ 25+ 30+ 35+ 40+ 45+ 50+ 55+ 60+ 65+ 70+ 75+
```










APPENDIX B
CALCULATED ANNUAL AND ACCRUED DEPRECITATION

## Aquarion Water Company of New Hampshire

Calculated Annual and Accrued Depreciation


Aquarion Water Company of New Hampshire
Calculated Annual and Accrued Depreciation

Account Number: lowa Curve Type: Avg. Service Life: Net Salvage Percent:

| 311 | SOURCE OF SUPPLY STRUCTURES \& IMPROVEMENTS |
| :--- | :--- |
| R5 |  |
| 40 | Years |

Warcont of Amual Daprechation Aceruad Deprechation
2001
2002
2003
2004
2005
2006
2007
2008
Beg Bal
6,370
9,472
523,798
545,610
599,543
587,603
611,459

| Add | Re: | Adi/Trans | End Bal | Net Change |
| :---: | :---: | :---: | :---: | :---: |
| 6,370 |  |  | 6,370 | 6,370 |
| 3,102 |  |  | 9,472 | 3,102 |
| 514,326 |  |  | 523,798 | 514,326 |
| 21,812 |  |  | 545,610 | 21,812 |
| 53,933 |  |  | 599,543 | 53,933 |
| 11.920 | $(23,860)$ |  | 587,603 | (11,940) |
| 23,856 |  |  | 611,459 | 23.856 |
|  |  |  | 611,459 | - |
| 635,319 | (23,860) |  | 3,495,313 | 611,459 |



Aquarion Water Company of New Hampshire
Calculated Annual and Accrued Depreciation
317
SQ
20

| Account Number: | 317 | SOURCE OF SUPPLY OTHER WATER SOURCE PLANT |
| :--- | :---: | :--- |
| lowa Curve Type: | SQ |  |
| Avg. Service Life: | 20 | Years |
| Net Salvage Percent: | $0 \%$ |  |



| 321 | PUMPING PLANT STRUCTURES \& IMPROVEMENTS |
| :--- | :--- |
| R5 |  |
| 40 | Years |



BegBal
5,423

Add Ret
Ret


# Aquarion Water Company of New Hampshire 

 Calculated Annual and Accrued Dopreclation| Account Number: | 326 | PUMPING PLANT DIESEL PUMPING EQUIPMENT |
| :--- | :---: | :--- |
| lowa Curve Type: | R1 |  |
| Avg. Service Life: | 30 | Years |
| Net Salvage Percent: | $-10 \%$ |  |

1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008

| BegBal | $\frac{\text { Add }}{32.297}$ | Ret | Adifrans | $\frac{\text { End Bal }}{32297}$ | $\frac{\text { Net Change }}{32.297}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 32,297 |  |  |  | 32.297 | - |
| 32,297 |  |  |  | 32.297 | - |
| 32,297 |  |  |  | 32,297 | - |
| 32,297 |  |  |  | 32,297 | - |
| 32,297 |  |  |  | 32,297 | - |
| 32.297 |  |  |  | 32,297 | - |
| 32,297 |  |  |  | 32,297 | - |
| 32,297 |  |  |  | 32,297 | - |
| 32.297 |  |  |  | 32,297 | - |
| 32,297 |  |  |  | 32,297 | - |
| 32,297 |  |  |  | 32,297 | - |
| 32,297 |  |  |  | 32,297 | * |
| 32.297 |  |  |  | 32,297 | - |
| 32,297 |  |  |  | 32,297 | * |
| 32,297 |  |  |  | 32,297 | - |
| 32,297 |  |  |  | 32,297 | - |
| 32,297 |  |  |  | 32,297 | - |
| - | 32,297 |  |  | 581.346 | 32,297 |

Aquarion Water Company of New Hampshire
Calculated Annual and Accrued Depreciation


Aquarion Water Company of New Hampshire
Calculated Annual and Accrued Deprectation

| Account Number: | 331 | WATER TREATMENT PLANT STRUCTURES \& lMPROVEMENTS |
| :--- | :---: | :--- |
| lowa Curve Type: | R5 |  |
| Avg. Service Life: | 40 | Years |
| Net Salvage Percent: | $-10 \%$ |  |



Aquarion Water Company of New Hampshire
Calculated Annual and Accrued Depreciation


Aquarion Water Company of New Hampshire
Calculated Annual and Accrued Depreciation

| Account Number: lawa Curve Type: |  | 341 | TRANSMISSION \& DISTRIBUTION PLANT STRUCTURES \& IMPROVEMENTS |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | R5 |  |  |  |  |  |  |  |  |  |  |
| Avg. Service Life: <br> 40 Yea |  |  |  |  |  |  |  |  |  |  |  |  |
| Net Salvage Percent: -10\% |  |  |  |  |  |  |  |  |  |  |  |  |
| Beg Bal |  | Add | Ret | Adj/Trans | End Bal | Net Change |  | Percont of Avi. Ago | Annualooprectation (kecrued Depraclation |  |  |  |
|  |  | Ag9 |  |  |  |  | , Rats |  | Amount | Ratio | Amt. |
| 1991 | - |  |  |  | 2,850 | 2,850 | 2,850 | 17.5 | 43.75 | 2.50\% | 71 | 0.4300 | 1226 |
| 1992 | 2,850 |  |  |  | 2,850 | - | 16.5 | 41.25 | 2.50\% | . | 0.4100 | 0 |
| 1993 | 2,850 |  |  |  | 2,850 | - | 15.5 | 38.75 | 2.50\% | - | 0.3800 | 0 |
| 1994 | 2,850 | 13,100 |  |  | 15,950 | 13,100 | 14.5 | 36.25 | 2.50\% | 328 | 0.3600 | 4716 |
| 1995 | 15,950 | 8,760 |  |  | 24,710 | 8,760 | 13.5 | 33.75 | 2.50\% | 219 | 0.3300 | 2891 |
| 1996 | 24,710 | 7.994 |  |  | 32,704 | 7,994 | 12.5 | 31.25 | 2.50\% | 200 | 0.3100 | 2478 |
| 1997 | 32.704 |  |  |  | 32.704 | - | 11.5 | 28.75 | 2.50\% | - | 0.2800 | 0 |
| 1998 | 32,704 |  |  |  | 32,704 | - | 10.5 | 26.25 | 2.50\% | - | 0.2600 | 0 |
| 1999 | 32,704 |  |  |  | 32,704 | - | 9.5 | 23.75 | 2.50\% | - | 0.2300 | 0 |
| 2000 | 32,704 |  |  | $(32,704)$ | - | $(32,704)$ | 8.5 | 21.25 | 2.50\% | (818) | 0.2100 | -6868 |
| 2001 | - |  |  |  | - |  | 7.5 | 18.75 | 2.50\% | - | 0.1800 | 0 |
| 2002 | - |  |  |  | " | - | 6.5 | 16.25 | 2.50\% | - | 0.1600 | 0 |
| 2003 | - | 39,158 |  | 227,648 | 266,806 | 266,806 | 5.5 | 13.75 | 2.50\% | 6,670 | 0.1300 | 34685 |
| 2004 | 266,806 | 1.733 |  |  | 268,539 | 1.733 | 4.5 | 11.25 | 2.50\% | 43 | 0.1100 | 191 |
| 2005 | 268,539 | 6,464 |  |  | 275,003 | 6.464 | 3.5 | 8.75 | 2.50\% | 162 | 0.0800 | 517 |
| 2006 | 275,003 | 14,411 |  |  | 289,414 | 14,411 | 2.5 | 6.25 | 2.50\% | 360 | 0.0600 | 865 |
| 2007 | 289,414 | 26 |  |  | 289,440 | 26 | 1.5 | 3.75 | 2.50\% | 1 | 0.0300 | 1 |
| 2008 | 289,440 |  |  |  | 289,440 | - | 0.5 | 1.25 | 2.50\% | - | 0.0100 | 0 |
|  | - | 94,496 |  |  | 1,858,668 | 289,440 |  |  |  | 7,236 |  | 40,701 |
|  |  |  |  |  |  |  |  | at Salavage Ad | justment | 724 |  | 4,070 |
|  |  |  |  |  |  |  |  | Annual Dep | reciation | 7,960 |  |  |
|  |  |  |  |  |  |  |  |  |  | ccrued De | eciation: | 44,771 |
|  |  |  |  |  |  |  |  | site Annual A | crual Rat | Parcent: | 2.75\% |  |



| Account Number: | $\mathbf{3 4 3}$ | TRANSMISSION \& DISTRIBUTION PLANT TRANSMISSION \& DISTRIBUTION MAINS |
| :--- | :---: | :--- |
| lowa Curve Type: | R3 |  |
| Avg. Service Life: | 100 | Years |
| Net Salvage Percent: | $-20 \%$ |  |


|  |  |  |  |  |  |  |  | fercentof | Annualo | dation | Actruad | 10n |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Beg Bal | Add | Ret | AdjTrans | End Bal | Net Change | Ane | Avol Age | Pato | Amount | Ratlo |  |
| 1915 |  | 126,843 |  |  | 126,843 | 126,843 | 93.5 | 93.50 | 1.00\% | 1,268 | 0.7630 | 96781 |
| 1916 | 126,843 |  |  |  | 126,843 | - | 92.5 | 92.50 | 1.00\% | - | 0.7576 | 0 |
| 1917 | 126,843 |  |  |  | 126,843 | - | 91.5 | 91.50 | 1.00\% |  | 0.7521 | 0 |
| 1918 | 126,843 |  |  |  | 126,843 | - | 90.5 | 90.50 | 1.00\% |  | 0.7465 | 0 |
| 1919 | 126.843 |  |  |  | 126,843 | - | 89.5 | 89.50 | 1.00\% |  | 0.7409 | 0 |
| 1920 | 126,843 |  |  |  | 126.843 | - | 88.5 | 88.50 | 1.00\% |  | 0.7351 | 0 |
| 1921 | 126,843 | 1,448 |  |  | 128,291 | 1,448 | 87.5 | 87.50 | 1.00\% | 14 | 0.7292 | 1056 |
| 1922 | 128,291 |  |  |  | 128.291 | - | 86.5 | 86.50 | 1.00\% | - | 0.7233 | 0 |
| 1923 | 128,291 |  |  |  | 128,291 | - | 85.5 | 85.50 | 1.00\% |  | 0.7172 | 0 |
| 1924 | 128,291 |  |  |  | 128,291 | - | 84.5 | 84.50 | 1.00\% |  | 0.7111 | 0 |
| 1925 | 128.291 |  |  |  | 128,291 | - | 83.5 | 83.50 | 1.00\% |  | 0.7049 | 0 |
| 1926 | 128,291 | 2,314 |  |  | 130,605 | 2,314 | 82.5 | 82.50 | 1.00\% | 23 | 0.6986 | 1617 |
| 1927 | 130,605 |  |  |  | 130,605 | - | 81.5 | 81.50 | 1.00\% |  | 0.6923 | 0 |
| 1928 | 130,605 |  |  |  | 130,605 | - | 80.5 | 80.50 | 1.00\% |  | 0.6858 | 0 |
| 1929 | 130,605 |  |  |  | 130,605 | - | 79.5 | 79.50 | 1.00\% |  | 0.6793 | 0 |
| 1930 | 130,605 | 1,920 |  |  | 132,525 | 1.920 | 78.5 | 78.50 | 1.00\% | 19 | 0.6727 | 1291 |
| 1934 | 132,525 | 1.564 |  |  | 134,088 | 1,564 | 77.5 | 77.50 | 100\% | 16 | 0.6660 | 1041 |
| 1932 | 134,088 | 3,817 | (85) |  | 137,820 | 3,732 | 76.5 | 76.50 | 1.00\% | 37 | 0.6593 | 2460 |
| 1933 | 137,820 | 23,337 | (517) |  | 160,640 | 22.820 | 75.5 | 75.50 | 1.00\% | 228 | 0.6525 | 14890 |
| 1934 | 160.640 | 8,258 |  |  | 168,897 | 8,258 | 74.5 | 74.50 | 1.00\% | 83 | 0.6456 | 5331 |
| 1935 | 168.897 | 115.733 | (23) |  | 284,607 | 115,710 | 73.5 | 73.50 | 1.00\% | 1,157 | 0.6387 | 73904 |
| 1936 | 284,607 | 2,265 | $(1,080)$ |  | 285,793 | 1,185 | 72.5 | 72.50 | 1.00\% | 12 | 0.6316 | 749 |
| 1937 | 285.793 | 9,328 |  |  | 295,121 | 9,328 | 71.5 | 71.50 | 1.00\% | 93 | 0.6245 | 5826 |
| 1038 | 205,121 | 31,642 | $(6,833)$ |  | 319,930 | 24,009 | 70.5 | 70.50 | 1.00\% | 240 | 0.6174 | 15317 |
| 1939 | 319,930 | 156,584 | (193,110) |  | 283,403 | $(36,527)$ | 69.5 | 69.50 | 1.00\% | (365) | 0.6102 | -22289 |
| 1940 | 283,403 | 9,002 |  |  | 292.406 | 9,002 | 68.5 | 68.50 | 1.00\% | 90 | 0.6029 | 5427 |
| 1941 | 292,406 | 4,884 | (81) |  | 297,209 | 4,803 | 67.5 | 67.50 | 1.00\% | 48 | 0.5956 | 2861 |
| 1942 | 297,209 | 261 | (55) |  | 297,414 | 205 | 66.5 | 66.50 | 1.00\% | 2 | 0.5882 | 121 |
| 1943 | 297,414 |  |  |  | 297,414 | - | 65.5 | 65.50 | 1.00\% |  | 0.5807 | 0 |
| 1944 | 297,414 |  | $(3,657)$ |  | 293,757 | $(3,657)$ | 64.5 | 64.50 | 1.00\% | (37) | 0.5732 | -2096 |
| 1945 | 293,757 | 102 | (74) |  | 293.785 | 28 | 63.5 | 63.50 | 1.00\% | 0 | 0.5656 | 16 |
| 1946 | 293,785 | 2,531 | (400) |  | 295,916 | 2,131 | 62.5 | 62.50 | 1.00\% | 21 | 0.5579 | 1189 |
| 1947 | 295,916 | 31.713 | $(1,244)$ |  | 326.385 | 30,469 | 61.5 | 61.50 | 1.00\% | 305 | 0.5579 | 16999 |
| 1948 | 326,385 | 3,834 |  |  | 330,219 | 3,834 | 60.5 | 60.50 | 1.00\% | 38 | 0.5425 | 2080 |
| 1949 | 330,219 | 8,652 | (595) |  | 338,276 | 8.058 | 59.5 | 59.50 | 1.00\% | 81 | 0.5347 | 4308 |
| 1950 | 338,276 | 30,364 | $(1,793)$ |  | 366,847 | 28,571 | 58.5 | 58.50 | 1.00\% | 286 | 0.5268 | 15051 |
| 1951 | 366,847 | 7,254 | (52) |  | 374,049 | 7,202 | 57.5 | 57.50 | 1.00\% | 72 | 0.5189 | 3737 |
| 1952 | 374,049 | 22,396 | (7) |  | 396,438 | 22,389 | 56.5 | 56.50 | 1.00\% | 224 | 0.5110 | 11441 |
| 1953 | 396,438 | 30,317 | $(1.117)$ |  | 425.638 | 29,200 | 55.5 | 55.50 | 1.00\% | 292 | 0.5029 | 14685 |
| 1954 | 425,638 | 41,591 | (428) |  | 466,801 | 41,163 | 54.5 | 54.50 | 1.00\% | 412 | 0.4949 | 20372 |
| 1955 | 466,801 | 51,664 | (537) |  | 517.928 | 51,127 | 53.5 | 53.50 | 1.00\% | 511 | 0.4867 | 24884 |
| 1956 | 517,928 | 74,201 | (633) |  | 591,497 | 73,568 | 52.5 | 52.50 | 1.00\% | 736 | 0.4786 | 35210 |
| 1957 | 591.497 | 57,405 | (62) |  | 648.840 | 57.343 | 51.5 | 51.50 | 1.00\% | 573 | 0.4704 | 26974 |
| 1958 | 648,840 | 52,391 | (477) |  | 700,753 | 51,914 | 50.5 | 50.50 | 1.00\% | 519 | 0.4621 | 23989 |
| 1959 | 700,753 | 38,557 | (905) |  | 738.405 | 37.652 | 49.5 | 49.50 | 1.00\% | 377 | 0.4538 | 17086 |
| 1960 | 738,405 | 45,937 | $(2,183)$ |  | 782,159 | 43,754 | 48.5 | 48.50 | 1.00\% | 438 | 0.4454 | 19488 |
| 1961 | 782.159 | 47,555 | $(5,077)$ |  | 824.637 | 42.478 | 47.5 | 47.50 | 1.00\% | 425 | 0.4370 | 18563 |
| 1962 | 824,637 | 47,632 | (391) |  | 871,879 | 47.241 | 46.5 | 46.50 | 1.00\% | 472 | 0.4285 | 20243 |
| 1963 | 871,879 | 62,243 | (638) |  | 933.484 | 61,605 | 45.5 | 45.50 | 1.00\% | 616 | 0.4200 | 25874 |
| 1964 | 933.484 | 126,494 | (3,402) |  | 1,056,576 | 123,092 | 44.5 | 44.50 | 1.00\% | 1,231 | 0.4114 | 50640 |
| 1965 | 1,056,576 | 89,150 | $(2,288)$ |  | 1,143,438 | 86,862 | 43.5 | 43.50 | 1.00\% | 869 | 0.4028 | 34988 |
| 1966 | 1,143,438 | 127,955 | $(3,352)$ |  | 1,268,041 | 124,603 | 42.5 | 42.50 | 1.00\% | 1,246 | 0.3942 | 49119 |
| 1967 | 1,268,041 | 76,957 | $(1,706)$ |  | 1,343,293 | 75,252 | 41.5 | 41.50 | 1.00\% | 753 | 0.3855 | 29010 |
| 1968 | 1,343,293 | 58,617 | $(1,432)$ |  | 1,400,478 | 57,185 | 40.5 | 40.50 | 1.00\% | 572 | 0.3767 | 21542 |
| 1969 | 1,400,478 | 171,428 | $(1,451)$ |  | 1,570,454 | 169,977 | 39.5 | 39.50 | 1.00\% | 1,700 | 0.3679 | 62534 |
| 1970 | 1,570,454 | 30,364 | (708) |  | 1,600.111 | 29,656 | 38.5 | 38.50 | 1.00\% | 297 | 0.3591 | 10650 |
| 1971 | 1,600,111 | 59,102 | (420) |  | 1,658,793 | 58,682 | 37.5 | 37.50 | 1.00\% | 587 | 0.3503 | 20556 |
| 1972 | 1,658,793 | 61.791 | (820) |  | 1,719,765 | 60,972 | 36.5 | 36.50 | 1.00\% | 610 | 0.3413 | 20810 |
| 1973 | 1,719,765 | 56,680 | $(5,578)$ |  | 1,770,867 | 51,102 | 35.5 | 35.50 | 1.00\% | 511 | 0.3324 | 16986 |
| 1974 | 1.770 .867 | 63.403 | $(20.637)$ |  | 1,813,633 | 42.766 | 34.5 | 34.50 | 1.00\% | 428 | 0.3234 | 13831 |
| 1975 | 1,813,633 | 56,276 | (207) |  | 1,869,702 | 56,069 | 33.5 | 33.50 | 1.00\% | 561 | 0.3144 | 17628 |
| 1976 | 1,869,702 | 34,027 | (739) |  | 1,902,990 | 33,288 | 32.5 | 32.50 | 1.00\% | 333 | 0.3053 | 10163 |
| 1977 | 1,902,990 | 126,644 | (374) |  | 2,029,260 | 126,270 | 31.5 | 31.50 | 1.00\% | 1,263 | 0.2962 | 37401 |
| 1978 | 2.029.260 | 298,343 | $(8.037)$ |  | 2,319,566 | 290,306 | 30.5 | 30.50 | 1.00\% | 2.903 | 0.2871 | 83347 |
| 1979 | 2,319,566 | 98,058 | (109) |  | 2,417,515 | 97,949 | 29.5 | 29.50 | 1.00\% | 979 | 0.2779 | 27220 |
| 1980 | 2,417.515 | 76.011 | (471) |  | 2,493,055 | 75.540 | 28.5 | 28.50 | 1.00\% | 755 | 0.2687 | 20298 |
| 1981 | 2,493,055 | 130,266 | (361) |  | 2,622,960 | 129,905 | 27.5 | 27.50 | 1.00\% | 1,299 | 0.2594 | 33697 |
| 1982 | 2,622,960 | 279,835 | (280) |  | 2,902,515 | 279,555 | 26.5 | 26.50 | 1.00\% | 2,796 | 0.2501 | 69917 |
| 1983 | 2,902,515 | 318,101 | $(2,131)$ |  | 3,218,485 | 315,970 | 25.5 | 25.50 | 1.00\% | 3,160 | 0.2408 | 76086 |
| 1984 | 3,218,485 | 141,294 |  |  | 3,359,779 | 141,294 | 24.5 | 24.50 | 1.00\% | 1,413 | 0.2315 | 32710 |
| 1985 | 3,359,779 | 368,692 |  | 5.500 | 3,733,971 | 374,192 | 23.5 | 23.50 | 1.00\% | 3,742 | 0.2221 | 83108 |
| 1986 | 3,733,971 | 355,668 | (1,702) |  | 4,087.937 | 353,966 | 22.5 | 22.50 | 1.00\% | 3,540 | 0.2127 | 75289 |
| 1987 | 4,087,937 | 521,400 | (20,746) |  | 4,588,591 | 500,654 | 21.5 | 21.50 | 1.00\% | 5,007 | 0.2033 | 101783 |
| 1988 | 4,588,591 | 602,043 | $(21,806)$ |  | 5,168,828 | 580,237 | 20.5 | 20.50 | 1.00\% | 5,802 | 0.1938 | 112450 |
| 1989 | 5,168,828 | 415,583 | $(5,283)$ |  | 5,579,128 | 410,300 | 19.5 | 19.50 | 1.00\% | 4,103 | 0.1843 | 75618 |
| 1990 | 5.579,128 | 116,589 | (7.836) |  | 5,687,881 | 108,753 | 18.5 | 18.50 | 1.00\% | 1,088 | 0.1748 | 19010 |
| 1991 | 5,687,881 | 61,029 | $(2,151)$ |  | 5,746,759 | 58,878 | 17.5 | 17.50 | 1.00\% | 589 | 0.1653 | 9733 |
| 1992 | 5.746,759 | 134,399 |  |  | 5,881,158 | 134,399 | 16.5 | 16.50 | 1.00\% | 1,344 | 0.1557 | 20926 |
| 1993 | 5,881,158 | 171,148 | (16,563) |  | 6,035,743 | 154,585 | 15.5 | 15.50 | 1.00\% | 1,546 | 0.1461 | 22585 |
| 1994 | 6,035,743 | 356,801 | (119) |  | 6,392,425 | 356,682 | 14.5 | 14.50 | 1.00\% | 3,567 | 0.1365 | 48687 |
| 1995 | 6,392,425 | 144,334 |  | 71,061 | 6,607,820 | 215,395 | 13.5 | 13.50 | 1.00\% | 2,154 | 0.1269 | 27334 |
| 1996 | 6,607,820 | 162,608 | $(11.049)$ |  | 6,759,379 | 151,559 | 12.5 | 12.50 | 1.00\% | 1.516 | 0.1172 | 17763 |
| 1997 | 6,759,379 | 247,093 | (131) |  | 7,006,341 | 246,962 | 11.5 | 11.50 | 1.00\% | 2,470 | 0.1075 | 26548 |
| 1998 | 7,006,341 | 486,194 | (47) |  | 7,492,488 | 486,147 | 10.5 | 10.50 | 1.00\% | 4,861 | 0.0978 | 47545 |
| 1999 | 7,492,488 | 754,715 |  |  | 8,247,203 | 754,715 | 9.5 | 9.50 | 1.00\% | 7,547 | 0.0881 | 66490 |
| 2000 | 8,247,203 | 1.108,591 | $(22,816)$ | 312 | 9,333,290 | 1,086,087 | 8.5 | 8.50 | 1.00\% | 10,861 | 0.0784 | 85149 |
| 2001 | 9,333.290 | 272,696 | (897) |  | 9,605,089 | 271,799 | 7.5 | 7.50 | 1.00\% | 2.718 | 0.0686 | 18645 |
| 2002 | 9,605,089 | 275,152 |  |  | 9,880,241 | 275,152 | 6.5 | 6.50 | 1.00\% | 2,752 | 0.0589 | 16206 |
| 2003 | 9,880,241 | 560,621 |  |  | 10,440,862 | 560,621 | 5.5 | 5.50 | 1.00\% | 5,606 | 0.0491 | 27526 |
| 2004 | 10,440,862 | 556,745 | $(22,717)$ |  | 10,974,890 | 534,028 | 4.5 | 4.50 | 1.00\% | 5,340 | 0.0393 | 20987 |
| 2005 | 10.974.890 | 77.352 |  |  | 11,052,242 | 77.352 | 3.5 | 3.50 | 1.00\% | 774 | 0.0295 | 2282 |
| 2006 | 11,052,242 | 1,741,105 | $(96,002)$ |  | 12,697,345 | 1,645,103 | 2.5 | 2.50 | 1.00\% | 16.451 | 0.0197 | 32409 |
| 2007 | 12,697.345 | 451.978 | (478) |  | 13,148,845 | 451,500 | 1.5 | 1.50 | 1.00\% | 4.515 | 0.0098 | 4425 |
| 2008 | 13,148,845 | 797248.07 |  | (5) | 13,946,088 | 797,243 | 0.5 | 0.50 | 1.00\% | 7.972 | 0.0000 | 0 |
|  | - | 14.376.118 | (506.898) | 76.868 | 247,405,708 | 13.946 .088 |  |  |  | 139.461 |  | 208,104 |


| $\mathbf{3 4 5}$ | TRANSMISSION \& DISTRIBUTION PLANT SERVICES |
| :---: | :--- |
| R3 |  |
| 65 | Years |
| $-\mathbf{- 2 0 \%}$ |  |












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## Aquarion Water Company of New Hampshire

 Calculated Annual and Accrued Depreciation| Account Number: | 349 | TRANSMISSION \& DISTRIBUTION PLANT OTHER T \& D PLANT |
| :--- | :---: | :--- |
| lowa Curve Type: | SQ |  |
| Avg. Service Life: | 20 | Years |
| Net Salvage Percent: | $0 \%$ |  |


| Beg Bal | Add | Ret | Adi/Trans | End Bal | Net Change | Arge | Porcent of * Anmul Depreciation . Acciued Depraclation . |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  | Avtianco | Rate | Amount | Ratio | Ant |
| $\bigcirc$ | 5,777 |  |  | 5,777 | 5,777 | 6.5 | 32.50 | 5.00\% | 289 | 0.3150 | 1820 |
| 5,777 | 30,293 |  |  | 36,070 | 30,293 | 5.5 | 27.50 | 5.00\% | 1,515 | 0.2650 | 8028 |
| 36,070 | 333 |  |  | 36.403 | 333 | 4.5 | 22.50 | 5.00\% | 17 | 0.2150 | 72 |
| 36,403 | 14,983 |  |  | 51,386 | 14,983 | 3.5 | 17.50 | 5.00\% | 749 | 0.1650 | 2472 |
| 51,386 | 21,299 |  |  | 72,685 | 21,299 | 2.5 | 12.50 | 5.00\% | 1,065 | 0.1150 | 2449 |
| 72,685 | 26,019 |  |  | 98,704 | 26,019 | 1.5 | 7.50 | 5.00\% | 1,301 | 0.0650 | 1691 |
| 98,704 |  |  |  | 98,704 | - | 0.5 | 2.50 | 5.00\% | - | 0.0150 | 0 |
| - | 98,704 |  |  | 399.729 | 98,704 |  |  |  | 4,935 |  | 16,532 |


| Net Salavage Adjustment: | - | - |
| :---: | :---: | :---: |
| Annual Depreciation: | 4,935 |  |
|  | Accrued Depreciation: | 16,532 |

Composite Annual Accrual Rate, Percent: $\quad 5.00 \%$

| 390 | GENERAL PLANT STRUCTURES \& IMPROVEMENTS |
| :---: | :--- |
| R1 |  |
| 35 | Years |
| $-10 \%$ |  |


|  | BeqBa! | ${ }^{\text {Add }}{ }_{200}$ | Ret | Adj/rans | End Bat | Net Change | Arg | Percent of Ambual Depreclailon A Corued Dopreclation |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  | Avosage | Whual Depreclation Accrued Deprectation Rale: Amount Ratio: Amt. |  |  |  |
| 1915 |  |  | 200 |  | 200 | 200 | 93.5 | 267.14 | 2.86\% | 6 | 1.0000 | 200 |
| 1916 | 200 |  |  |  |  |  |  | - | 92.5 | 264.29 | 2.86\% | - | 1.0000 | 0 |
| 1917 | 200 |  |  |  | 200 | - | 91.5 | 261.43 | 2.86\% | $\cdot$ | 1.0000 | 0 |
| 1918 | 200 |  |  |  | 200 | - | 90.5 | 258.57 | 2.86\% | - | 1.0000 | 0 |
| 1919 | 200 |  |  |  | 200 | . | 89.5 | 255.71 | 2.86\% | - | 1.0000 | 0 |
| 1920 | 200 |  |  |  | 200 | - | 88.5 | 252.86 | 2.86\% | - | 1.0000 | 0 |
| 1921 | 200 |  |  |  | 200 | - | 87.5 | 250.00 | 2.86\% | - | 1.0000 | 0 |
| 1922 | 200 |  |  |  | 200 | - | 86.5 | 247.14 | 2.86\% | - | 1.0000 | 0 |
| 1923 | 200 |  |  |  | 200 | . | 85.5 | 244.29 | 2.86\% | - | 1.0000 | 0 |
| 1924 | 200 |  |  |  | 200 | - | 84.5 | 241.43 | 2.86\% | - | 1.0000 | 0 |
| 1925 | 200 |  |  |  | 200 | - | 83.5 | 238.57 | 2.86\% | - | 1.0000 | 0 |
| 1926 | 200 |  |  |  | 200 | - | 82.5 | 235.71 | 2.86\% | - | 1.0000 | 0 |
| 1927 | 200 |  |  |  | 200 | - | 81.5 | 232.86 | 2.86\% | - | 1.0000 | 0 |
| 1928 | 200 |  |  |  | 200 | - | 80.5 | 230.00 | 2.86\% | - | 1.0000 | 0 |
| 1929 | 200 |  |  |  | 200 | - | 79.5 | 227.14 | 2.86\% | - | 1.0000 | 0 |
| 1930 | 200 |  |  |  | 200 | - | 78.5 | 224.29 | 2.86\% | - | 1.0000 | 0 |
| 1931 | 200 |  |  |  | 200 | - | 77.5 | 224.43 | 2.85\% | - | 1.0000 | 0 |
| 1932 | 200 |  |  |  | 200 | - | 76.5 | 218.57 | 2.86\% | - | 1.0000 | 0 |
| 1933 | 200 |  |  |  | 200 | - | 75.5 | 215.71 | 2.86\% | - | 1.0000 | 0 |
| 1934 | 200 |  |  |  | 200 | - | 74.5 | 212.86 | 2.86\% | - | 1.0000 | 0 |
| 1935 | 200 |  |  |  | 200 |  | 73.5 | 210.00 | 2.86\% | - | 1.0000 | 0 |
| 1936 | 200 |  |  |  | 200 | - | 72.5 | 207.14 | 2.86\% | - | 1.0000 | 0 |
| 1937 | 200 |  |  |  | 200 | - | 71.5 | 204.29 | 2.86\% | - | 1.0000 | 0 |
| 1938 | 200 |  |  |  | 200 | - | 70.5 | 201.43 | 2.86\% | - | 1.0000 | 0 |
| 1939 | 200 |  |  |  | 200 | - | 69.5 | 198.57 | 2.86\% | - | 0.9896 | 0 |
| 1940 | 200 |  |  |  | 200 | - | 68.5 | 195.71 | 2.86\% | - | 0.9801 | 0 |
| 1941 | 200 |  |  |  | 200 | - | 67.5 | 192.86 | 2.86\% | - | 0.9701 | 0 |
| 1942 | 200 |  |  |  | 200 | - | 66.5 | 190.00 | 2.86\% | - | 0.9634 | 0 |
| 1943 | 200 |  |  |  | 200 | - | 65.5 | 187.14 | 2.86\% | - | 0.9533 | 0 |
| 1944 | 200 |  |  |  | 200 | - | 64.5 | 184.29 | 2.86\% | - | 0.9435 | 0 |
| 1945 | 200 |  |  |  | 200 | - | 63.5 | 181.43 | 2.86\% | - | 0.9342 | 0 |
| 1946 | 200 |  |  |  | 200 | - | 62.5 | 178.57 | 2.86\% | * | 0.9252 | 0 |
| 1947 | 200 |  |  |  | 200 | - | 61.5 | 175.71 | 2.86\% | - | 0.9163 | 0 |
| 1948 | 200 |  |  |  | 200 | - | 60.5 | 172.86 | 2.86\% | - | 0.9074 | 0 |
| 1949 | 200 |  |  |  | 200 | - | 59.5 | 170.00 | 2.86\% | - | 0.9014 | 0 |
| 1950 | 200 |  |  |  | 200 | - | 58.5 | 167.14 | 2.86\% | - | 0.8924 | 0 |
| 1951 | 200 |  |  |  | 200 | - | 57.5 | 164.29 | 2.86\% | - | 0.8831 | 0 |
| 1952 | 200 | 170 |  |  | 370 | 170 | 56.5 | 161.43 | 2.86\% | 5 | 0.8737 | 149 |
| 1953 | 370 | 385 |  |  | 755 | 385 | 55.5 | 158.57 | 2.86\% | 11 | 0.8641 | 333 |
| 1954 | 755 |  |  |  | 755 | . | 54.5 | 155.71 | 2.86\% | . | 0.8543 | 0 |
| 1955 | 755 |  |  |  | 755 | - | 53.5 | 152.86 | 2.86\% | - | 0.8443 | 0 |
| 1956 | 755 |  |  |  | 755 | - | 52.5 | 150.00 | 2.86\% | - | 0.8376 | 0 |
| 1957 | 755 |  | (385) |  | 370 | (385) | 51.5 | 147.14 | 2.86\% | (11) | 0.8272 | -318 |
| 1958 | 370 |  |  |  | 370 | - | 50.5 | 144.29 | 2.86\% | - | 0.8166 | 0 |
| 1959 | 370 |  |  |  | 370 | - | 49.5 | 141.43 | 2.86\% | - | 0.8058 | 0 |
| 1960 | 370 |  |  |  | 370 | - | 48.5 | 138.57 | 2.86\% | - | 0.7948 | 0 |
| 1961 | 370 | 11,214 |  |  | 11,584 | 11,214 | 47.5 | 135.71 | 2.86\% | 320 | 0.7835 | 8786 |
| 1962 | 11,584 | 3,007 |  |  | 14,590 | 3,007 | 46.5 | 132.86 | 2.86\% | 86 | 0.7720 | 2321 |
| 1963 | 14,590 | 4,438 | (50) |  | 18,979 | 4.388 | 45.5 | 130.00 | 2.86\% | 125 | 0.7642 | 3354 |
| 1964 | 18,979 | 170 | 26 |  | 19,174 | 195 | 44.5 | 127.14 | 2.86\% | 6 | 0.7523 | 147 |
| 1965 | 19,174 | 126 |  |  | 19,301 | 126 | 43.5 | 124.29 | 2.86\% | 4 | 0.7401 | 94 |
| 1965 | 19,301 |  |  |  | 19,301 | - | 42.5 | 121.43 | 2.85\% | - | 0.7276 | 0 |
| 1967 | 19,301 |  |  |  | 19,301 | - | 41.5 | 118.57 | 2.86\% |  | 0.7149 | 0 |
| 1968 | 19,301 | 7.234 | (385) |  | 26,150 | 6,849 | 40.5 | 115.79 | 2.86\% | 196 | 0.7019 | 4807 |
| 1969 | 26,150 | 309 | (329) |  | 26,130 | (20) | 39.5 | 112.86 | 2.86\% | (1) | 0.6887 | -14 |
| 1970 | 26,130 |  |  |  | 26.130 | . | 38.5 | 110.00 | 2.86\% | . | 0.6797 | a |
| 1971 | 26,130 |  |  |  | 26,130 | - | 37.5 | 107.14 | 2.86\% | - | 0.6659 | 0 |
| 1972 | 26,130 |  |  |  | 26,130 | - | 36.5 | 104.29 | 2.86\% | - | 0.6519 | 0 |
| 1973 | 26,130 | 110 |  |  | 26,240 | 110 | 35.5 | 101.43 | 2.86\% | 3 | 0.6376 | 70 |
| 1974 | 26,240 |  |  |  | 26,240 | - | 34.5 | 98.57 | 2.86\% | - | 0.6230 | 0 |
| 1975 | 26,240 |  |  |  | 26,240 | - | 33.5 | 95.71 | 2.86\% | - | 0.6080 | 0 |
| 1976 | 26,240 |  |  |  | 26,240 | - | 32.5 | 92.86 | 2.86\% | - | 0.5928 | 0 |
| 1977 | 26,240 |  |  |  | 26,240 | - | 31.5 | 90.00 | 2.86\% | - | 0.5824 | 0 |
| 1978 | 26,240 |  |  |  | 26,240 | $\cdots$ | 30.5 | 87.14 | 2.86\% | - | 0.5667 | 0 |
| 1979 | 25.240 | 935 | (167) |  | 27,008 | 768 | 29.5 | 84.29 | 2.86\% | 22 | 0.5506 | 423 |
| 1980 | 27.008 | 24,180 |  |  | 51,183 | 24,180 | 28.5 | 81.43 | 2.86\% | 691 | 0.5342 | 12917 |
| 1981 | 51,188 |  |  |  | 51,188 | - | 27.5 | 78.57 | 2.86\% | - | 0.5174 | 0 |
| 1982 | 51,188 |  |  |  | 51.188 | - | 26.5 | 75.71 | 2.86\% | - | 0.5004 | 0 |
| 1983 | 51,188 | 9,087 |  |  | 60,275 | 9,087 | 25.5 | 72.86 | 2.86\% | 260 | 0.4831 | 4390 |
| 1984 | 60.275 | 27,584 | (935) |  | 86.924 | 26,649 | 24.5 | 70.00 | 2.86\% | 761 | 0.4714 | 12562 |
| 1985 | 86,924 | 780 |  |  | 87,704 | 780 | 23.5 | 67.14 | 2.86\% | 22 | 0.4535 | 354 |
| 1986 | 87,704 | 36,934 | $(1,103)$ |  | 123.535 | 35,831 | 22.5 | 64.29 | 2.86\% | 1.024 | 0.4354 | 15601 |
| 1987 | 123,535 | 111,347 | 37 |  | 234,919 | 111,384 | 21.5 | 61.43 | 2.86\% | 3,182 | 0.4170 | 46447 |
| 1988 | 234,919 | 34,415 | \% 5 5,754. |  | 275,088 | 40,169 | 20.5 | 58.57 | 2.86\% | 1.148 | 0.3983 | 15999 |
| 1989 | 275,088 |  |  |  | 275,088 | - | 19.5 | 55.71 | 2.86\% | - | 0.3794 | 0 |
| 1990 | 275,088 |  | \%-23,820. |  | 298.908 | 23,820 | 18.5 | 52.86 | 2.86\% | 681 | 0.3602 | 8580 |
| 1991 | 298,908 |  | (780) |  | 298,128 | (780) | 17.5 | 50.00 | 2.86\% | (22) | 0.3473 | -271 |
| 1992 | 298,128 | 12,595 | $(51,613)$ |  | 259,110 | (39,018) | 16.5 | 47.14 | 2.86\% | (1.115) | 0.3278 | -12790 |
| 1993 | 259,110 |  | (803) |  | 258.307 | (803) | 15.5 | 44.29 | 2.86\% | (23) | 0.3080 | -247 |
| 1994 | 258.307 |  |  |  | 258,307 | - | 14.5 | 41.43 | 2.86\% | - | 0.2881 | 0 |
| 1995 | 258,307 |  |  |  | 258,307 | - | 13.5 | 38.57 | 2.86\% | $\cdot$ | 0.2680 | 0 |
| 1996 | 258,307 | 4,000 |  |  | 262,307 | 4.000 | 12.5 | 35.71 | 2.86\% | 114 | 0.2477 | 991 |
| 1997 | 262,307 |  |  | 780 | 263,087 | 780 | 11.5 | 32.86 | 2.88\% | 22 | 0.2273 | 177 |
| 1998 | 263,087 |  |  |  | 263,087 | - | 10.5 | 30.00 | 2.86\% | . | 0.2136 | 0 |
| 1999 | 263,087 |  |  |  | 263,087 | - | 9.5 | 27.14 | 2.86\% | $\bigcirc{ }^{-}$ | 0.1930 | 0 |
| 2000 | 263,087 | 93,097 | (991) | (25,351) | 329,842 | 66,755 | 8.5 | 24.29 | 2.86\% | 1.907 | 0.1722 | 11495 |
| 2001 | 329,842 | 6,863 |  |  | 336,705 | 6,863 | 7.5 | 21.43 | 2.86\% | 196 | 0.1513 | 1038 |
| 2002 | 336,705 | 99,386 |  |  | 436.091 | 99,386 | 6.5 | 18.57 | 2.86\% | 2.840 | 0.1302 | 12940 |
| 2003 | 436.091 | 32.290 |  |  | 468,381 | 32,290 | 5.5 | 15.71 | 2.86\% | 923 | 0.1090 | 3520 |
| 2004 | 468,381 | 5,316 |  |  | 473.697 | 5,316 | 4.5 | 12.86 | 2.86\% | 152 | 0.0876 | 466 |
| 2005 | 473,697 | 109,284 |  |  | 582,981 | 109,284 | 3.5 | 10.00 | 2.86\% | 3,122 | 0.0732 | 8000 |
| 2006 | 582,981 | 7,827 |  |  | 590,808 | 7,827 | 2.5 | 7.14 | 2.88\% | 224 | 0.0515 | 403 |
| 2007 | 590,808 |  |  |  | 590.808 | - | 1.5 | 4.29 | 2.86\% | . | 0.0295 | 0 |
| 2008 | 590,808 |  |  |  | 590,808 | - | 0.5 | 1.43 | 2.86\% | - | 0.0074 | 0 |
|  | . | 643,283 | (27.904) |  | 8,829.460 | 590.808 |  |  |  | 16.880 |  | 162.922 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | Net Salavage Ad | justment | 1,68 |  | 16.292 |
|  |  |  |  |  |  |  |  | Annual Dep | reclation | 18,568 |  |  |
|  |  |  |  |  |  |  |  |  |  | Accrued D | preciation: | 179,214 |
|  |  |  |  |  |  |  |  | te Annual | crual | Perce | 3.14 |  |

Aquarion Water Company of New Hampshire
Calculated Annual and Accrued Depreciation



Aquarion Water Company of New Hampshire
Calculated Annual and Accrued Depreciation


Aquarion Water Company of New Hampshire Calculated Annual and Accrued Depreciation

| Account Number: | 393 | GENERAL. PLANT STORES EQUIPMENT |
| :--- | :---: | :--- |
| lowa Curve Type: | SQ |  |
| Avg. Service Life: | 20 | Years |
| Net Salvage Percent: | $0 \%$ |  |


| 1958 |
| :--- |
| 1959 |
| 1960 |
| 1961 |
| 1962 |
| 1963 |
| 1964 |
| 1965 |
| 1966 |
| 1967 |
| 1968 |
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| 1970 |
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| 2002 |
| 2003 |
| 2004 |
| 2005 |
| 2006 |
| 2007 |
| 2008 |


| Beg Bal | ${ }^{\text {Add }} 185$ | Ret | Ad//Trans | End Bal | Nat Change | Anes | Forcent of A Anual Depreclation Accrued Daproclation |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  | Avaisama | Rate. | Amount | Ratio | Amt |
| - |  |  |  | 185 | 185 | 50.5 | 252.50 | 5.00\% | 9 | 1.0000 | 185 |
| 185 |  |  |  | 185 | - | 49.5 | 247.50 | 5.00\% | - | 1.0000 | 0 |
| 185 |  |  |  | 185 | - | 48.5 | 242.50 | 5.00\% | - | 1.0000 | 0 |
| 185 |  |  |  | 185 | - | 47.5 | 237.50 | 5.00\% | - | 1.0000 | 0 |
| 185 |  |  |  | 185 | - | 46.5 | 232.50 | 5.00\% | - | 1.0000 | 0 |
| 185 |  |  |  | 185 | - | 45.5 | 227.50 | 5.00\% | - | 1.0000 | 0 |
| 185 |  |  |  | 185 | - | 44.5 | 222.50 | 5.00\% | - | 1.0000 | 0 |
| 185 |  |  |  | 185 | - | 43.5 | 217.50 | 5.00\% | - | 1.0000 | 0 |
| 185 |  |  |  | 185 | - | 42.5 | 212.50 | 5.00\% | - | 1.0000 | 0 |
| 185 |  |  |  | 185 | - | 41.5 | 207.50 | 5.00\% | - | 1.0000 | 0 |
| 185 |  |  |  | 185 | - | 40.5 | 202.50 | 5.00\% | - | 1.0000 | 0 |
| 185 |  | 159 |  | 344 | 159 | 39.5 | 197.50 | 5.00\% | 8 | 1.0000 | 159 |
| 344 |  |  |  | 344 | - | 38.5 | 192.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | - | 37.5 | 187.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | - | 36.5 | 182.50 | 5.00\% | - | 1.0ưou | 0 |
| 344 |  |  |  | 344 | - | 35.5 | 177.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | . | 34.5 | 172.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | - | 33.5 | 167.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | - | 32.5 | 162.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | - | 31.5 | 157.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | - | 30.5 | 152.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | - | 29.5 | 147.50 | 5.00\% | * | 1.0000 | 0 |
| 344 |  |  |  | 344 | - | 28.5 | 142.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | - | 27.5 | 137.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | - | 26.5 | 132.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | - | 25.5 | 127.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | - | 24.5 | 122.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | - | 23.5 | 117.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | - | 22.5 | 112.50 | 5.00\% | - | 1.0000 | 0 |
| 344 |  |  |  | 344 | $\cdot$ | 21.5 | 107.50 | 5.00\% | " | 1.0000 | 0 |
| 344 | 2,094 |  |  | 2,438 | 2,094 | 20.5 | 102.50 | 5.00\% | 105 | 1.0000 | 2094 |
| 2,438 |  |  |  | 2,438 | - | 19.5 | 97.50 | 5.00\% | . | 0.9650 | 0 |
| 2,438 |  |  |  | 2,438 | * | 18.5 | 92.50 | 5.00\% | - | 0.9150 | 0 |
| 2,438 |  |  |  | 2,438 | - | 17.5 | 87.50 | 5.00\% | $\bullet$ | 0.8550 | 0 |
| 2,438 |  |  |  | 2.438 | - | 16.5 | 82.50 | 5.00\% | - | 0.8150 | 0 |
| 2,438 |  |  |  | 2,438 | - | 15.5 | 77.50 | 5.00\% | - | 0.7650 | 0 |
| 2,438 |  |  |  | 2,438 | - | 14.5 | 72.50 | 5.00\% | - | 0.7150 | 0 |
| 2,438 |  |  |  | 2.438 | - | 13.5 | 67.50 | 5.00\% | - | 0.6650 | 0 |
| 2,438 |  |  |  | 2,438 | - | 12.5 | 62.50 | 5.00\% | - | 0.6150 | 0 |
| 2,438 |  |  |  | 2.438 | - | 11.5 | 57.50 | 5.00\% | * | 0.5550 | 0 |
| 2,438 |  |  |  | 2,438 | - | 10.5 | 52.50 | 5.00\% | * | 0.5150 | 0 |
| 2,438 |  |  |  | 2,438 | - | 9.5 | 47.50 | 5.00\% | - | 0.4650 | 0 |
| 2,438 |  |  |  | 2,438 | - | 8.5 | 42.50 | 5.00\% | - | 0.4150 | 0 |
| 2,438 |  |  |  | 2,438 | - | 7.5 | 37.50 | 5.00\% | - | 0.3650 | 0 |
| 2,438 |  |  |  | 2,438 | - | 6.5 | 32.50 | 5.00\% | - | 0.3150 | 0 |
| 2,438 |  |  |  | 2,438 | - | 5.5 | 27.50 | 5.00\% | - | 0.2650 | 0 |
| 2,438 |  |  |  | 2,438 | * | 4.5 | 22.50 | 5.00\% | - | 0.2150 | 0 |
| 2.438 |  |  |  | 2,438 | - | 3.5 | 17.50 | 5.00\% | - | 0.1650 | 0 |
| 2,438 | 15,454 |  |  | 17,892 | 15,454 | 2.5 | 12.50 | 5.00\% | 773 | 0.1150 | 1777 |
| 17,892 |  |  |  | 17,892 | - | 1.5 | 7.50 | 5.00\% | - | 0.0650 | 0 |
| 17,892 |  |  |  | 17,882 | - | 0.5 | 2.50 | 5.00\% | - | 0.0150 | 0 |
| - | 17,733 | 159 |  | 106,119 | 17,892 |  |  |  | 895 |  | 4,215 |
|  |  |  |  |  |  |  | et Salavage Ad | ustment | - |  | - |
|  |  |  |  |  |  |  | Annual Dep | reciation | 885 |  |  |
|  |  |  |  |  |  |  |  |  | crrued De | reciation: | 4,215 |

# Aquarion Water Company of New Hampshire 

Calculated Annual and Accrued Depreciation

| Account Number: | 394 | GENERAL PLANT TOOLS, SHOP \& GARAGE EQUIPMENT |
| :--- | :---: | :--- |
| lowa Curve Type: | SQ |  |
| Avg. Service Life: | 20 | Years |
| Net Salvage Percent: | $0 \%$ |  |


|  |  |  |  |  |  |  |  |  | arcent af | Ambual | rectation | ceruedp | clation |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Beq Bal | Add | Ret | Adi/Trans | End Bal | Net Change | 24030 | Avgiking | Rata | Anrount | Ratio: | Amt: |
|  | 1962 | - | 1,599 |  |  | 1.599 | 1.599 | 46.5 | 232.50 | 5.00\% | 80 | 1.0000 | 1599 |
|  | 1963 | 1,599 |  |  |  | 1,599 | - | 45.5 | 227.50 | 5.00\% | - | 1.0000 | 0 |
|  | 1964 | 1,599 | 67 | (194) |  | 1.472 | (128) | 44.5 | 222.50 | 5.00\% | (6) | 1.0000 | -128 |
|  | 1965 | 1,472 | 781 | (30) |  | 2,223 | 751 | 43.5 | 217.50 | 5.00\% | 38 | 1.0000 | 751 |
|  | 1966 | 2,223 |  | (500) |  | 1.722 | (500) | 42.5 | 212.50 | 5.00\% | (25) | 1.0000 | -500 |
|  | 1967 | 1,722 |  |  |  | 1,722 | - | 41.5 | 207.50 | 5.00\% | - | 1.0000 | 0 |
|  | 1968 | 1,722 |  |  |  | 1,722 | - | 40.5 | 202.50 | 5.00\% | - | 1.0000 | 0 |
|  | 1969 | 1,722 | 331 | 1,443 |  | 3.496 | 1,774 | 38.5 | 197.50 | 5.00\% | 89 | 1.0000 | 1774 |
|  | 1970 | 3,496 | 578 | (568) |  | 3,506 | 10 | 38.5 | 192.50 | 5.00\% | 1 | 1.0000 | 10 |
|  | 1971 | 3,506 |  | 13,322 |  | 16,828 | 13,322 | 37.5 | 187.50 | 5.00\% | 666 | 1.0000 | 13322 |
|  | 1972 | 16,828 | 775 | (589) |  | 17.014 | 185 | 36.5 | 182.50 | 5.00\% | 9 | 1.0000 | 185 |
|  | 1973 | 17,014 | 1,836 | $(1,238)$ |  | 17.612 | 598 | 35.5 | 177.50 | 5.00\% | 30 | 1.0000 | 598. |
|  | 1974 | 17,612 |  | (695) |  | 16,917 | (695) | 34.5 | 172.50 | 5.00\% | (35) | 1.0000 | -695 |
|  | 1975 | 16,917 | 401 |  |  | 17,318 | 401 | 33.5 | 167.50 | 5.00\% | 20 | 1.0000 | 401 |
|  | 1976 | 17,318 | 811 | (270) |  | 17,859 | 541 | 32.5 | 162.50 | 5.00\% | 27 | 1.0000 | 541 |
|  | 1977 | 17,858 | 638 | (401) |  | 18,096 | 237 | 31.5 | 157.50 | 5.00\% | 12 | 1.0000 | 237 |
|  | 1978 | 18,096 |  |  |  | 18,096 | . | 30.5 | 152.50 | 5.00\% | - | 1.0000 | 0 |
|  | 1979 | 18,096 | 11.189 | $(4,455)$ |  | 24,830 | 6,734 | 29.5 | 147.50 | 5.00\% | 337 | 1.0000 | 6734 |
|  | 1980 | 24,830 | 2,662 | (615) |  | 26,877 | 2.047 | 28.5 | 142.50 | 5.00\% | 102 | 1.0000 | 2047 |
|  | 1981 | 26,877 | 2,101 |  |  | 28,978 | 2,101 | 27.5 | 137.50 | 5.00\% | 105 | 1.0000 | 2101 |
|  | 1982 | 28,978 |  |  |  | 28,978 | - | 26.5 | 132.50 | 5.00\% | . | 1.0000 | 0 |
|  | 1983 | 28,978 | 6,375 | $(1,233)$ |  | 34,120 | 5.142 | 25.5 | 127.50 | 5.00\% | 257 | 1.0000 | 5142 |
|  | 1984 | 34,120 | (589) | (137) |  | 33,394 | (726) | 24.5 | 122,50 | 5.00\% | (36) | 1.0000 | -726 |
|  | 1985 | 33,394 | 979 |  |  | 34,373 | 979 | 23.5 | 117.50 | 5.00\% | 49 | 1.0000 | 979 |
|  | 1986 | 34,373 | 2,092 |  |  | 36,465 | 2,092 | 22.5 | 112.50 | 5.00\% | 105 | 1.0000 | 2092 |
|  | 1987 | 36,465 | 1,192 |  |  | 37,657 | 1,192 | 21.5 | 107.50 | 5.00\% | 60 | 1.0000 | 1192 |
|  | 1988 | 37,657 | 967 | 506 |  | 39,130 | 1,473 | 20.5 | 102.50 | 5.00\% | 74 | 1.0000 | 1473 |
|  | 1989 | 39,130 | 2,450 | (900) |  | 40,680 | 1,550 | 19.5 | 97.50 | 5.00\% | 78 | 0.9650 | 1496 |
|  | 1990 | 40,680 | 5,657 |  |  | 46,337 | 5,657 | 18.5 | 92.50 | 5.00\% | 283 | 0.9150 | 5176 |
|  | 1991 | 46,337 | 6,780 |  |  | 53,117 | 6,780 | 17.5 | 87.50 | 5.00\% | 339 | 0.8550 | 5797 |
|  | 1992 | 53,117 | 1.646 | (157) |  | 54,606 | 1,489 | 16.5 | 82.50 | 5.00\% | 74 | 0.8150 | 1214 |
|  | 1993 | 54,606 | 3,111 | (700) |  | 57,017 | 2,411 | 15.5 | 77.50 | 5.00\% | 121 | 0.7650 | 1844 |
|  | 1994 | 57,017 | 6,097 |  |  | 63,114 | 6,097 | 14.5 | 72.50 | 5.00\% | 305 | 0.7150 | 4359 |
|  | 1995 | 63,114 | 5,001 |  |  | 68,115 | 5,001 | 13.5 | 67.50 | 5.00\% | 250 | 0.6650 | 3326 |
|  | 1996 | 68,115 | 2,487 |  |  | 70,602 | 2,487 | 12.5 | 62.50 | 5.00\% | 124 | 0.6150 | 1530 |
|  | 1997 | 70,602 | 2,896 |  |  | 73,498 | 2,896 | 11.5 | 57.50 | 5.00\% | 145 | 0.5550 | 1607 |
|  | 1998 | 73,498 |  |  |  | 73,498 | - | 10.5 | 52.50 | 5.00\% | - | 0.5150 | 0 |
|  | 1999 | 73,498 | 7.252 |  |  | 80,750 | 7,252 | 9.5 | 47.50 | 5.00\% | 363 | 0.4650 | 3372 |
|  | 2000 | 80,750 | 238 |  |  | 80,988 | 238 | 8.5 | 42.50 | 5.00\% | 12 | 0.4150 | 99 |
|  | 2001 | 80,988 |  |  |  | 80,988 | - | 7.5 | 37.50 | 5.00\% | . | 0.3650 | 0 |
|  | 2002 | 80,988 |  |  |  | 80,988 | - | 6.5 | 32.50 | 5.00\% | - | 0.3150 | 0 |
|  | 2003 | 80,988 | 37,339 |  |  | 118,327 | 37,339 | 5.5 | 27.50 | 5.00\% | 1,867 | 0.2650 | 9895 |
|  | 2004 | 118,327 |  |  |  | 118,327 | - | 4.5 | 22.50 | 5.00\% | - | 0.2150 | 0 |
|  | 2005 | 118,327 | 24.494 |  |  | 142,821 | 24,494 | 3.5 | 17.50 | 5.00\% | 1,225 | 0.1650 | 4042 |
|  | 2006 | 142,821 |  |  |  | 142,821 | - | 2.5 | 12.50 | 5.00\% | - | 0.1150 | 0 |
|  | 2007 | 142,821 |  |  |  | 142,821 | - | 1.5 | 7.50 | 5.00\% | - | 0.0650 | 0 |
|  | 2008 | 142,821 |  |  | -50 | 142,771 | (50) | 0.5 | 2.50 | 5.00\% | (3) | 0.0150 | -1 |
|  |  | - | 140,232 | 2,589 |  | 2,215,780 | 142,771 |  |  |  | 7.139 |  | 82,885 |
|  |  |  |  |  |  |  |  |  | t Salavage Ac | djustmen | - |  | - |
|  |  |  |  |  |  |  |  |  | Annual Dep | preciation | 7,139 |  |  |
|  |  |  |  |  |  |  |  |  |  |  | ccrued D | reciation: | 82,885 |
|  |  |  |  |  |  |  |  |  | Site Annual Ac | ccrual Ra | Parcent: | 5.00\% |  |



Calculated Annual and Accrued Depreciation
397
SQ GENERAL PLANT COMMUNICATIONS EQUIPMENT
10


| Account Number: | 398 | MISCELLANEOUS EQUIPMENT |
| :--- | :---: | :--- |
| lowa Curve Type: | SQ |  |
| Avg. Service Life: | 15 | Years |
| Net Salvage Percent: | $0 \%$ |  |

1971
1972
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2007
2008


