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RECLAMATION FACILITY OUTFALL VALUATION STUDY

AVON LAKE BOARD OF MUNICIPAL UTILITIES
LORAIN COUNTY RURAL WASTEWATER DISTRICT
LORAIN COUNTY, OHIO

PN 185046
FINAL REPORT
AUGUST 21, 2025

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List of Abbreviations

Abbreviation	Term/Phrase/Name
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
1898 & Co.	A part of Burns & McDonnell
ALRW	Avon Lake Regional Water
ALWC	Accelerated Low Water Corrosion
ASA	American Society of Appraisers
ASL	Average Service Life
Assets	Effluent Outfall System assets
AWWA	American Water Works Association
CCI	Engineering News Records Construction Cost Index
CIP	Capital Improvement Projects
Client	Avon Lake Board of Municipal Utilities Lorain County Rural Wastewater District Lorain County, Ohio
ENR	Engineering News-Record
EQ	Equalization
FMV	Fair Market Value
GPM	Gallons Per Minute
HWI	Handy-Whitman Index
MGD	Million Gallons per Day
OC	Original Construction Cost
PCCP	Pre-Stressed Concrete Cylinder Pipe
PPN	Permanent Parcel Number
RCN	Reproduction Cost New
RCNLD	Reproduction Cost New Less Depreciation
Station	The LORCO Four-Plex Sanitary Pump
TDH	Total Dynamic Head
WRF	Water Reclamation Facility

Introduction

Background

Avon Lake Board of Municipal Utilities, Lorain County Rural Wastewater District , and Lorain County, Ohio (collectively, "Client") has engaged 1898 & Co. to perform a valuation study of the Accelerated Low Water Corrosion (ALWC) Effluent Outfall System (Assets, Outfall) owned by the City of Avon Lake, Ohio. The Assets include a 36-/24-inch effluent pipeline, diversion junction valve, and submerged diffuser.

Scope of Study

The scope of this Study and report consists of the following sections:

Assets Under Consideration	Provides a general description of the major assets being valued and a brief overview discussion on the current state of the Outfall based on independent visual observation during a site visit.
Cost Approach Valuation	Summarizes the reproduction cost approach valuation analysis used to estimate the Fair Market Value (FMV) of the Outfall.
Valuation Summary	Summarizes the results of the valuation analyses used to estimate the FMV of the Outfall.

Valuation Determination

Three (3) appraisal approaches to determining value are generally accepted as standard valuation methodologies. For this study one (1) approach was used in evaluating the FMV of the Assets, namely the cost approach. These approaches, along with other frequently used valuation terms, are defined below to ensure clarity and understanding of the terms used in this report.

Cost Approach: The cost approach is one of three accepted valuation methodologies. The value of a property under the cost approach is determined as the maximum amount a knowledgeable buyer would pay for the property based on either (1) the cost of producing a substitute with the same function as the subject property or (2) the cost of reproducing an identical substitute of the subject property.

Market Approach: The market approach is the second of three accepted valuation methodologies. The value of a property under the market approach is determined based on an evaluation of the amounts knowledgeable buyers have paid for similar properties recently sold in the market. Overall, the market approach relies on a comparative analysis of similar property transactions to develop an indication of the most probable selling price of the subject property.

Income Approach: The value of a property under the income approach is determined based on the present worth of future benefits derived from ownership of the subject property measured as the discounted value of a net income stream over a specified time.

Reproduction Cost New (RCN): RCN is defined as the current cost as of a certain time of producing a new property identical to the subject property, comprised of the same or similar materials.

Reproduction Cost New Less Depreciation (RCNLD): Defined as the RCN adjusted to reflect the loss in value of the asset due to age, wear and tear, service, and/or obsolescence as of a certain time.

Fair Market Value: The fair market value (FMV) of a property is equal to the amount that may reasonably be expected in an exchange between a willing buyer and a willing seller, neither under any compulsion to buy or sell, and both are fully aware of all relevant facts.

The terms and definitions above are based on definitions prescribed by the American Society of Appraisers ("ASA").

Sources of Data

The data and information supporting this Study were supplied largely by the Client. This included computer-generated information and reports and other documents such as construction contracts and asset records. Other supplemental data sources included American Water Works Association (AWWA) average service life (ASL) data for pipe materials.

Original Cost Data	Original construction costs were obtained from the Avon Lake, Ohio, Board of Municipal Utilities meeting minutes dated March 23, 1970, which document the signed board approval for the submerged outfall sewer project.
Engineering & Owner's Costs	Engineering and Owner's costs were estimated based on 1898 & Co. industry experience.
Piping Materials	The ASL for Pre-stressed Concrete Cylinder Pipe (PCCP) was adopted from the cited AWWA study [1].
Survivor Curve	The Iowa survivor type curve was assigned based on 1898 & Co.'s experience.

Statement of Limitations

The estimate of the FMV of the Assets was developed expressly subject to the following limiting conditions:

[1] American Water Works Association. (2012). *Buried No Longer: Confronting America's Water Infrastructure Challenge*. Denver, CO: American Water Works Association.

1	In preparation of this report, 1898 & Co. relied upon information provided by the Client. While 1898 & Co. has no reason to believe that the information provided to it and upon which 1898 & Co. has relied is inaccurate in any material respect, 1898 & Co. has not independently verified such information and cannot guarantee its accuracy or completeness.
2	This report was prepared with the assumption that all contracts and agreements as well as all statutes, regulations, rules, and permit requirements under which the Assets were constructed and are operating, will be fully enforceable in accordance with their terms and conditions. 1898 & Co. makes no representations or warranties and provides no opinion regarding the enforceability or legal interpretation of such contractual or legal requirements.
3	This valuation is developed using the Cost Approach in support of determining the FMV of the Assets.
4	1898 & Co. did not conduct a technical engineering review of each asset's construction, operations, performance, or condition. The observations documented within this Report are limited to visual condition observations of the Assets made during 1898 & Co.'s site visit conducted on May 12, 2025.
5	Please note that this Report and the accompanying FMV assessment reflect only those assets in service as of May 12, 2025.
6	The Client should adjust the FMV presented in this Report to reflect any assets added through capital-improvement projects between May 12, 2025, and the closing date of a future transaction.
7	This Report is reflective of analysis and value conclusions as of July 28, 2025.

Overview

Outfall Description

The ALWC Effluent Outfall begins at the Avon Lake Water Reclamation Facility (WRF), 180 Shields Road in Avon Lake, Ohio (Lorain County Parcel No. 04-00-006-114-077). UV-disinfected secondary effluent leaves the plant through a dedicated pipeline that follows public rights-of-way and State-leased submerged lands before discharging to Lake Erie via a submerged diffuser located roughly 1,200 feet offshore.

The WRF is rated for an average capacity of 6.5 MGD. Treatment flows in excess of 7.0 MGD and up to 20 MGD are diverted to an onshore flow diversion structure and authorized under the current facility's National Pollutant Discharge Elimination System permit. During normal flow conditions (≤ ≈7 MGD), all effluent is conveyed to the offshore diffuser, which is fitted with check-valve style ports and flap gates to ensure continuous submergence and prevent lake backflow.

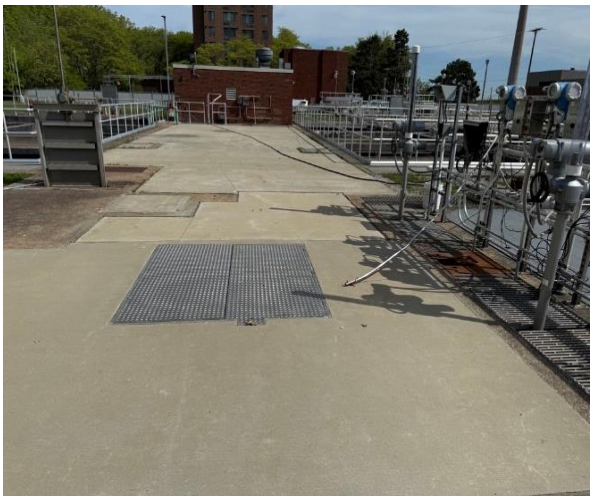
Facility staff indicated that when treatment flows rise above approximately 7–8 MGD, an automated valve in an on-shore flow diversion structure diverts excess discharge volume to a secondary pipe that ties into the City's 108-inch storm sewer, allowing gravity discharge to Lake Erie near the shoreline. This dual-path arrangement provides hydraulic redundancy and protects the plant during extreme wet-weather surges.

Supporting infrastructure includes an access manhole for inspection and pigging, cathodic-protection test stations, and an annual diver survey program that confirms diffuser integrity and burial depth. Together, these elements deliver a reliable, permit-compliant effluent discharge strategy while maintaining operational flexibility for Avon Lake Regional Water (ALRW).

Asset Condition

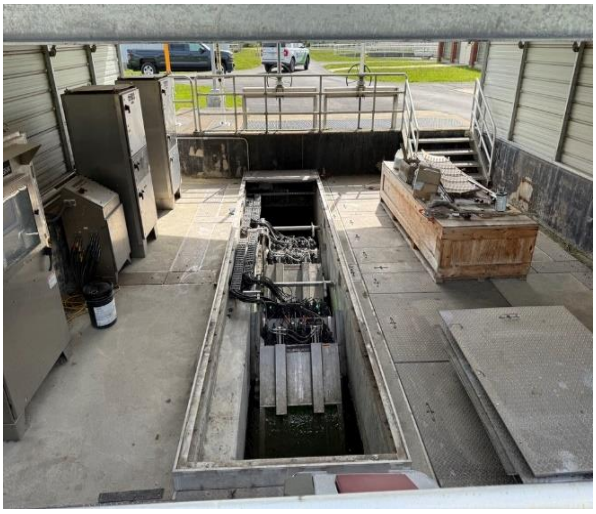
On May 12, 2025, 1898 & Co. conducted a site visit to verify that the accounting data provided is consistent with the assets that are physically located at the site. 1898 & Co. did not conduct a condition assessment but generally observed that the assets are well maintained. The following figures present photographs of some assets located at the site.

Figure 1: Flow Diversion Structure Vault



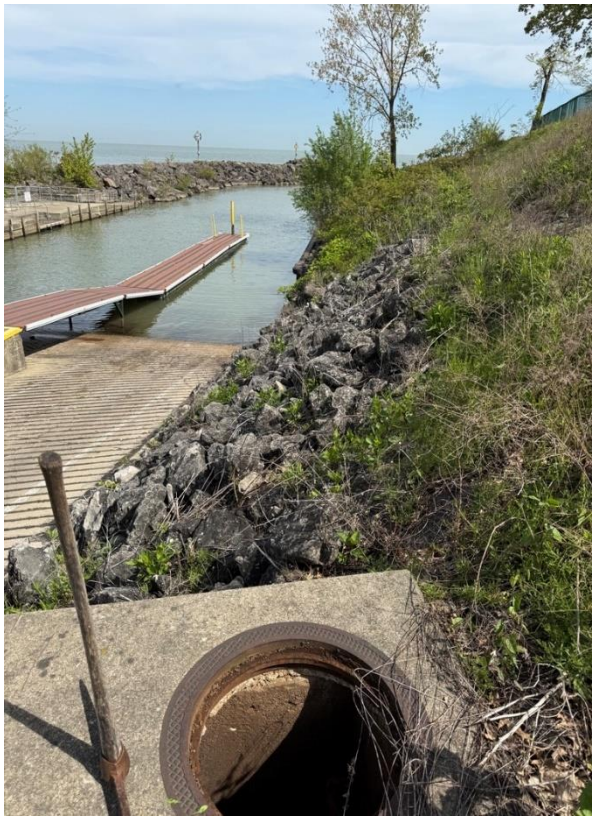
Photograph taken during May 12, 2025, site visit.

Figure 2: UV Disinfection



Photograph taken during May 12, 2025, site visit.

Figure 3: Outfall Manhole & Lake



Photograph taken during May 12, 2025, site visit.

Cost Valuation

The Client requested a FMV assessment of the Outfall. The reproduction cost approach is one of the valuation methods utilized by 1898 & Co. to estimate the value of the Assets. Under the reproduction cost approach, the FMV is determined as the cost of reproducing an identical asset with the same or similar material and technology, also considering factors such as age and obsolescence.

Reproduction Cost Approach

The American Society of Appraisers (ASA) defines Reproduction Cost New (RCN) as the current cost, as of a specific date, to reproduce a new replica of the subject property using similar materials and construction methods that provide equivalent utility. 1898 & Co. estimated the RCN by identifying the costs that would be incurred to reproduce identical or functionally similar assets, including all associated auxiliary components, using comparable materials, equipment, and construction practices where practical.

To determine the RCN, 1898 & Co. utilized the original asset cost data provided by the Client and applied appropriate cost escalation factors. Specifically, Handy-Whitman Index (HWI) values for the North Central region were applied to reflect inflation through July 2024. In addition to HWI, the Engineering News-Record (ENR) Construction Cost Index (CCI) for Cleveland, Ohio was used to further adjust costs for inflation occurring between July 2024 and July 2025.

To estimate the value of an asset using the RCN methodology, it is essential to account for both depreciation and obsolescence. To calculate the Reproduction Cost New Less Depreciation (RCNLD) values, 1898 & Co. employed Iowa-type survivor curves. These statistical models assign a remaining life percentage to each asset based on its age and classification. This percentage is then applied to the Asset's RCN value to derive the corresponding RCNLD.

An ASL and survivor curve was assigned to the outfall using the sources identified in the **Error! Reference s ource not found.** Section: (1) the AWWA study, and (2) 1898 & Co.'s industry experience. AWWA's published PCCP ASLs were applied to the assets, while 1898 & Co. relied on experience to assign the most appropriate survivor curve for the PCCP.

Effluent Outfall System Reproduction Cost Valuation

Utilizing this method, 1898 & Co. developed the RCN estimates for the Assets by escalating original construction costs (OC) to 2025 dollars, then adjusted for depreciation. The total OC of the Assets, including Engineering and Owner's costs, is $283,776, the calculated RCN value is $2.78 million, and the calculated RCNLD value is $2.61 million as summarized in Table 1.

Table 1 : Effluent Outfall System Reproduction Cost Analysis

Reclamation Facility Outfall	NARUC Account #	Original Construction Date	Valuation Year	Asset Installation Cost	Handy-Whitman Index	Handy-Whitman Trend Factor	Engineering News Record Trend Factor	Total Trend Factor	Reproduction Cost New (2025 $)	Current Age (Years)	Average Service Life (Years)	Survivor Curve	Remaining Life Condition %	Reproduction Cost New Less Depreciation
Submerged Outfall Sewer	311	3/23/1970	2025	$283,776	Collecting & Impounding Res.	9.77	1.03	9.81	$2,783,000	55	105	R3	94%	$2,609,000
Total				$283,776					$2,783,000					$2,609,000

Valuation Summary

The Client engaged 1898 & Co. to prepare a valuation of the Accelerated Low Water Corrosion Effluent Outfall System owned by the City of Avon Lake, Ohio. The fair market value (FMV) of the Assets was estimated using the Reproduction Cost New valuation methodology. A summary of the valuation analyses is presented in Table . The original construction cost of the Assets is $283,776. After adjusting for inflation, the calculated reproduction cost new for the Assets is $2.78 million. An adjustment was then applied to account for the Assets' age and physical depreciation. The resulting reproduction cost new less depreciation value of $2.61 million represents the estimated FMV of the Assets. This valuation exclusively reflects those assets listed in the fixed asset records provided by the Client as of July 28, 2025.

Table 2: Valuation Summary of Results

Original Construction Cost	$283,776
Reproduction Cost New	$2,783,000
Reproduction Cost New Less Depreciation	**$2,609,000**

- The reported analyses, opinions, and conclusions in this Report are limited only by the reported assumptions and limiting conditions, and are unbiased, professional analyses, opinions, and conclusions.
- 1898 & Co. has no present or prospective interest in the Assets valued in this Report and 1898 & Co. has no bias with respect to the parties involved.
- 1898 & Co's. compensation is not contingent upon the reporting of a predetermined value or direction in value that favors the cause of the Client, the amount of the value estimate, the attainment of a stipulated result, or the occurrence of a subsequent event.
- The analyses, opinions, and conclusions were developed, and this Report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice.
- 1898 & Co. conducted a visual onsite inspection of the major assets being valued to verify the Assets are present and in adequate condition relative to their age. The site visit was conducted on May 12, 2025. 1898 & Co. did not conduct technical inspections or engineering reviews of the assets while completing this Study or during its site visit.

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