Water for the 21st Century
A Comprehensive Approach to Water and Wastewater Management for 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
- Licensed Water and Wastewater Operators
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 mounted 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
- Closed System treatment
- Humidification treatment
- Steam Line Inhibitors
- Water Stabilization treatment
- Cooling Towers
- Boilers
- 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.
Finding Real Value in Rain Water

It has never been more important to work for environmental sustainability. Harvesting rain is a practice that has been around for centuries. Cisterns and other rain harvesting systems are widely used in Europe, Africa, Australia, India, the Bahamas, and countless remote countries - many who depend solely on rain for day to day life. Today right here in the USA, we too can successfully harvest rainwater to meet many of our needs.

Anyone, from the individual who wants to use stored rain for watering plants to large companies that use grey water in toilets and sinks, can make a difference. There is a large array of rainwater catchment systems available.

Rainwater harvesting systems provide distributed storm water runoff containment while simultaneously storing water which can be used for irrigation, flushing toilets, washing clothes, washing cars, pressure washing, or it can be purified for use as everyday drinking water.

Small steps can make a huge impact. The Complete Water Services (CWS) team of professional water treatment experts will help you design the optimal rain water harvest system to meet your specific needs. We will supply the equipment and guidance in designing the ideal filtration system to meet your needs.

From a simple barrel system to a complex underground rain water catchment system to selecting the right filtration and processing systems, CWS is your one stop supplier of material and resources to support your sustainable, efficient and effective rain water harvesting system. Saving you time and money while optimizing your use of one our planets most important resources – water.

What could be better!
Water/Utilities Conservation

One of the main reasons our clients hire Complete Water Services is to save money. Our water and utilities conservation services ensure that these savings continue and compound long after the project is completed. Examples of these services include:

- Water audits
- Reduce - water conservation equipment and practices
- Reuse - partial treatment and re-circulation of process water; heat recovery
- Recycle - full treatment and recovery
- Retainage - locally administered Sewer Diversion credit programs
- Zero discharge plant design or re-design
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
• 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:
• Flow equalization with aeration
• Neutralization/coagulation/flocculation
• Dissolved air flotation
• Effluent monitoring
CLIENT: Snyder’s-Lance Inc., Columbus, Georgia
Wastewater Pretreatment System

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

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: Voith Paper Fabric & Roll Systems, Inc., West Monroe, LA Wastewater Pretreatment System

BACKGROUND:

Voith Paper Fabric & Roll Systems, Inc. is a German-owned company that repairs, refurbishes and maintains large rollers for the paper industry. These repairs/ maintenance include:

• Repair or replacement of journals
• Rubber roll covers
• Mechanical repairs
• Balancing

Repair activities are different for each roller that enters the facility. Any combination of the above can be conducted on the roller or its associated parts. These activities can be comprised of any of the following:

• Solvent cleaning Burning bar/lancing to remove journal
• Lathe removal of existing cover material
• Machining
• Welding
• Thermal metal spraying
• Abrasive blasting
• Application of rubber cover material
• Wet grinding of new cover
• Application of surface coating

These repair activities generate process wastewater which is constantly changing. CWS completed a design/build of a flexible pretreatment system that removes grit, adjusts pH, removes oil & grease, removes Total Suspended Solids, and removes metals to levels that consistently meet the required discharge limits.

PROJECT REQUIREMENTS:

• Design/build of a multi-staged treatment process
• Small space for treatment system (20’ x 40’)
• Influent rate of 40 gallons per minute
• Increase the capability to treat surges of flow volume and contaminant concentrations

SYSTEM COMPONENTS:

• Oil separation and grit removal
• Flow equalization
• Neutralization/coagulation/flocculation
• Dissolved air flotation
• Effluent monitoring

• Maximized the layout of process equipment in limited space
• Effluent concentrations meet discharge limits
CLIENT:  FCC NC, LLC, Laurinburg, North Carolina
Water Treatment System
Wastewater Treatment System

BACKGROUND:
FCC, NC, LLC, is a Japanese-owned company that manufactures clutches. FCC, NC, LLC, in Laurinburg is a friction paper material manufacturing plant. Manufacture of paper-based friction materials includes sheet-making, resin impregnation, resin hardening, and friction sheet attachment.

WATER TREATMENT:
Process water quality is important in the manufacture of high quality friction papers. Source water for production is groundwater. Analyses showed the water too high in iron.

The water treatment system installed included sand removal, pH adjustment, and iron removal. System components include:

• In-ground Concrete Tanks
• Hydracyclones
• Neutralization
• Manganese Greensand Plus™ Iron Removal Filters

WASTEWATER TREATMENT:
Process wastewater treatment at FCC, NC, is to be conducted in two phases. The installed system is Phase 1: clarification.

The wastewater treatment system under Phase 1 included:

• Equalization
• Coagulation
• Clarification
• Sludge Dewatering (belt press)
• Monitoring

This 1.07 MGD system was installed in a very limited area. System meets quality requirements for process water and discharge requirements for wastewater.