

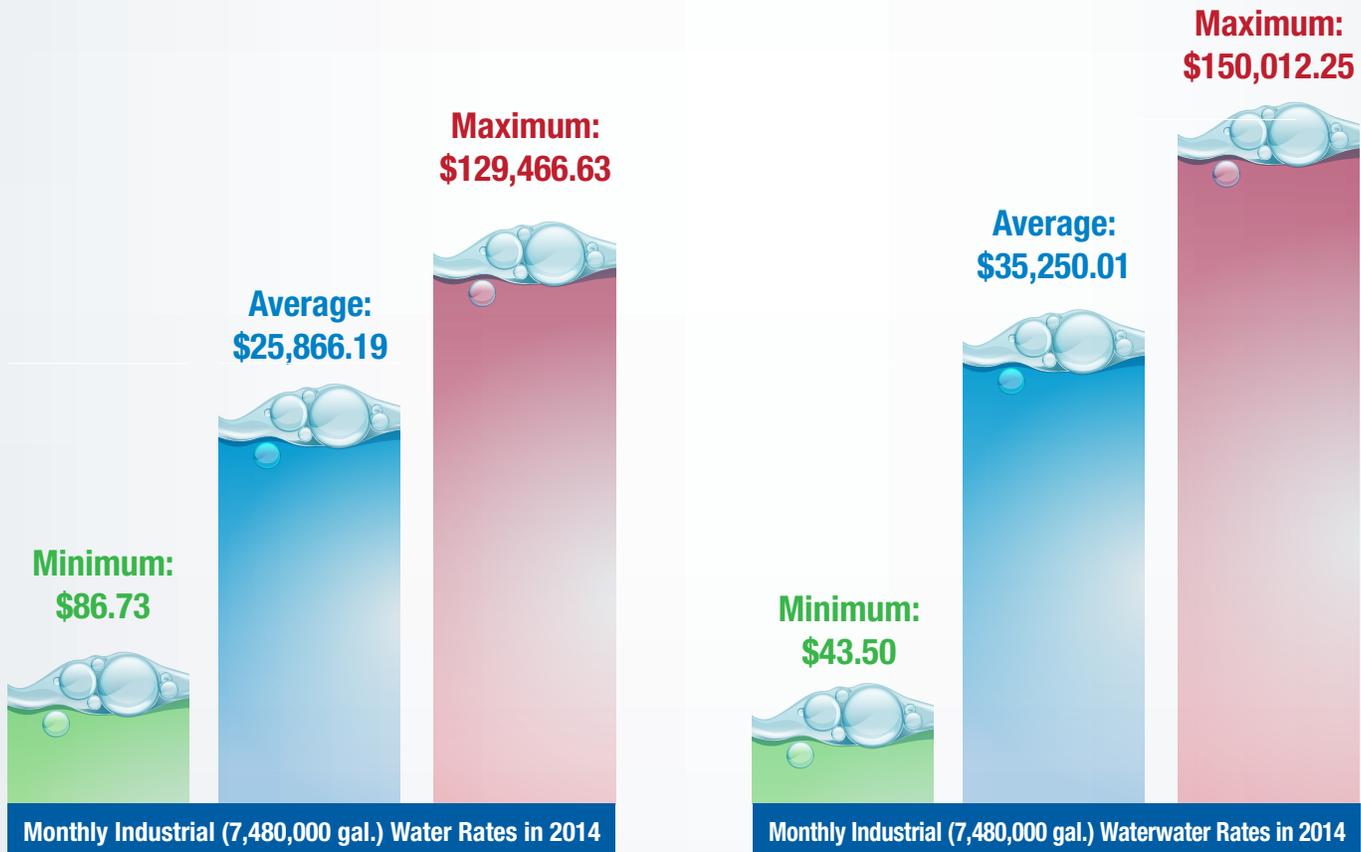


## Introduction

Global water scarcity partnered with increased water withdrawals has made the efficient use of water an increasingly more prominent focus of corporate sustainability programs. In addition to environmental impacts, beverage manufacturers are likely to encounter financial impacts to operations due to water risks in the near future, according to a 2015 Ceres report. “Near-term business impacts include: disruption to operations and the supply chain, increased capital expenditures and operating costs, and constraints on revenue growth,” the report states.<sup>1</sup> Impacts may result from five key water risks identified in the report: competition for water, weak regulation, aging and/or inadequate infrastructure, water pollution and climate change. These risk factors may lead to water rationing and increased rates for water and wastewater treatment, stricter regulations, water supply and treatment infrastructure failures, and decreased agricultural productivity.<sup>2</sup>

Businesses operating in North America may already be experiencing some of these impacts, including water and wastewater treatment rate increases. From 1996 to 2012, municipal water withdrawal rates increased 11.7 percent, and wastewater rates increased 12.1 percent.<sup>3</sup>

While rates for water and wastewater have increased overall, they vary widely, with a 149,275 percent difference between the minimum and maximum water rates for industrial facilities using just under 7.5 million gallons of water a month and a 344,856 percent difference between the minimum and maximum wastewater rates for the same usage.



Source: 2014 Water and Wastewater Rate Survey, American Water Works association and Raffellis Financial Consultants, Inc., 2015

Water rates are expected to continue to rise. According to the American Water Works Association, “faced with increasing capital needs and potential funding shortfalls, many utilities must increase the rates they charge for water services in the immediate future.”<sup>4</sup> Implementing a more sustainable wastewater program may help companies offset some of the costs associated with increased water risks and rates.

## Wastewater Discharge

While the EPA set federal restrictions on wastewater discharge through the Clean Water Act, national restrictions are broad, giving municipal wastewater treatment plants the power to design local limits based on facility conditions. Thus, wastewater discharge regulations vary considerably across the United States.

In addition to setting and enforcing local limits and regulations for wastewater, POTWs set rates for pollutants discharged in wastewater. Surcharges include rates for Biochemical Oxygen Demand (BOD), Suspended Solids (SS) and Total Kjeldahl Nitrogen (TKN). Just as water and wastewater rates have increased, wastewater surcharges have increased as well. For example, the municipality regulating wastewater for the Denver, Colorado metro area released a phased plan to increase surcharges, up to 124 percent for TKN, through 2018.<sup>5</sup> Such increased rates could pose significant financial impacts for manufacturers already paying thousands, if not millions, of dollars in wastewater surcharges each year. According to the Brewers Association, a typical brewery producing 2 million barrels of beer per year in 2016 pays up to \$1.1 million in annual wastewater surcharges.<sup>6</sup> Annual surcharge fees for the same production volume in Denver could reach \$1,491,600 in 2017 and up to \$1,882,399 in 2018.

## DENVER WASTEWATER SURCHARGE PLAN

	2016 RATES	2017 RATES	% INCREASE YOY	2018 RATES	% INCREASE YOY	% INCREASE 2016-2018
BOD	\$0.2317	\$0.2600	12.21%	\$0.2882	10.85%	24.38%
SS	\$0.2308	\$0.2922	26.60%	\$0.3536	21.01%	53.21%
TKN	\$0.2830	\$0.4587	62.08%	\$0.6343	38.28%	124.13%

Source: Revised Municipal Code for the City of Denver, Colorado, Section 56-94

Water risks are expected to continue to increase surcharge rates across the nation as existing POTW infrastructure ages. In its latest state of the industry report, the American Water Works Association found that 63 percent of water industry professionals polled found the renewal and replacement of aging water and wastewater infrastructure to be a critical issue, ranking aging infrastructure as the top issue facing the industry. Financing for capital improvements was ranked the second most pressing issue, with 61 percent of respondents rating financing as a critical issue.<sup>7</sup>

Implementing a water sustainability program that includes pretreating wastewater onsite prior to discharge to the POTW could provide significant cost savings on wastewater surcharges for beverage manufacturers.

### Water Reuse

With increasing demand and prices coupled with decreasing water supplies, it is essential for manufacturers to use water both sustainably and cost-effectively. Beverage manufacturers may already be facing local regulations limiting the amount of water available for use.<sup>8</sup> With the potential to reduce both the water footprint and cost, water reuse can ensure the sustainable management of water in a manufacturing or bottling facility.

**Water recovery and efficient use can reduce water used per liter of beverage by up to 40%.**



Source: Water Recovery and Reuse: Guideline for Safe Application of Water Conservation Methods in Beverage Production and Food Processing, ISLI Risk Science Innovation and Application, 2013

According to Water Recovery and Reuse: Guideline for Safe Application of Water Conservation Methods in Beverage Production and Food Processing, “Water recovery and reuse is one conservation option in which water can be recovered and treated to any quality level for use in the same or other applications. This conservation method can reduce total water consumption and result in less waste and increased production, which in turn fosters improved sustainability as well as continued high-quality product offerings.”<sup>9</sup>

The aforementioned guideline provides beverage manufacturers with recommended water quality requirements for reuse in a variety of applications. Water should be treated to meet varying standards based on the reuse application. Reuse opportunities include fire hydrants, toilet flushing, crate and vehicle washing, landscape irrigation, floor washing, filters backwash, facility (machinery) cleaning operations, cooling towers, boilers, bottle washing, package washing and rinsing and bottle final rinsing.<sup>10</sup>

With less water withdrawn from the municipal supply—rates of which have increased and are anticipated to continue to increase over the next few years—effective water reuse systems provide savings on facility water bills. Additionally, pretreating wastewater for reuse can save manufacturers significant wastewater discharge and surcharge costs for high BOD and SS content.

“Water managers should also consider non-monetary costs and benefits of reuse projects, such as increased water supply reliability in times of drought, greenhouse gas emissions, and ecological impacts, to determine the most socially, environmentally, and economically feasible water supply option for their community.”<sup>11</sup> Studies predict climate change will increase severe weather events that will disrupt the freshwater system, such as droughts and floods, resulting in increased demand and competition for water.<sup>12</sup> Both economical and environmental stresses make it increasingly important for beverage manufacturers to implement water sustainability programs that include reuse.

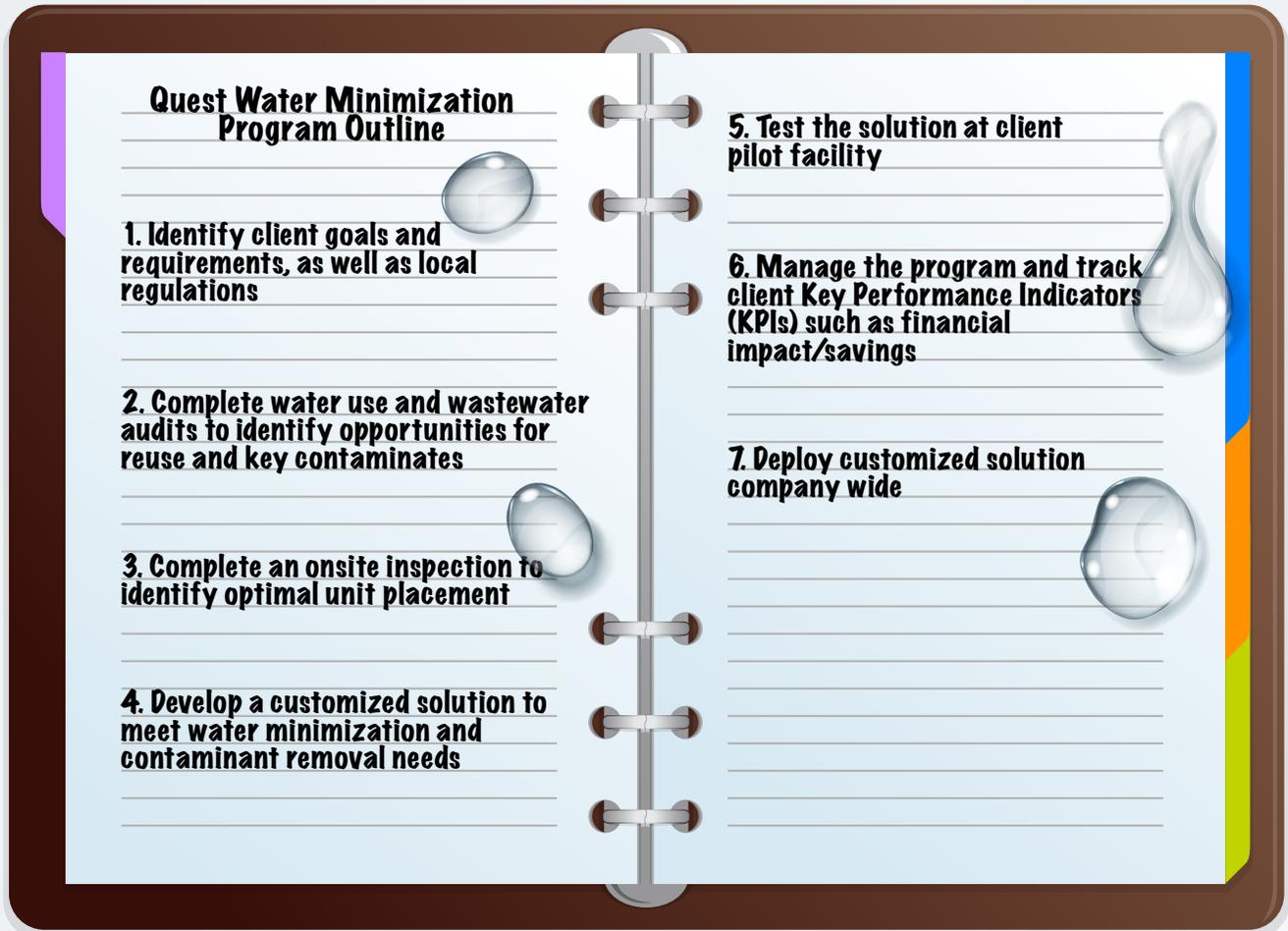
## Quest Solution

Quest Resource Management Group develops water minimization and reuse programs to meet the specific needs of clients in the beverage industry. Sustainable solutions help beverage manufacturers reduce daily water volume as well as avoid costly wastewater surcharge fees.

Quest’s program offers on-site water treatment solutions that effectively remove contaminants to provide clean water for reuse or discharge. The sophisticated process has the ability to remove any bacteria, organic, TKN, Fats, Oils and Grease (FOG), BOD, Chemical Oxygen Demand (COD) and SS contaminants.



On-site water treatment provides consistent, clean output beverage manufacturers can rely on. Quest's flexible solution allows clients to maximize efficiency by reacting to production volume and contaminate changes. Additionally, Quest staff works with on-site client teams to ensure the operational needs are met, schedule unit services and ensure water reuse and discharge requirement compliance.



## **Quest Water Minimization Program Outline**

- 1. Identify client goals and requirements, as well as local regulations**
- 2. Complete water use and wastewater audits to identify opportunities for reuse and key contaminants**
- 3. Complete an onsite inspection to identify optimal unit placement**
- 4. Develop a customized solution to meet water minimization and contaminant removal needs**

## **5. Test the solution at client pilot facility**

## **6. Manage the program and track client Key Performance Indicators (KPIs) such as financial impact/savings**

## **7. Deploy customized solution company wide**

Trusted by some of the nation's largest brands, Quest provides dedicated account management, 24-hour client services support (365 days a year), invoice auditing and billing, regulation compliance protection, and reporting for clients.



**CONTACT QUEST FOR YOUR CUSTOMIZED WATER MINIMIZATION AND REUSE PROGRAM TODAY!**



Quest Resource Management Group is a full service environmental consulting and management company dedicated to helping Fortune 500 companies across North America maximize eco-efficiencies and profits. Quest helps large corporations streamline operations and reduce costs by minimizing the amount of waste they generate through the design and management of custom, comprehensive waste minimization and sustainability solutions.

## References

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**SUSTAINABILITY.**



**DELIVERED.**