

Complete 
Water Services, LLC

Water for the 21st Century

A Comprehensive Approach to
Water and Wastewater Management
for the Food Processing Industry



Corporate Profile

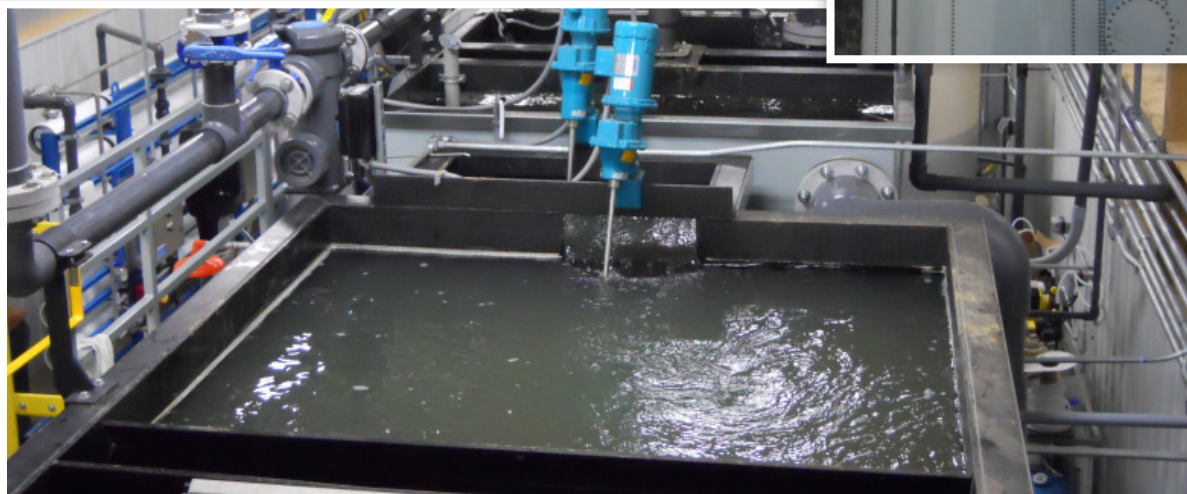
The increasing demand on water supplies has created the need for innovative solutions to food manufacturers water treatment challenges. The Complete Water Services (CWS) group of professionals offers a powerful combination of experience and expertise:

- Water Usage
- Water Supply
- High Purity Systems
- Process Treatment
- Corrosion Control
- Treatment of Wastewater
- Reuse / Recycle Options



Services include:

- Treatment System Design
- Treatment Equipment/Components
- Treatment System Integration
- Installation
- Construction
- Consulting, Training and Trouble Shooting
- Operational Services
- Custom Fabricated Skid/Package Systems
- Licensed General and Utility Contractors





CWS: An Industry Leader in Water Treatment.

Water is a precious resource. Only 1% of all the water on Earth is available for humanity's needs – agriculture, residential, manufacturing, community, and personal. In the industrial market, a quality water treatment system makes all the difference. Our industry is held up to the highest level of scrutiny.

At CWS, our experience, expertise, and environmental exceptionalism have earned us worldwide recognition as a leader in the treatment of water and wastewater.

We offer a powerful combination of hands-on experience, design, consulting, and construction expertise. There aren't many companies that can provide everything we do and do it well.

Whether you have a water or wastewater issue at your plant, need to install a complete water or wastewater treatment system for your facility, or need experienced assistance with a specialized industrial application, we can help.

Skid Mounted Package Systems for Water and Wastewater Treatment

We specialize in providing customized pre-assembled water and wastewater treatment systems that simplify field construction activities. Our systems include package pumping and filtration systems, pH adjustment systems, membrane systems, high purity systems and packaged wastewater treatment systems.

CWS offers multiple treatment options including;

- pH Adjustment
- Iron Filtration Systems
- Dissolved Air Flotation
- Precipitation and Clarification
- Oil Water Separators
- Membrane Filtration Systems
- Water Softeners
- Package Wastewater Systems



Water Recycle / Reuse

With the decreasing availability of freshwater, increasing cost of potable water, and drought conditions that exist in many parts of the country and world, the emphasis on water recycling and reuse has significantly increased.

One of the main reasons for water reuse programs is to identify new water sources for the increased water demand and to find economical ways to meet increasingly more stringent discharge standards. Water reuse is a drought-proof, renewable supply of water.

Many companies are establishing water reuse programs to reduce costs and to lower their overall water footprint as part of sustainability policies. Industries are implementing programs to become substantially greener. Often, these programs are based on an effective water strategy.

CWS can assist industries in these admirable goals. Reducing their water footprint can propel a company a long way toward sustainability. Facility water balances, evaluating processes to reduce water use, looking at water sources within the facility for other purposes, and additional water treatment for improved water quality for specific water needs are all ways that CWS can help your company make a difference.

Our innovative systems can purify the water to the level required. Process include NF, RO, MBR



High Purity Water Systems

The majority of natural waters are not suitable for potable uses. Most municipalities or other entities provide some level of treatment prior to distribution to make the water suitable for consumptive purposes. Often, this potable water is not of a quality required for many industrial and most research applications. Additional treatment is required for the water to meet certain quality criteria. Many industries and organizations have established water quality specifications to meet their specific requirements. Many of these include:

- College of American Pathologists (CAP)
- National Committee for Clinical Laboratory Standards (NCCLS)
- American Society for Testing and Materials (ASTM)
- United States Pharmacopoeia (USP)
- Semiconductor Equipment and Materials International (SEMI)
- Association for the Advancement of Medical Instrumentation (AAMI)

CWS can design systems to handle the unique challenges of high purity water systems. Components of these systems can include:

- Filtration Systems
- Softeners
- Iron and Manganese Removal
- Ultrafiltration/Nanofiltration
- Reverse Osmosis
- Ion Exchange/Deionization
- EDI – Electrodeionization
- Ultra-violet Disinfection



CWS has the expertise to provide these systems, designed for specific needs of the client and the level of water quality required.

- Design Engineering
- Custom Skid Systems
- Point of Use Systems
- System Installation
- Mechanical/Electrical
- Controls

Treatment Plant Design and Construction

CWS professionals are hands-on, real world designers and operators. We know what it takes to design and build practical, efficient and effective treatment plants, well suited for their purpose and setting. Sometimes we use the latest, most innovative technologies. Other times we use tried and true methods that have been available for years. At all times, though, our designs are tailored to the needs and budgets of our clients, given present and likely future application requirements.

Our wide range of experience and technical expertise allows us to offer these services in a variety of options, from Turnkey to a la Carte:

- Engineer, Procure and Construct
- Design, Construction Management
- Lump Sum Design/Build
- Traditional Design/Bid/Build
- Membrane Bioreactor (MBR)



CWS designs include the entire range of pre-treatment and treatment options, from skid-mounted package plants to custom designed and fabricated systems, including:

- Zero discharge water recycling systems
- Batch treatment
- Continuous flow
- Physical/chemical
- Biological
- Membrane filtration
- BOD/COD removal
- Oil & Grease removal
- TSS Removal



Turnkey Design/Build WWTP

Complete Water Services specializes in providing complete turnkey pre-treatment and water treatment systems for industrial clients. CWS has the ability to take a project from concept through startup with the engineering, project management, and construction expertise to provide a quality installation. We pride ourselves in being your one-stop source for water and wastewater projects. Installations from Greenfield (including building, utilities and equipment) to modification of existing systems are within the scope of our capability.

CWS designs include the entire scope and scale of pre-treatment and treatment options from skid mount-ed package plants to custom designed and fabricated systems. No project is too small, too large, or too complex.

We believe that our expertise, contacts and market focus are unique. When you factor in our experience, technical ingenuity and high level of client service, we know we are unique.

The project history of Complete Water Services pre-treatment and treatment systems covers a wide variety of industrial sectors, including:

- Metal Manufacturing and Metal Finishing
- Food Processing, Packaging and Preparation
- Specialty Chemical Manufacturing
- Industrial Laundries
- Paint Manufacturing



Wastewater Treatment Plant Operations

Complete Water Services will operate your wastewater treatment or pre-treatment system, allowing you and your staff to concentrate on your core business. Under the direction of their Certified Operators, CWS will manage the operations, maintenance and environmental compliance of this critical process.

We offer this service under a variety of models. Benefits to your company or organization include:

- Prolong the life of plant equipment through proper maintenance and repair
- Reduce plant downtime and its impact on production
- Reduce administrative, management, and training costs
- Ensure the proper use and application of all treatment chemicals
- Avoid costly fines for non-compliance
- Minimize surcharges
- Avoid the potential impacts of staff turnover

Complete Water Services personnel visit treatment plant sites on an appropriate schedule to perform at least the following services:

- Onsite analysis and process operations
- Sample collection, analysis, with required decision making compliance reporting
- Residuals solids management
- Chemical management
- Preventative maintenance
- Emergency Response

Reference Projects:



Bakery, Atlanta

A 40,000 gpd industrial treatment system for high strength bakery waste which includes screening, equalization, pH control, activated sludge system, clarification, and belt press operation for solids dewatering.



Wastewater Treatment Chemical Programs

Coupled with our other services or as a stand-alone offering, CWS can deliver significant savings in water treatment chemical costs. Our water professionals make sure that you are buying the correct chemical compounds in the correct concentrations for your particular application, and then deliver these chemicals at competitive prices. We will design/install new or troubleshoot existing chemical feed systems to ensure the most efficient chemical delivery. Take advantage of great savings in all chemical categories, including:

- Polymer flocculants & clarifiers
- Odor control chemicals
- Biodispersants
- Foam control chemicals
- Bacterial inoculants
- Micro-nutrients
- Humidification treatment
- Water Stabilization treatment
- Corrosion Control
- Micro-organism Contamination Control



Mobile Treatment System and Services

CWS provides mobile treatment systems and services for emergency wastewater treatment needs, including clarifier systems, solids dewatering and dissolved air flotation. These systems have been successfully used for treatment plants that are not able to meet permit limits due to temporary problems with biological treatment systems, high levels of solids in lagoons, excessive flow rates, etc.

CWS can provide operations and chemistry along with mobile treatment equipment if desired.



CLIENT: King's Hawaiian Bakery, Inc., Oakwood, GA
Wastewater Pretreatment System



BACKGROUND:

In the 1950's, Robert's Bakery of Hilo, Hawaii, developed the famous Original Recipe of King's Hawaiian Sweet Bread. Nearly a decade later, the well-known bakery expanded and moved to King's Street in Honolulu. The bakery and cafe immediately turned into a destination location for locals and tourists who shipped the bread back to the mainland as gifts. In the late 1970s, some aloha was shared with the mainlanders by the construction of a commercial bakery in California.



In 2004, King's Hawaiian continued to expand with a 150,000 square foot, state of the art baking facility and corporate headquarters in Torrance, CA. King's Hawaiian Bakery decided to expand to the east coast and, in the summer of 2011, constructed a new baking facility in Georgia.



PROJECT REQUIREMENTS:

- Design/build of a biological treatment process to reduce BOD
- Storage capacity for wastewater generated over the weekend and process it during the following week
- Treatment for fats, oils, greases, solids, and dissolved BOD

SYSTEM COMPONENTS:

- Flow equalization with aeration
- Neutralization/coagulation/flocculation
- Primary dissolved air flotation
- Bioreactor – Activated Sludge
- Secondary Dissolved air flotation
- Effluent monitoring

WASTEWATER FACILITY WAS FILMED AND SHOWN ON NATIONAL TELEVISION.

- Design and construction of a new wastewater facility
- Efficient and cost effective design using the same dissolved air flotation unit for primary and secondary separation
- DAF for sludge removal allows higher mixed liquor concentrations
- Higher mixed liquor concentrations result in smaller tank requirements

CLIENT: Cargill Meat Solutions Corp., Hazelton, PA
Wastewater Treatment Plant (WWTP)



BACKGROUND:

Cargill Meat Solutions built a new case-ready meat processing plant in Hazelton, PA. The plant takes in sides and sections of beef, and further processes them into select cuts and ground beef, packaged and ready for retail sale. Wastewater produced by washing and rinsing operations is high in solids, fats and oil grease. Because of their prior experience with our firm, Cargill specified Complete Water Services as the preferred wastewater treatment subcontractor when they put the plant construction project out to bid.

PROJECT REQUIREMENTS:

- Treatment for solids, fats, oils and grease
- Design and construction of new building and all systems, from the ground up
- Schedule to match completion of processing plant construction

SYSTEM COMPONENTS:

- Flow equalization
- Continuous pH neutralization
- Chemical flocculation/ coagulation
- Dissolved air flotation

- Greenfield installation including building, utilities and equipment
- On time, on budget
- No change orders from original design



CLIENT: Sugar Food Corporation, Villa Rica, Georgia
Wastewater Pretreatment System



BACKGROUND:

Sugar Foods Corp. is a privately-held manufacturer and marketer of food products. Founded in 1948, the company began as a bulk sugar distributor in New York but now provides a variety of products to complement other food products. Sugar Foods Corp. sells artificial sweeteners, non-dairy creamers, croutons, snack foods, and other complementary food products.

The Sugar Foods facility in Villa Rica is generally divided into two operations. The first is the bakery which produces croutons and tortilla strips. The second is the packaging operation which packages sugar, sweeteners, powdered non-dairy creamers, parmesan cheese, salt, black pepper, and crushed red pepper.

PROJECT REQUIREMENTS:

- Design/build of a pretreatment system to reduce FOG and TSS
- Treatment for pH, fat, oils, greases and suspended solids

SYSTEM COMPONENTS:

- Flow equalization with aeration
- Neutralization/coagulation/flocculation
- Dissolved air flotation
- Effluent monitoring



CLIENT: Snyder's-Lance Inc., Columbus, Georgia
Wastewater Pretreatment System

Snyder's-Lance
INCORPORATED

**PMMI Sustainability Excellence in Manufacturing Award,
3rd Place in the Project Category, 2015**



BACKGROUND:

Tom's was founded in Columbus, Georgia in 1925, when a young mechanical inventor named Tom Huston received peanuts from farmers in payment for some of his mechanical inventions. Huston then designed a mechanical peanut sheller and a roasting process for shelled peanuts. He then put the roasted peanuts into a narrow cellophane package. This narrow cellophane package received a patent in 1926.



Tom's Foods was purchased in 2005 by Lance, Inc., which merged with Snyder's of Hanover in 2010 to become Snyder's-Lance, Inc. Today, peanuts are still roasted and packaged at the facility in Columbus. The facility also includes a bakery for crackers and cookies, and a candy factory for brittle, etc.



PROJECT REQUIREMENTS:

- Design/build of a pretreatment system to reduce FOG and TSS
- Storage capacity for wastewater generated over the weekend and process it during the following week
- Treatment for fat, oils, greases and suspended solids



SYSTEM COMPONENTS:

- Rotary screen
- Flow equalization with aeration
- Neutralization/coagulation/flocculation
- Dissolved air flotation
- Effluent monitoring



CLIENT: Wayne Farms, LLC, Pendergrass, Georgia
Wastewater Treatment/Nutrient
Removal/Recycling System



**US Poultry and Egg Association, Clean Water Award, Full Treatment
Category, 2018**

**Georgia Association of Water Professionals, Industrial Direct Discharge -
Biological Treatment System Plant of the Year, 2015**

BACKGROUND:

Wayne Farms, LLC operated a single tank sequencing batch reactor (SBR) treatment system with discharge to an onsite land application system (LAS). Due to issues associated with limitations to land application of the treated wastewater, Wayne Farms received an NPDES permit for direct discharge. Also, in looking ahead at potential water issues, Wayne Farms wanted the ability to recycle wastewater in the future.

The upgraded MBR system integrated/adapted the existing bioreactor tank and lagoons to work with the new ultrafilter membranes. As a result, the upgraded system effluent meets NPDES discharge requirements for direct discharge and the USDA FSIS requirements of reuse water in poultry plants.



PROJECT REQUIREMENTS:

- Design/build of an upgraded system to meet NPDES discharge limits in accordance with the new permit
- Meet or exceed USDA standards for reuse water at poultry processing plants
- Reduction of nitrogen, phosphorus, BOD, and TSS
- Utilize as much of the existing system as possible and practical



SYSTEM COMPONENTS:

- Phosphorus removal ponds
- Anoxic Pond (De-nitrification)
- Bioreactor with membrane separation (MBR System)
- Ultra-violet disinfection
- Effluent monitoring with cascade aeration
- Reuse water tank
- Biosolids storage ponds



CLIENT: Snyder's-Lance, Inc., Hyannis, Massachusetts
Wastewater MBR System



BACKGROUND:

Established in a small storefront in Hyannis in 1980, Cape Cod Potato Chips has grown to be one of the country's most popular brands. Lance Inc. purchased the company in 1999, which merged with Snyder's of Hanover in 2010, to become Snyder's-Lance, Inc.

Cape Cod Potato Chips are still batch cooked in kettles to maintain their distinctive flavor and crunch. Facility tours, established in 1985, have become one of the area's top attractions with over 250,000 visitors annually.



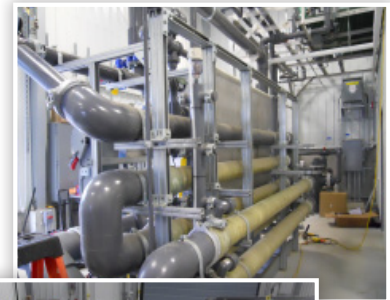
PROJECT REQUIREMENTS:

- Production facility is situated on a very small lot. Pretreatment system had to have a small footprint.
- Design/build pretreatment facility for fats, oil, greases, starches, and suspended solids
- Needed storage capacity for high pH wastewater generated over the weekend and process it during the coming week
- Unobtrusive treatment facility with little impact on the tourists or parking lot.



SYSTEM COMPONENTS:

- Lined lift stations
- Flow equalization with aeration
- Neutralization/coagulation/flocculation
- Dissolved air flotation
- Bioreactor with membrane separation (MBR System)
- Effluent monitoring





PortionPac, a condiment packaging facility located in Nashville, TN, was having problems meeting effluent wastewater permit requirements due to deficiencies in their existing wastewater pretreatment system. CWS assessed the system and by installing better mixing in the equalization system and improving the chemical feed system, was able to improve the contaminant removal efficiency so it could meet permit.



Complete Water Services installed pH neutralization for effluent process wastewater at several major salad and vegetable packaging processing facilities across the US, including GA, TX, CA, PA and IL.



A major fruit cake mfg was having issues with meeting effluent discharge permit requirements. CWS audited the existing WW pretreatment system and determined existing treatment processes were creating excessive temperature conditions for a healthy biological treatment process during summer months. CWS replaced the effluent solids removal process and operating temperatures returned to design conditions and effluent contaminant levels were reduced to acceptable levels.



CLIENT: General Mills Incorporated - Murfreesboro, TN
Rail Yard Improvements 2016



GENERAL MILLS

BACKGROUND:

The General Mills Pillsbury plant in Murfreesboro, Tennessee, produces dough products (biscuits, croissants, cookies, turnovers) for consumer baking. An expansion of this plant created the need to double the amount of flour required, on a daily basis, from 2.2 million pounds/day to 4.4 million pounds/day. The existing indoor off loading facilities were adequate for unloading but the existing rail facilities were not capable of supporting the number of rail movements needed to supply the process. Both truck and rail traffic required access to the unloading facilities.

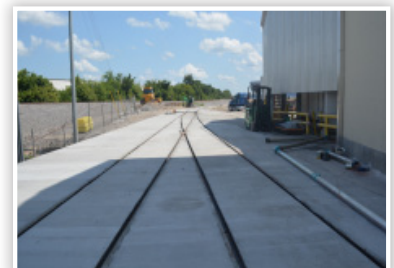


PROJECT REQUIREMENTS:

- Provide rail yard and mainline access to receive and unload flour from 22 rail cars per day to feed GMI bakery products plant.
- Receive and store 90 rail cars.
- Provide yard switching movements for full and empty cars.
- Double ended 3 track ladder tracks and 3 track stub end yard.

SYSTEM COMPONENTS:

- Dual track rail feed into existing building for offloading flour.
- Slab track with switch in the slab track for full truck access across slab track.
- Private yard switcher locomotive storage area.
- Railroad Permitting.
- Local Land Disturbance Permit
- Resolution of FEMA flood plain impacts.
- Important property restraints.
- Fire, storm, and sanitary utility relocations.
- Fiber optic trunk line permitting, relocation, and protection.
- Important considerations included protection of the adjacent river, erosion, impacts to the neighbors.
- Extremely tight schedule constraints.



CLIENT: Golden State Foods, Opelika, AL
Industrial Wastewater Pretreatment System



BACKGROUND:

As one of the largest diversified suppliers to the food service industry, Golden State Foods (GSF) services approximately 125,000 restaurants in over 60 countries from its 50 locations on five continents. Founded in 1947, the company began as a meat supplier to restaurants in the Los Angeles area. The GSF facility in Opelika is a further meat processing facility that was constructed in 2016. Wastewater is discharged to the local municipal treatment works.

PROJECT REQUIREMENTS:

- Design/build of a pretreatment system to reduce fats, oils, and grease (FOG) and Total Suspended Solids (TSS)
- Equalization to reduce fluctuations in flow and loading, with sufficient storage capacity for wastewater generated over the weekend for processing during the following week



SYSTEM COMPONENTS

- Screening to remove larger solids
- Flow equalization with aeration for freshening and mixing
- pH Adjustment
- Coagulation and flocculation to enhance FOG and TSS removal
- Dissolved air flotation for FOG and TSS removal
- Effluent monitoring



Client: Coca Cola Corporation, Wilsonville, Oregon
Wastewater Pretreatment and Equalization System



BACKGROUND:

As one of the largest beverage producers in the food service industry, Coca Cola Corporation has bottling plants worldwide. A large number of beverages are bottled in the Wilsonville plant; both sugar and non sugar beverages. The facility also houses a reclaim/recycle facility for beverages which dates have expired. This crushing operation and the large number of product changes created a highly variable flow rate, sugar content, and pH. These large variations caused excursions outside of pretreatment permit limits and created operational issues at the local municipal treatment plant.

PROJECT REQUIREMENTS:

- Design/build of a pretreatment and equalization system to minimize excursions
- Storage capacity to allow for equalization of the discharge to minimize the impacts to the local municipal treatment plant by creating a 7-day 24-hour constant flow
- Treatment for pH control and solids removal (fat, oils, greases and suspended solids)



SYSTEM COMPONENTS

- Two 50,000-gallon stainless steel tanks with aeration for equalization
- Two stage pH adjustment for pH control
- Coagulation and flocculation to aid in solids removal
- Dissolved air flotation for solids removal
- Effluent monitoring with automatic recirculation for out of permit discharges including pH and flow

