CASE STUDY

ReclaimX™ WT
Wastewater Reuse
Case Study

A Mid-Atlantic Dairy Plant Reused 20 Million Gallons of Wastewater Annually with ReclaimX™

OVERVIEW

A leading global dairy manufacturer sought to implement a wastewater reuse strategy that would reduce freshwater demand, lower water and sewer costs, and support corporate sustainability goals at its Mid-Atlantic altermative milk and creamer production facility.

The plant generated a substantial volume of treated wastewater through its onsite wastewater treatment system. Rather than sending all treated effluent to discharge, plant leadership recognized an opportunity to recover and reuse water for cooling tower operations, reducing dependence on municipal water supplies while improving overall water efficiency.

To achieve these objectives, the customer engaged Team Apex to evaluate and optimize a wastewater reclamation solution using the Apex ReclaimX™ platform.

Today, the system reclaims approximately **20 million gallons** of wastewater annually, reducing 30 million gallons of municipal water consumption, saving **$188,000 water and sewer cost** per year, and advancing the company's sustainability and water stewardship goals.

RESULTS AT A GLANCE

20 million gallons
of water reclaimed each year

30 million gallons
of city water saved per year

$188,000 annaul savings
in water and sewer cost

Advanced Company sustainability Goals

CHALLENGES

The facility operated a sophisticated wastewater treatment system consisting of:

- Equalization
- Primary clarification
- Aerobic digestion
- Anoxic digestion
- Secondary clarification

The system consistently produced effluent with low biological oxygen demand (BOD), total suspended solids (TSS), and nitrogen concentrations. However, producing reliable reverse osmosis (RO) permeate from wastewater effluent presented a unique challenge.

Unlike municipal water treatment, wastewater reclaim systems must accommodate constantly changing wastewater characteristics driven by:

- Production variability
- Cleaning-in-place (CIP) cycles
- Biological treatment performance
- Seasonal operating conditions
- Coagulants and polymer treatment programs

The facility had previously explored wastewater reclaim opportunities but needed a more robust solution capable of reliably producing cooling tower makeup water while minimizing operator intervention and membrane fouling.

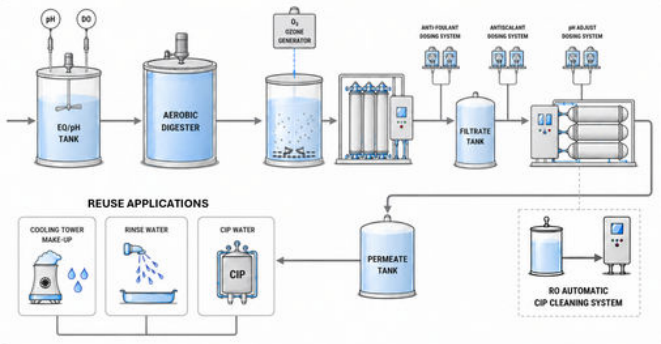
SOLUTIONS

Following several months of pilot testing, Apex implemented a customized ReclaimX™ WT wastewater reuse system specifically for dairy wastewater applications.

The pilot program validated the treatment approach under real-world conditions, including a significant clarifier upset that increased TSS from approximately 100 ppm to 500 ppm, while maintaining stable membrane performance and water production.

The final solution combined onsite oxidant generation, submerged ultrafiltration, reverse osmosis, real-time monitoring, and Apex's unique Chemically Enhanced Automated Flushing (CEAF) technology, which automatically cleans RO membranes during normal operation to reduce fouling, minimize downtime, and improve long-term system reliability.

Apex ReclaimX™ Platform



Success Insights

Successful water reuse projects start with understanding wastewater variability and matching treatment technology to the intended reuse application. Pilot testing, effective pretreatment, operational simplicity, and planning for seasonal demand are all critical factors in long-term success.

RESULTS

Wastewater reuse projects require continuous optimization to be successful. During startup and operation, Apex worked closely with facility personnel to optimize:

- Ultrafiltration chemically enhanced backwash (CEB) procedures
- Polymer feed rates within the wastewater treatment process
- Membrane operating conditions
- Reverse osmosis cleaning strategies
- CEAF operating protocols

As operating conditions evolved, Apex refined membrane cleaning procedures and flush protocols to reduce fouling and extend cleaning intervals.

Through this optimization effort, the facility was able to improve uptime, reduce chemical consumption, and maximize reclaimed water production.

The ReclaimX™ WT system enables the facility to reclaim approximately **20 million gallons** of water annually for cooling tower makeup, significantly reducing freshwater consumption and dependence on municipal water supplies.

By converting treated wastewater into high-quality, low-TDS RO permeate, the project improves cooling tower efficiency, reduces blowdown and scaling potential, and delivers approximately **$188,000** in water and sewer savings each year.

IMPACTS

Beyond financial savings, the ReclaimX™ WT system conserves local water resources, supports sustainability goals, and transforms wastewater from a disposal cost into a valuable operational asset, advancing a circular water economy.

WATER QUALITY COMPARISON	Digester Effluent	ReclaimX Product
T. Hardness (mg/L as CaCO3)	116	2.5
Conductivity (µmho)	1,983	30
Chloride (mg/L)	81	2
Sodium (mg/L)	454	9
Phosphate (mg/L)	32	0.5
Silica (mg/L)	12	1
Sulfate (mg/L)	120	8
COD (mg/L)	125	<1.0
TSS (mg/L)	45	<0.1
pH	7.9	6.7

Recover More. Discharge Less. Reuse Smarter.

Apex delivers comprehensive water reclaim systems and solutions that integrate customized chemical treatments, cutting-edge equipment, and the proprietary WaterSim™ modeling platform. We provide real-time insights and trusted expertise, enabling facilities to maximize efficiency, extend equipment life, and optimize water reuse with confidence.

Learn more

Why Apex?

- Simplified Compliance
- Tailored Solutions
- Reliable Operations
- Timely Support

CONTACT US

Learn more about how Apex can help you simplify water and process so you can focus on running safe, efficient, and sustainable operations.

APEX

1 (844) 603-4077 Info@TeamApex.com TeamApex.com

12270 43rd Street NE, St. Michael, MN 55376 | © 2026 Apex Water and Process Inc. All rights reserved.