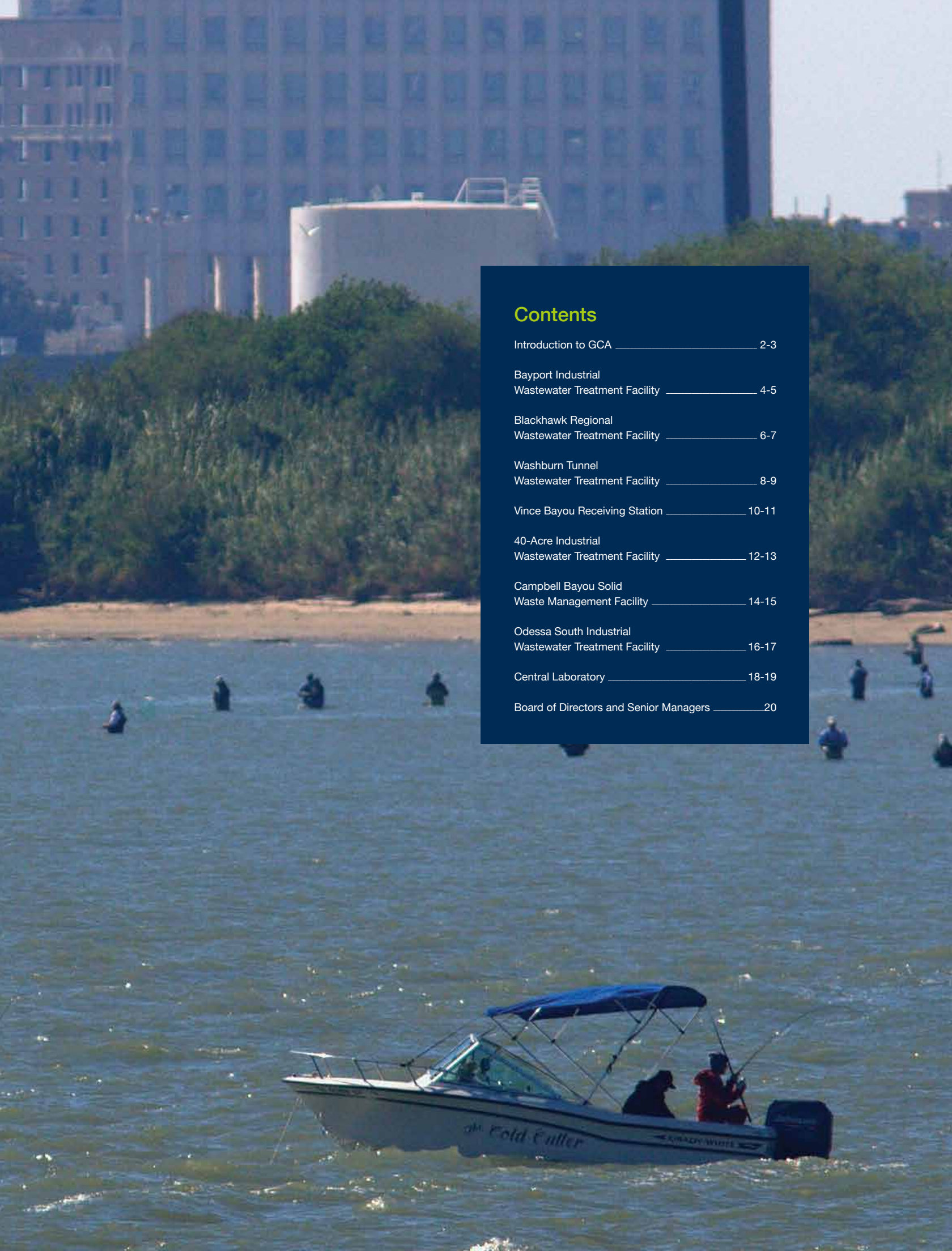
Gulf Coast Waste Disposal Authority

Protecting the waters of the State of Texas through environmentally sound and economically feasible regional waste management practices



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Chairman's Letter

The Gulf Coast Waste Disposal Authority (GCA) has fulfilled its mission of protecting the waters of the State of Texas for more than 40 years. All of us at GCA—the Board of Directors, management and employees—are proud of our achievements, from playing a central role in the improved water quality of Galveston Bay and the Houston Ship Channel; to promoting economic development in Texas through professional, cost-efficient, environmentally responsible treatment of regional industrial and municipal wastewater streams; to financing solid waste and industrial sewage pollution control equipment for Texas industries and issuing industrial development bonds for small manufacturers in Galveston, Harris and Chambers counties.

Looking toward the future, GCA General Manager Ricky Clifton, with the Board's full support and encouragement, implemented a new business development strategy aimed at enhancing the stability and expansion of our current operations, pursuing new opportunities for our existing expertise, seeking opportunities in new business sectors and promoting our financing services. Everyone in our organization—from Board members to field personnel—is an active participant in promoting GCA's expertise among our customers in providing regional waste management services to industries and communities throughout the state.

We've also focused the entire organization on our key performance areas that are critical to the success of our ongoing operations and will serve us well in developing new partnerships in other areas. Our key performance areas are:

- **Safety;**
- **Reliability;**
- **Environmental Compliance; and**
- **Cost Effectiveness.**

All in the organization have embraced the business development initiative and key performance factors with their customary energy, professionalism and enthusiasm. We believe wholeheartedly in our mission and our capabilities and look forward to spreading the word about GCA.

Sincerely,

J.M. "Mark" Schultz
Chairman of the Board
Chambers County

General Manager's Message

The Gulf Coast Waste Disposal Authority (GCA) was created in 1969 by the Texas Legislature to protect the waters of the State of Texas through regional waste management practices that are environmentally sound and economically feasible.

Unique in Texas, we operate our specially designed industrial wastewater treatment plants under an exemption from federal categorical pretreatment standards for industrial wastewater. The exemption allows GCA to treat wastewater from diverse industrial customers without requiring them to install and operate costly, redundant pretreatment equipment. Our industrial customers benefit from foregoing the capital and operating expense of unnecessary pretreatment systems, environmental regulators benefit from a reduction in the number of individual permits they must manage, and the communities we serve benefit from economic development and cleaner water resources.

Our primary jurisdiction is within Harris, Chambers and Galveston counties, but we may provide services elsewhere in the State of Texas at the request of local interests. Although GCA has the power to tax, we're proud of the fact that we've never exercised that authority; instead, we are funded through service fees collected from the municipal and industrial customers we serve.

Operations

GCA's current operations include:

- Four regional industrial wastewater treatment facilities serving over 80 industrial customers in the tri-county Gulf Coast area and in the City of Odessa;
- A landfill for non-hazardous industrial solid waste such as construction debris;
- A receiving station for trucked-in wastewater;
- One regional municipal wastewater treatment facility serving the cities of Friendswood and Houston and two Municipal Utility Districts, and three small municipal wastewater treatment plants serving the Port of Houston and the Cedar Bayou Park Utility District.
- A Central Laboratory accredited by the National Environmental Laboratory Accreditation Program (NELAP) that tests wastewater coming into our plants, treated water discharged by our facilities and samples from outside customers.

In addition to our wastewater and solid waste management activities, GCA supports Texas economic development and environmental protection by financing solid waste projects and industrial wastewater treatment equipment for industries operating in the state. Since the 1970s, we have issued over $3 billion in private activity bonds toward this end. We also issue industrial development bonds for small manufacturers in Galveston, Harris and Chambers counties.

Our industrial and municipal treatment facilities employ activated sludge processes to remove organic pollutants and suspended solids from wastewater so that the treated water may be reintroduced into the environment in clean condition.

GCA's wastewater treatment facilities are basically microbe "farms" that provide suitable conditions for naturally occurring, harmless microscopic organisms that consume sewage and other organic pollutants in a wastewater stream. Our job is to keep the microorganisms healthy, active and reproducing so that they can go about their work. That means maintaining the proper temperature range, pH balance, oxygen and nutrient levels and ensuring that chemicals or metals that might be harmful to the microbes are not present in the incoming wastewater stream.

We monitor the water we treat at every stage—from discharge points at the industries we serve, through each step of the treatment process, to our own discharge points—to ensure that all permit requirements are met.

GCA offers significant advantages for our municipal and industrial customers:

Municipal

- GCA responsible for permits and dealing with regulators;
- Favorable economies of scale save money and improve efficiency;
- Infrastructure financed by GCA preserves municipalities' capacity to issue bonds for other purposes;
- GCA fees are an operating expense, rather than a capital expense.

Industrial

- GCA responsible for permits and dealing with regulators;
- Favorable economies of scale save money and improve efficiency;

- Industries avoid the cost of installing and operating extensive treatment systems;
- GCA can provide tax-exempt financing for pipelines and solid waste;
- GCA fees are an operating expense, rather than a capital expense;
- GCA staff are experts in wastewater treatment;
- GCA's wastewater monitoring serves as an early-warning system capable of identifying problems at an industrial facility often before the customer is aware they exist.

Core Values

GCA's core values guide every aspect of our business:

- **Stewardship**—We manage our operations in a way that respects the environment and protects the health and safety of our employees and neighbors;
- **Communication**—We communicate openly, honestly and frequently in a manner that encourages participation from all stakeholders;
- **Reliability**—We provide reliable waste management services 24 hours a day, seven days a week, 365 days a year;
- **Integrity**—We operate in a simple, clear, transparent and honest manner and take full responsibility for our actions;
- **Planning**—We plan for our future with continuity of service, innovation, sustainability and fiscal responsibility guiding our decisions;
- **Teamwork**—We foster teamwork through trust, hard work, enthusiasm and innovation.

Environmental stewardship is a way of life at GCA that extends beyond our mission of protecting the waters of the State of Texas. For example, to help minimize GCA's carbon footprint, our Central Laboratory has updated its test equipment to enable the use of smaller water samples, thereby saving weight and fuel in transportation. We also sponsor and participate in community outreach activities such as Trash Bash® —the largest event of its kind in the nation—in which thousands of volunteers gather each year clean up rivers, lakes, bayous and bays at 17 sites throughout the Houston-Galveston area.

GCA has been keeping Texas waters clean and safe for more than 40 years. Our goals for the future include retaining existing customers by continuing to provide reliable, cost-effective service; attracting new customers to our existing facilities and expanding those facilities as needed; identifying opportunities to expand our operations elsewhere in Texas; and developing new lines of business in financing and environmental management where our considerable expertise can make a difference.

Sincerely,

Ricky Clifton
General Manager

Bayport Industrial Wastewater Treatment Facility

Bayport is GCA's largest facility, serving over 60 industrial customers and two municipalities via a 2.25-mile BioSan pipeline for process wastewater and contaminated storm water runoff and a parallel "Clean Stream" concrete channel for streams that require solids treatment only, such as cooling tower blow-down water.

Location	Bayport Industrial District, Pasadena, Texas
Process	Activated Sludge with atmospheric and pure oxygen diffusion
Treatment Capacity	30 million gallons/day
Average Volume Treated	18 million gallons/day
Staff	33

The original plant was built by Friendswood Development Company, then owned by Exxon, as part of its Bayport Industrial Complex. GCA acquired the facility in 1974 and has expanded and improved it since.

With customers ranging from petrochemical plants, warehouses and transportation cleaning facilities to the City of LaPorte and the City of Shore Acres, Bayport treats one of the most diverse wastewater streams in the GCA system.

The facility employs an activated sludge process with both oxygen and air diffusion. Effluent or treated water from the activated sludge process is clarified for solids removal, disinfected and finally passed through a series of ponds that provide additional solids removal before being discharged into the Bayport Ship Channel. The solids are dewatered on belt presses, loaded into trucks and shipped to a municipal landfill. The Bayport facility is permitted only for wastewater conveyed by pipeline, so any new customers must be piped into the system. Bayport's GCA personnel actively participate in the local Economic Alliance organization and Community Advisory Panel to promote economic development and community communication.

Our Bayport facility routinely practices water conservation internally by reusing treated effluent for various operational needs and is currently conducting a feasibility study aimed at conserving water for public consumption by recycling our facility's treated discharge water for reuse by local industries.

Blackhawk Regional Wastewater Treatment Facility

While GCA's other facilities primarily treat industrial wastewater, Blackhawk is solely dedicated to regional treatment of municipal sewage, serving the City of Friendswood, Harris County Municipal Utility District (MUD) 55, Baybrook Municipal Utility District 1, extreme southern portions of the City of Houston and part of League City.

Location	Friendswood, Texas
Process	Activated Sludge with atmospheric aeration
Treatment Capacity	9.25 million gallons/day
Average Volume Treated	4.5-5 million gallons/day
Staff	6

Blackhawk came on line in 1979 after the City of Friendswood invited GCA to create a regional facility to treat its wastewater more efficiently and economically. Its capacity was more than tripled during the 1990s to accommodate customer growth and the facility is currently operating at approximately half capacity.

Wastewater is transported by pipeline to the facility, where it undergoes primary, secondary and advanced treatment, including filtering through sand and charcoal and disinfection by ultraviolet (UV) light, prior to discharge into Clear Creek. Blackhawk is currently undergoing a facility upgrade, replacing its UV system with a newer, more energy–efficient, economical model and modifying its two oldest sand filters to add another 10 to 15 years to their life cycle. GCA also has plans to improve the head works, where wastewater enters the plant as well as improve its aeration system.

Blackhawk personnel also operate a small wastewater treatment plant near the City of Baytown for the Cedar Bayou Park Utility District.

In 2011 GCA entered into an agreement with the Port of Houston to provide an operator from Blackhawk for two small wastewater treatment plants that serve offices and warehouses at the Port.

Washburn Tunnel Wastewater Treatment Facility

Acquired in 1973 from Champion Paper Co. and immediately modified and improved, Washburn Tunnel was the first facility to be operated by GCA, providing an early demonstration of the effectiveness and viability of wastewater treatment on a regional scale.

Location	Pasadena, Texas, on the Houston Ship Channel
Process	Activated Sludge with atmospheric aeration and pure oxygen infusion
Treatment Capacity	60 million gallons/day
Average Volume Treated	12-15 million gallons/day
Staff	29

Washburn Tunnel serves 13 customers, including two refineries, three petrochemical plants, bulk storage facilities and other local industries. The facility also treats approximately a million gallons per day of municipal wastewater from the City of Pasadena as well as volumes from GCA's nearby Vince Bayou Receiving Station, which is operated by Washburn Tunnel.

The facility receives most of its wastewater via pipeline; one customer, a small specialty fuels refinery, delivers its waste by barge. Wastewater containing high concentrations of organic material goes through a two-step activated sludge treatment process involving oxygenation and aeration. The facility's incoming low-strength streams are mixed with higher-content organic waste streams before the second step of aeration. The final stage of the process utilizes conventional secondary clarifiers to remove much of the remaining solids before the effluent is discharged into the Houston Ship Channel.

The diverse, complex nature of wastewater treated by Washburn Tunnel has helped produce a robust mixture of contaminant-consuming microorganisms. Each year, Washburn Tunnel is called upon by other treatment facilities in the Greater Houston Area to provide sludge for re-seeding plants whose

microorganisms have been killed or weakened as a result of a shutdown or unexpected incident. Washburn Tunnel personnel actively participate in the Community Advisory Panel to promote community communication.

Vince Bayou Receiving Station

GCA created the Vince Bayou Receiving Station at the request of the City of Pasadena and the State of Texas to offload non-hazardous wastewater transported by truck for treatment at the nearby Washburn Tunnel Facility, which operates the station.

Location	Pasadena, Texas, near GCA's Washburn Tunnel Facility
Process	Receiving station for trucked-in wastewater treated by Washburn Tunnel
Average Volume	1.4 million gallons/month
Staff	2

Vince Bayou receives waste material from portable chemical toilets, septic tanks, equipment/parking lot wash-down streams and some industrial non-hazardous wastewater. The wastewater is screened to remove trash and other debris, tested to ensure it meets treatment specifications and then piped to the Washburn Tunnel Facility for processing.

40-Acre Industrial Wastewater Treatment Facility

The 40-Acre Facility commenced operations in 1974 and today provides regional wastewater treatment services for two petrochemical plants owned by The Dow Chemical Company/Union Carbide Corporation and Eastman Chemical Company and a marine terminal operation owned by Oiltanking Texas City, LLP.

Location	Texas City area
Process	Oxygen-Activated Sludge
Treatment Capacity	15.7 million gallons/day
Average Volume Treated	5-6 million gallons/day
Staff	12

The facility also treats storm water and carriage water from the 40-Acre landfarm, which receives sludge from the wastewater treatment facility. The storm water and non-hazardous leachate from GCA's nearby Campbell Bayou landfill are also treated at the 40-Acre Facility.

Wastewater is transported to the facility by pipeline, treated with sludge activated by pure oxygen infusion and polished in a series of retention ponds before the treated water is discharged into the Hurricane Canal, which feeds into the Texas City ship turning basin.

The 40-Acre Facility was named for the amount of wetlands created for mitigation purposes during construction. Personnel from the 40-Acre facility actively participate in the local Economic Alliance organization and Community Advisory Panel to promote economic development and community communication.

Campbell Bayou Solid Waste Management Facility

Campbell Bayou operates a landfill for non-hazardous industrial solid waste which includes construction debris from petrochemical plants operating in the Texas City Industrial Complex. Landfills are no longer permitted within 75 miles of coastal areas, so the grandfathered facility occupies a strategic position for serving this important industrial area.

Location	Texas City area
Operation	Non-hazardous solid waste industrial landfill
Volumes Received	Varies greatly—919 tons in 2011; 16,900 tons in 2008
Staff	2 (One shared with 40-Acre Facility)

The facility was permitted in 1978 and began operations the following year. Since then, it has completed and sealed nine waste cells and one land treatment unit. Space at the landfill is available by contract only. Current customers are The Dow Chemical Company/Union Carbide Corporation and Eastman Chemical Company.

Solid waste is trucked to Campbell Bayou, where facility personnel weigh and check loads to ensure all material received meets permit requirements. Operators compact the solid waste into impermeable, lined cells, which capture rainwater percolating through the solid waste for treatment at the 40-Acre Facility. Wells monitor the quality of groundwater under the landfill on a ongoing basis.

Odessa South Industrial Wastewater Treatment Facility

In the late 1990s, Odessa had a problem. Economic development was constrained by the city's inability under environmental regulations to combine municipal wastewater with industrial streams that had not undergone pretreatment. GCA was invited to provide a regional solution—the Odessa South Industrial Wastewater Treatment Facility. GCA rebuilt and refurbished the city's old municipal plant, commencing operations in 1997.

Location	Odessa, Texas
Process	Activated Sludge with atmospheric aeration
Treatment Capacity	7 million gallons/day
Average Volume Treated	2.3 million gallons/day
Staff	10

Today, the facility provides treatment services for municipal and industrial wastewater transported by pipeline from the City of Odessa and a number of industries, including electric generating companies and a chemical manufacturing facility. Under its permit, Odessa South also receives trucked-in wastewater from municipal septic systems and portable toilets as well as non-hazardous industrial wastewater.

Effluent from the facility is discharged into Monahan's Draw. Area ranchers are permitted to use water from the draw to irrigate alfalfa fields that feed their cattle. Odessa South is a prime example of how regional wastewater treatment can benefit an entire community.

Central Laboratory

GCA's individual facility laboratories were consolidated into a single Central Laboratory in 1991. While the facilities still perform some basic analysis, the heavy lifting is accomplished at the Central Laboratory, which processes 400 samples daily. Test results are available the same day, versus a one-week turnaround for most commercial facilities.

Location	Bayport Industrial District, Pasadena, Texas (on-site at GCA's Bayport Facility)
Operation	Full-service NELAP-accredited testing laboratory.
Average Volume	400 samples/day
Staff	27

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The Central Laboratory tests all GCA streams daily for pH balance, total organic carbons, total suspended solids, metals, chemicals and other materials to ensure that incoming wastewater may be processed effectively and that treated wastewater meets all permit requirements. The state-of-the-art facility employs spectrometry, mass spectrometry, electron capture detection, flame ionization, atomic absorption and inductively coupling plasma equipment, much of it automated, to perform its mission. The lab purchased and is in the process of implementing a web-based laboratory information management system that enables GCA facilities and other customers to rapidly access test status and results and performs automated quality assurance for sample analysis.

In addition to its work for GCA facilities, the Central Laboratory provides analytical services to external municipal and industrial organizations. The lab is accredited by the National Environmental Laboratory Accreditation Program (NELAP) and the Texas Commission on Environmental Quality (TCEQ). The accreditation is awarded by TCEQ based on the information submitted utilizing the NELAP quality system.

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