

CLARIFIER

A PUBLICATION OF GULF COAST WASTE DISPOSAL AUTHORITY



SPRING/SUMMER 2016

PROJECT DISINFECTION

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2016 Trash Bash: 4,578 volunteers pick up 54 tons of refuse, 518 tires 18





GCA CHAIRMAN'S LETTER

Disinfection of wastewater is a key step in the treatment process. It ensures that the effluent—the treated water we reintroduce to the environment—is clean and safe when it leaves our facilities and goes back to nature.

In fulfilling our mission of protecting the waters of the state of Texas, we at GCA are dedicated to ensuring that our facilities are efficient, compliant, well-maintained and sized to accommodate existing as well as future customers in order to promote environmentally responsible economic growth in our state and region.

Moreover, we are committed to transparency and open communication with our users and the communities in which we operate, which is one of the reasons we publish *Clarifier*. We believe it is important for us to educate the public on what GCA does, how we do it and the impact we have on our beautiful, prosperous state.

In this issue, we focus on the disinfection aspect of our business. A number of our wastewater treatment facilities in recent years have seen construction projects designed to upgrade or otherwise improve wastewater disinfection. These are some of their stories.

As an organization created by, regulated by and responsible to the Texas state government, we at GCA take our commitment to the public very seriously. We're proud of our people and the job they do in protecting and improving the environment and providing an infrastructure that enables industry to grow and prosper, creating jobs for our citizens.

Frank Jones

Chairman of the Board

GENERAL MANAGER'S LETTER

In addition to the technical wastewater treatment side, community involvement is an essential part of our business. GCA's employees serve on civic, industry and environmental boards and associations. We actively participate in sponsoring, helping to manage and staffing environmental education and cleanup programs and we encourage facility tours for everyone from school groups to elected officials and other dignitaries. Some of the community activities in which we participate are highlighted in this issue of *Clarifier*.

Let me also say a word about safety. It's something we emphasize throughout our operations. We owe it to our employees, our customers and our communities to maintain a safe and healthy workplace. GCA has been recognized many times over for our safety performance and we're very proud that the construction company that built our new disinfection system at the Washburn Tunnel Facility received two top National Safety Council awards for our project. The facility's employees should take pride in the awards because they certainly contributed to them, as the construction was in very close proximity to GCA daily operations. Read more about the awards inside.

Thanks for your continued interest in and support for the Gulf Coast Waste Disposal Authority.

Ricky Clifton

General Manager



GULF COAST WASTE DISPOSAL AUTHORITY ANNOUNCES EXECUTIVE PROMOTIONS

Gulf Coast Waste Disposal Authority (GCA) General Manager Ricky Clifton recently announced the promotion of two Authority executives.

Former Operations Manager Lori Traweek has been elevated to the new position of Assistant General Manager, GCA's second-highest leadership position, under General Manager Ricky Clifton. In her new role Traweek is responsible for Industrial and Municipal Operations, Facility Services, Financial and IT Services, the Central Laboratory and Human Resources.

Scott Harris has been promoted to Manager of Operations from Bayport Facility Manager. GCA's Bayport, Washburn Tunnel/Vince Bayou and 40-Acre/Campbell Bayou facility managers will report to Harris.

Congratulations to Traweek and Harris on their promotions.

CONGRATULATIONS!



Lori Traweek
Assistant General Manager



Scott Harris
Manager of Operations

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GCA JOINS OTHER DISCHARGERS STATEWIDE IN COMPREHENSIVE EFFORT TO FURTHER IMPROVE GALVESTON BAY AND SURROUNDING WATERWAYS

Dischargers around Galveston Bay and statewide are in the midst of the latest undertaking to improve water quality in the bay and surrounding waterways. Despite making giant advances in water quality improvements over the years, there is still some work to be done. GCA is among hundreds of dischargers in the area upgrading their facilities to do their part



in the current improvement effort. The collective goal is to further reduce bacteria in the waterways. GCA has tackled this issue by using both its in-house technical expertise and outside consultants to develop

the best site-specific solutions for each of its treatment facilities. As a result, GCA's Blackhawk, Bayport and

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Washburn Tunnel regional wastewater treatment facilities have each installed new state-of-the-art disinfection systems. Each of the facilities is using the disinfection technology selected for its specific application.

Disinfected effluent quality is determined by measuring the presence of indicator organisms. These are organisms that are normally present when there is human waste contamination. Indicator organisms are used in lieu of pathogenic organisms for safety reasons. Obviously, purposeful growing of disease-causing pathogenic organisms is a practice that should be avoided, thus indicator bacteria are used. The prescribed test methods for determining the amount of bacteria present involve growing bacteria using bacteria-specific growth media, then counting

the number of bacterial colonies present after a designated period of time. It is assumed if the levels of indicator bacteria are controlled,



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the pathogens will also be controlled. State of Texas water quality criteria are measured using E. Coli for dischargers to fresh water



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bodies, and Enterococcus for dischargers to saline waters. The criteria for seafood safety is determined using Fecal Coliform. All of these are indicator organisms. For purposes of bacteria control it is assumed that control of E.Coli and Enterococcus will also control Fecal Coliform.

BLACKHAWK FACILITY

GCA's Blackhawk Regional Wastewater Treatment Facility serves the City of Friendswood and several of the surrounding utility districts including a portion of the City of Houston. The facility has used ultraviolet disinfection (UV) for years. The aging system was nearing the end of its useful life and was in need of

an upgrade or replacement. After further study, it was decided that the best choice for upgrade was to install a modern state-of-the-art UV system. UV systems use ultraviolet light to damage the proteins, lipids and nucleic acids needed for bacterial growth and viability. The drawback of using UV is that it is dependent on penetration of the UV light into the water in order to kill the bacteria. The ability of the light to penetrate the water is

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dependent on the amount of solids and dissolved minerals contained therein. Blackhawk uses filtration ahead of the UV system to control the solids, so this was not an issue.

The dissolved minerals in most municipal wastewaters are in the range acceptable for the use of UV which is also the case for Blackhawk. To ensure proper sizing of the system, long-term data on light penetration of the Blackhawk effluent were evaluated. The unit was sized

to provide superior performance in all conditions experienced at the facility.



BAYPORT FACILITY

Our Bayport Regional Industrial Wastewater Treatment Facility treats wastewater from all the industries located in the Bayport Industrial Complex. In addition, the facility receives wastewater from two municipalities and the Port of Houston. The facility receives two categories of waste streams from its users. The high-strength wastewaters may contain potential sources of human waste along with other organic compounds. The facility generally achieves over 95% removal efficiency in treating the

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high-strength wastewater it receives. The low-strength wastewaters contain primarily cooling tower blowdown, boiler blowdown and stormwater.

This stream flows through a series of ponds for solids settling only. The original system configuration provided disinfection only for the high-strength waste stream. Under this configuration the treated high-strength wastewater was then disinfected and mixed with the low-strength wastewater in ponds before discharge. Based on testing throughout the pond system, GCA determined that the best way to ensure enhanced bacteria control was to relocate the disinfection system to a point just before final discharge of the treated effluent. This would ensure that all the treated wastewater from the facility was disinfected with little chance of recontamination prior to its release into the Bayport Ship Channel.

The original disinfection system at Bayport used chlorination (bleach) for bacterial control. That system was very effective so chlorination was again selected as the system of choice for the project. Chlorination is the oldest disinfection technology.

The widespread use of chlorination has been credited for dramatic reduction of waterborne illnesses such as typhoid in areas where it was used. Typhoid deaths in the United States at the beginning of the 1900s occurred at a rate greater than 20 deaths per 100,000 people. Today typhoid is almost non-existent and the same goes for other countries where chlorine disinfection is used. The rate of reduction correlates strongly with the use of chlorination to control bacteria. Bayport's new system also incorporates a dechlorination step to remove all traces of chlorine before discharging the treated water. Even though

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today other technologies have been developed that equal the effectiveness of chlorination, chlorination remains a highly effective and widely used weapon for the control of waterborne pathogens. UV was not suitable for this application due the high mineral content. This is normal for the types of wastewater treated by the facility.

WASHBURN TUNNEL FACILITY

Our Washburn Tunnel Regional Industrial Wastewater Treatment Facility (WT) provides treatment for primarily refinery wastewater but also receives petrochemical plant wastewater in addition to wastewater from the City of Pasadena. The original practice at WT was to disinfect the municipal wastewater using pH adjustment prior to mixing with the industrial wastewaters. Our industrial customers were



required to disinfect their own waste streams prior to sending to WT for treatment. GCA determined that it was more appropriate to disinfect all wastewater received by the facility at WT. As a result, a new disinfection system was installed to provide bacterial control of the treated water

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just prior to discharge to the the Houston Ship Channel. The Washburn Tunnel site had very limited space available for installation of the new facilities so the space requirement of the new disinfection process was a very important consideration during selection of the disinfection technology. Following an extensive study of options, a fairly new disinfection technology utilizing peracetic acid (PAA) was selected. PAA disinfection is relatively new on the scene for wastewater treatment disinfection, however, it is used widely for disinfection purposes in the food processing industry and is rapidly gaining favor throughout the country for wastewater applications. PAA destroys the cell wall of bacteria in a similar manner that chlorination does. It has the advantage of having less interferences and requires a smaller footprint in order to treat the same flow. The Washburn Tunnel system also includes sodium bisulfate to remove all traces of the PAA prior to final discharge of the water. As was the case at Bayport, UV was not selected because of the presence of dissolved minerals in the water. Chlorination was ruled out due



to expansive space requirements and the uncertainty of the required chemical demand driven by the main treatment process at the facility, which

controls the amount of ammonia discharged to the receiving stream using biological nitrification. Nitrification can require excessive amounts of chlorine in order to attain a level high enough to kill bacteria. This makes the system harder to control and increases the possibility of creating undesirable chlorinated compounds in the discharge. The application of the site-specific disinfection technology to help control

bacteria in the area receiving waters is another example of how GCA continues to achieve its mission of protecting the waters of the state through environmentally sound and economically feasible regional waste management practices.

DISINFECTION 101

GCA stays on the cutting edge of disinfection technology, employing a variety of techniques, often in tandem with other cleanup technologies, to eliminate bacteria at its wastewater treatment facilities before the effluent is reintroduced into the environment. Three of the more common disinfection technologies employed in water treatment are chlorine, bleach or Ultraviolet (UV) light.

Many wastewater treatment facilities in the United States, including GCA facilities, employ a combination of water treatment and disinfection processes, beginning with activated sludge treatment which employs naturally occurring microbes that consume and destroy harmful constituents in a wastewater stream. Later stage disinfection is usually accomplished using UV light, chlorine, bleach and in some applications, peracetic acid, which is an emerging technology in the United States.

CHLORINE

Chlorine has been a traditional go-to chemical for wastewater disinfection, but poses a number of environmental and safety concerns, as it is toxic and can be highly corrosive in high concentrations. Chlorine spills can threaten plant personnel and nearby communities, it can leave byproducts that must be disposed of and is ineffective against *Cryptosporidium* and *Giardia* parasites that can cause serious gastric distress in humans and animals. It is generally a cost effective option.

Perhaps the most common application for chlorine treatment is in swimming pools.

BLEACH

Bleach is another common chemical used in wastewater disinfection. Bleach? Yes, the same stuff you put in your washing machine for whiter clothing or add to your fountain to kill algae. Bleach is similar to chlorine but much less toxic and corrosive. Bleach was first used as a medical disinfectant in Austria in 1847 to help prevent the spread of “childbed fever,” which often killed new mothers while recuperating from childbirth. Bleach smells like chlorine because that is one of its ingredients.

GCA uses bleach as a disinfectant at our Bayport and Odessa wastewater treatment facilities.



ULTRAVIOLET LIGHT

The UV process uses submerged ultraviolet lamps to instantaneously kill bacteria and other undesirable or contaminating organisms as the wastewater flows through the light. More than 20 percent of the wastewater treatment plants in North America use this environmentally friendly technology. UV is fast, energy-efficient, cost-efficient, leaves behind no carcinogenic byproducts and is effective against chlorine-resistant protozoa. UV systems are often paired with pre-filters to remove sediment that can block or interfere with the transmission of light, preventing complete disinfection. Another consideration is the flow rate of water passing through UV light. If the wastewater moves too fast, insufficient UV exposure can impair disinfection. On the other hand, if the wastewater moves too slowly heat buildup could damage the UV lamps. And unlike chlorine-treated water, UV-disinfected water is susceptible to re-infection.

UV disinfection has been used widely since the mid-20th Century in medical sanitation, sterile work facilities, and for sterilization of drinking water and wastewater.

GCA uses UV light as a disinfectant at our Blackhawk facility, which serves municipal customers.

PERACETIC ACID

A third major disinfection technology, peracetic acid (also known as peroxyacetic acid or PAA), was first registered as an antimicrobial by the U.S. Environmental Protection Agency (EPA) in 1985 for indoor use on hard surfaces such as food establishments, medical and agricultural facilities and residential bathrooms. It is also employed in dairy processing plants, pasteurizers in breweries, wineries and beverage plants, and in the disinfection of cooling tower water, where it is effective against biofilm formation and Legionella bacteria. Its effectiveness against bacteria, viruses, fungi and spores has positioned peracetic acid as a major disinfection technology for use in the wastewater treatment industry in recent years.

Advantages of PAA include an absence of toxic or mutagenic byproducts, no or reduced quenching requirement, small dependence on pH balance, short contact time and effectiveness for both primary and secondary effluents. Another advantage is that PAA technology takes up a relatively small physical footprint, which is important at facilities such as GCA's Washburn Tunnel Facility where expansion space is extremely limited. PAA is more expensive than chlorine and has increased safe handling requirements, but its cost should fall as demand for the treatment technology increases.

ALTERNATIVES

Other disinfection methods include ozonation, which bubbles ozone through the water to break down parasites, bacteria and other harmful organics. This technology is used by many countries in Europe and by a few municipalities in the United States. Chloramination—formed by combining ammonia and chlorine with water—is another increasingly common disinfection method, as is the use of bromine (bromination) and iodine (iodination). Bromine is commonly employed in hot tubs. None of these alternative technologies are employed by GCA at present.



CONSTRUCTION COMPANY UPGRADING WASHBURN TUNNEL FACILITY WINS MAJOR NATIONAL SAFETY COUNCIL AWARDS FOR THE PROJECT

CDM Smith Constructors, Inc. (CCI), which constructed a disinfection system at GCA's Washburn Tunnel Facility, has been awarded the Operational Excellence Achievement Award and the Perfect Record Award by the National Safety Council for the Authority project.

The Perfect Record Award recognizes individuals, companies, units and/or facilities that have completed a period of at least 12 consecutive months without incurring an occupational injury or illness that resulted in a fatality or days away from work.

The Occupational Excellence Achievement Award recognizes projects that have Lost Workday case incident rates better than or equal to 50% of the Bureau of Labor Statistics rating for GCA's North American Industrial Classification System code in the past calendar year and zero fatalities during previous calendar year.

These are outstanding achievements that attest to the close cooperation and teamwork exhibited by

CCI and GCA personnel during the recent Washburn Tunnel Facility construction project, which was conducted in very close proximity to GCA operations.

NEW PERACETIC ACID DISINFECTION SYSTEM AT WASHBURN TUNNEL WORKING WELL

Washburn Tunnel completed construction on the chemical disinfection system using peracetic acid (PAA) as the disinfectant. Peracetic acid is an emerging wastewater disinfection technology in the United States. After an extensive technology evaluation process including pilot testing in 2013, GCA selected the PAA technology for the Washburn Tunnel Facility. This technology provided the benefit of a smaller disinfection basin to meet available space constraints and elimination of potential undesirable disinfection byproducts. One of the challenges recognized from the beginning was the problem of fitting the technology in the limited available space so the smaller disinfection basin represented a distinct advantage.

Groundbreaking occurred in the fall of 2014 and construction continued through 2015. Challenges successfully addressed during the construc-

tion included close coordination of construction space with GCA operations, shortages of concrete and technically difficult construction—all done without disruption of service to our customers. Construction occurred immediately adjacent to areas that operations personnel had to enter daily. Construction equipment had to be positioned in locations that required close coordination with facility personnel in order to maintain



plant operations. Good communication was essential to successful teamwork for continuity of business operations and timely construction progress. The construction boom in the greater Houston area during 2015 posed logistical challenges for scheduling concrete pours so some of the pours had to be scheduled at night to maintain the schedule.

At the time of commissioning this PAA system was the largest industrial wastewater treatment application of its kind

in the United States. During the spring of 2016 we collected data to optimize operation and assess the performance of the system. It has more than lived up to expectations.

Washburn Tunnel provides wastewater treatment service to several refineries, chemical plants and terminals located along the Houston Ship Channel as well as to the City of Pasadena. Clients comprise 26 percent of the refining capacity of Harris County and provide

over 26 billion barrels of bulk liquid storage capacity for shipment through the Port of Houston. Most wastewater is received via pipeline, but Washburn Tunnel also receives wastewater via barge and trucked in wastewater via GCA's Vince Bayou Receiving Station.



BLACKHAWK CONSTRUCTION PROJECTS



GCA's Blackhawk Regional Wastewater Treatment Facility has seen a number of construction projects and upgrades in the last few years.

While our other facilities primarily treat industrial wastewater, Blackhawk is solely dedicated to regional municipal sewage treatment, serving the City of Friendswood, Harris County Municipal Utility District (MUD)

55, Baybrook Municipal Utility District 1, and extreme southern portions of the City of Houston.

Among these upgrade projects, we completed the rehabilitation of the two oldest of the facility's five dual-media sand filters. These dual-media systems provide tertiary treatment to the water leaving the plant by fine filtering of the water. The old filters were taken down

to bare concrete and then refitted with new under-drains and media-support systems. New filter cells were installed with fresh sand and anthracite coal media. New pumps also were installed and the traveling bridges, or elevated walkways, were sandblasted and painted.

Also completed were upgrades to Blackhawk's Ultra Violet (UV) disinfection system. The previous system was outdated and was upgraded to provide consistent disinfection. The new system was activated in April of 2014 and is operating very well.

"We are very pleased with the new system's performance" said Gordon Pederson, Manager of Facility Services. "The technology has improved significantly since the first system was installed in 1994."

Blackhawk also completed a new head works project. That's where untreated wastewater first enters the treatment facility. The new head works has two





This is the top portion of the two automatic, self-cleaning bar screens

automatic, self-cleaning bar screens to remove solid debris and then wash, compact and dewater the screened material in preparation for disposal. Removing screenings at the head works will increase the lift of all pumps located downstream in the treatment facility.

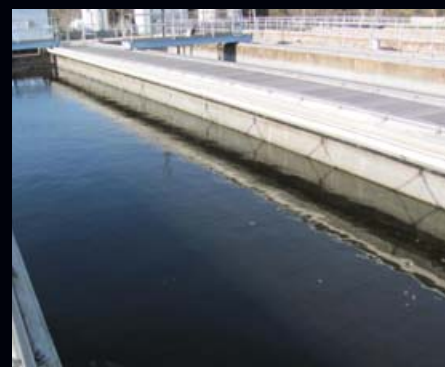
Four force mains were relocated to the new head works. The new piping has new flow meters to record volumes entering the treatment plant.

The head works project was completed in early 2016.

The facility is in the early phase of a construction project for a new third clarifier. This project will help the treatment process during times of high water flow due to rain. The new clarifier will enable operators to better control flow velocities during such storm events and maintenance of the existing clarifiers.

Blackhawk came on line in 1979 after the City of Friendswood invited GCA to create a regional facility to treat its and other entities' 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 roughly 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 UV light, prior to discharge into Clear Creek.



One of Blackhawk's dual-media filtration systems

2016 BAYPORT FACILITY IMPROVEMENT UPDATES



Bayport, GCA's largest facility, continues to make progress on projects that will provide additional reliability to customers and prepare the facility for continued growth.

The GCA team along with LEM Construction are now 75 percent finished with construction of Bayport's fourth main clarifier. With all of the in-

ground concrete work in place, electrical wiring and controls are being installed over the summer. The project is scheduled to be completed in September 2016.

Bayport also is in the process of replacing and upgrading to a larger diameter most of its piping, much of which has been in service for more than 20 years

and is approaching end of life. The majority of the effort this year has been spent on replacing the line from the facility's first-step tanks to its second-step tanks. The pipe supports all have been completed and sections of the replacement line set in place. We are currently in the middle of our transition plan to move all of the first step-tanks





and basin flows over to the new line. Heavy rainfall in May delayed parts of the transition, but GCA personnel have been working hard with the contractor to make up the time and now expect to have this project completed in mid to late August, weather permitting.



The second part of the piping project involves the replacement and upgrading to increase the size of the effluent line from the second-step basins to the main clarifiers. As with the influent side, pipe supports have been installed and piping set in place. The transition phase of this project will begin as soon as the first-step to second-step line is operational. The overall piping project is expected to be completed in November 2016.

Bayport's third major construction project under way addresses two of the facility's belt presses which have reached the end of their life cycle. One of the presses was completely rebuilt last year and parts have been staged for rebuilding the second belt press during 2016. As soon as the other main construction projects are finished, we will redirect resources to rebuilding the second press in October 2016.

These projects will allow us to meet future demands as the Bayport Industrial Complex continues to see strong growth heading into 2017. Bayport's compliance staff continues to receive discharge applications from existing users and inquiries from potential customers on a weekly basis—great news for the local economy. GCA remains diligent in our efforts to stay in front of these requests so that we can provide the best, most reliable service to our customers while serving our mission to protect the waters of the state of Texas.

From Left: Lori Traweek, Assistant General Manager/Public Relations Officer; Ricky Clifton, General Manager; GCA Board member Chris Peden; Rep. Pete Olson; Olson's District Director Robert Quarles; and Scott Harris, Manager of Operations, Acting Facility Manager, Bayport Facility



U.S.

REP. PETE OLSON (R, TX) TOURS GCA'S BAYPORT FACILITY

Congressman Pete Olson, who represents Texas's 22nd District, visited GCA's Bayport Facility last August with his District Director Robert Quarles.

The district includes the majority of Fort Bend County, including most of the cities of Sugar Land, Missouri City, Rosenberg, Needville and the county seat of Richmond, as well as the county's share of the largely unincorporated Greater Katy area. In addition, the district contains

portions of northern Brazoria County including Pearland and Alvin, and a small portion of southeast Harris County centered on Friendswood.

The tour was conducted by Scott Harris, former Bayport Facility Manager and current Manager of Operations for GCA. Also in attendance on behalf of GCA were Chris Peden, Board Member, Ricky Clifton, General Manager, and Lori Traweek, Assistant General Manager. We provide regular tours of

our facilities for schools, civic groups, businesses and governmental officials in order to keep the public and elected leaders aware of the Authority's mission and performance and to generate support for clean water and a healthy environment.

We appreciate Rep. Olson and his district director for having taken the time to visit.



GCA'S 40-ACRE FACILITY WINS PRESTIGIOUS NACWA AWARD

The National Association of Clean Water Agencies (NACWA) has once again awarded its prestigious Platinum Peak Performance Award to GCA's 40-Acre Facility.

Platinum awards recognize 100% compliance with permits over a consecutive five-year period. Congratulations to Facility Manager Terri Strachan and all of our 40-Acre personnel for your continued commitment to excellence!



The 40-Acre crew, Left to Right, Joanne Vasquez, Joe Pickens, John Bourman, Renee Eaglin, Jesse Williams, Terri Strachan, Troy Bellmeyer and Bert Pena. Not pictured but equally contributing are Gardenia Broussard, David Espinoza, Kevin Perkins, Cliff Pabon, Robert Robles and Dawn Ryczek

NACWA was established in 1970 by a group of individuals representing 22 large municipal sewerage agencies. They came together to secure federal funding for municipal wastewater treatment and discuss emerging national interest in improving the quality of the nation's waters. Based upon the shared goal of effectively representing the interests and priorities of publicly-owned treatment works they formed

NACWA - the National Association of Clean Water Agencies.

In the quarter century that followed, the Association grew and its interests diversified. Today, NACWA is a dynamic national organization, involved in all facets of water quality protection.

GCA's Odessa South Facility won a Gold Award and Washburn Tunnel and Bayport facilities each received Silver Awards.

Left to Right:
Adel H. Hagekhalil
(NACWA President (2015-2016)
Assistant Director
City of Los Angeles - LA Sanitation

Irvin Osbourne-Lee
GCA Board member

Ricky Clifton
GCA General Manager

Edward "Ted" G. Henifin
(NACWA Award Committee Chair)
General Manager
Hampton Roads Sanitation District



LATEST SCRIPT AWARDS ANNOUNCED

GCA announced the SCRIPT Award recipients for first quarter 2016.

The awards recognize Authority employees whose work ethic, performance and commitment reflect and promote GCA's Core Values, easily remembered by the SCRIPT acronym:

- **Stewardship of the environment and of the health and safety of employees, customers and neighbors;**
- **Communication—openly, honestly, frequently with all stakeholders;**
- **Reliability of our operations and services that are safe, compliant and cost effective;**
- **Integrity of our staff who operate in a simple, clear, transparent and honest manner;**
- **Planning to ensure continuity of service, innovation, sustainability and financial responsibility; and**
- **Teamwork to foster trust, commitment, enthusiasm and innovation.**

This period's SCRIPT Awards go to: **Bert Pena**, 40-Acre Facility; **Mary Lou Reyes**, Central Lab; and **Maria Kovich**, Central Office.

Pena, maintenance tech at 40-Acre, is known to be the first at work and ready to start his duties promptly. He can fill in for any position and is extremely reliable. His friendly and warm communication style is his trademark. Always possessing a smile and a welcoming spirit, Bert is a most deserving SCRIPT winner. Keep up the great work Bert!

Reyes was nominated for consistently going above and beyond in her duties as a chemist. Respected as a problem-solver and attentive teammate, Mary Lou is also known for her cooperative and pleasant manner. Congratulations on being a winner!

Maria Kovich very capably represents the face of GCA. She is the first to greet visitors at Central Office. Whether directing calls and inquiries or assisting guests, she makes a good first impression. In addition, she performs duties for all central departments while maintaining and improving the front office procedures. She's also the publisher of the WasteStream, our employee newsletter. Very good work Maria and congratulations on your SCRIPT award!



40 Acre employee Bert Pena receiving award from 40 Acre Facility Manager Terri Strachan



Chemist Mary Lou Reyes, Left, receives award from Lab Manager Diane Maloy



GM Ricky Clifton presenting award to Maria Kovich on behalf of Central Office



TRASH BASH WINS FIRST-PLACE AWARD FROM KEEP TEXAS BEAUTIFUL

Trash Bash, a major annual community waterway cleanup effort that GCA supports and helps manage, received a First-Place Regional Award for Texas civic organizations from Keep Texas Beautiful (KTB). The award was presented on June 22 at KTB's annual convention in Sugar Land.

GCA has sponsored and otherwise supported the River, Lakes, Bays 'N Bayous Trash Bash® event since its inception in 1994, and annually manages two of the 15 cleanup sites. In addition, GCA Assistant General Manager Lori Traweek is president of the Texas Conservation Fund, which organizes Trash Bash, and Executive Assistant Lynda Norton is the fund's treasurer. KTB Executive Director Suzanne Kho presented this year's award to Traweek and Becki Begley, Houston-Galveston Area Council, at the conference awards luncheon.

Keep Texas Beautiful, a statewide grassroots environmental and community improvement organization and affiliate of Keep America Beautiful, each year recognizes deserving individuals, businesses, community groups, civic organizations, media, government entities and law enforcement officials for their commitment to an array of environmental issues, including litter prevention and community beautification, volunteerism, illegal dumping enforcement and education.

Trash Bash has received a number of awards from KTB and other organizations since its beginning.

KEEP TEXAS BEAUTIFUL



Left to Right: KTB Executive Director Suzanne Kho;
GCA's Lori Traweek; Becki Begley, Houston-Galveston
Area Council





2016 4,578 VOLUNTEERS TRASH BASH GATHERS 54 TONS OF REFUSE

This year's annual
River, Lakes, Bays 'N Bayous

Trash Bash®, held April 2, was
another resounding success as 4,578 vol-
unteers cleaned up nearly 54 tons of trash,
along with 518 discarded tires, from 177 miles of
shoreline in the Greater Houston-Galveston area.

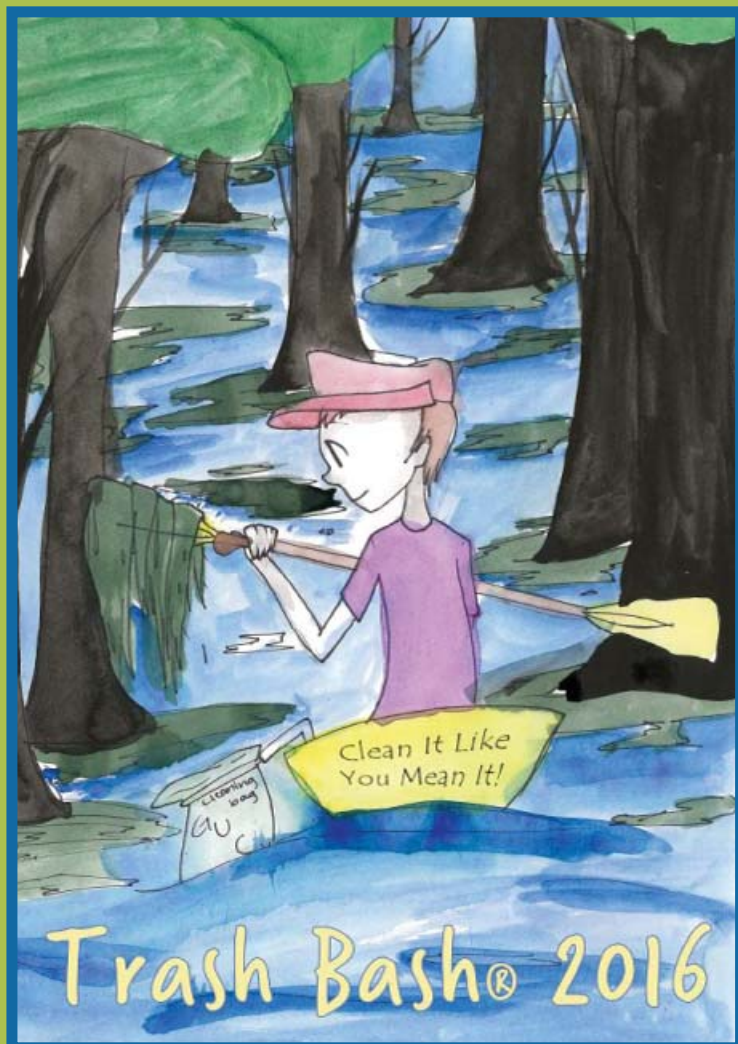
GCA has supported the Trash Bash since the cleanup
effort began in 1994. The Authority's Assistant General
Manager Lori Traweck is president of the Texas Conservation
Fund, which organizes the event, and Executive Assistant Lynda
Norton serves as the Fund's treasurer. And two GCA facility man-
agers supervise cleanup sites: Washburn Tunnel's Phyllis Frank
is over Sims Bayou and 40-Acre/Campbell Bayou's Terri Strachan
leads the Virginia Point sweep in Texas City. Many GCA employ-
ees and their families participate in the cleanup each year, as well.

"Trash Bash is one of the most important community events in
which GCA participates," says Traweck. "It's 100 percent in
line with our mission of protecting the waters of the state of Texas
and it helps raise public awareness of all the good things
the Authority and other partners do to maintain a clean environment."

Traweck said the 2016 event cleaned up the most miles of shoreline
since Trash Bash began recording the statistic. The average volunteer
picked up 23.5 pounds of trash this year. Over the last 22 years, since
Trash Bash began, more than 102,000 volunteers have removed over 1,200
tons of trash and 10,100 vehicle tires from nearly 1,300 total shore miles.







1st

Trash T-shirt Contest Winner

Cy-Fair ISD students swept the top three honors in the 2016 River, Lakes, Bays 'N Bayous Trash Bash® T-shirt Art Contest. A student from Pearland ISD won an honorable mention in the competition.

The contest, held for the past three years, allows students in grades 1-8 to submit a design illustrating the effects of litter on area waterways. The first-place winner's design is featured on the front of the T-shirts given to thousands of volunteers participating in the largest, single-day waterway cleanup in Texas each spring.

The winners were students at Hopper Middle School:



2nd



Bash shirt test ners



3rd

Khalia Gillette used Sharpies and watercolors to create her First Place bayou cleanup scene.

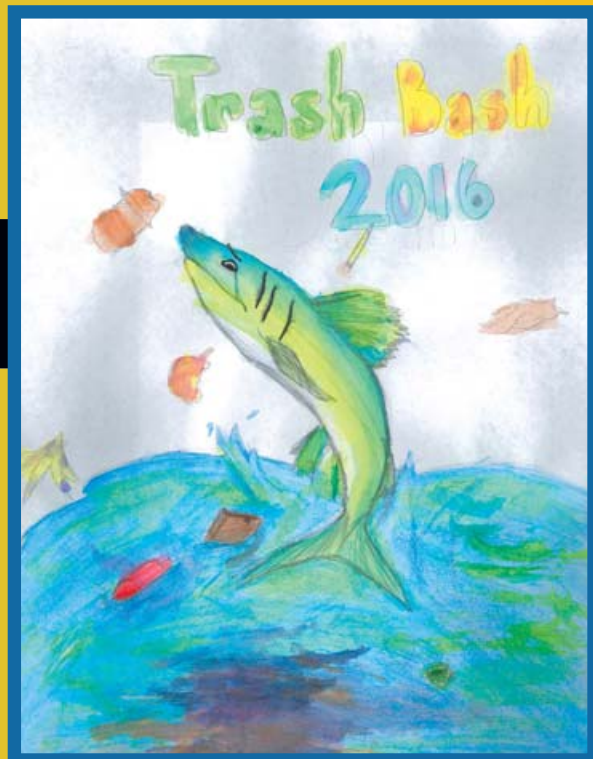
Alessandra Garcia used colored pencils to create her Second Place lake cleanup scene.

Zachary Roshong used colored pencils to create his Third Place river cleanup scene. All three received cash prizes, framed artwork, and a certificate.

Ashley Ramos, a student at Pearland Junior High East, used pencil and watercolors to create a bay cleanup scene that took honorable mention. She received framed artwork and a certificate.

GCA thanks all of you and congratulations to the winners.

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2016 TEXAS ENVIROTHON WINNERS ANNOUNCED

A team of high school students from the Science Academy of South Texas in Mercedes, TX, won the 2016 Texas Envirothon competition in Houston last April and represented Texas against other states and Canadian provinces at the NCF Envirothon in Ontario July 24-29.

Teams from the Academy of Science and Technology, The Woodlands, and Clear Lake High School took second and third place, respectively.

“Envirothon is a great way for high school students to get hands-on experience and an introduction to potential natural resource careers,” said Wendy Reistle, program coordinator of the Texas Envirothon. “The competition also exposes students to real environmental issues that need to be addressed.”

GCA is a competition sponsor and has supported the event for a number of years.

Twenty-two teams representing 15 high schools took part in the three-day competition which was held at Sheldon Lake State Park, the University of Houston-Clear Lake and Armand Bayou Nature Center.



GOV. ABBOTT APPOINTS NANCY BLACKWELL TO GCA BOARD; MANY THANKS TO GLORIA MATT FOR HER SERVICE

Texas Gov. Greg Abbott has appointed Nancy Blackwell as Harris County's representative on the GCA Board of Directors. Blackwell succeeds Gloria Milian Matt, a two-year GCA board veteran.

Blackwell is president and majority owner of AEI Engineering, a consulting firm specializing in design and construction management of utility and facility projects, primarily for municipal and governmental entities. She graduated from Texas A&M University with a bachelor's degree in civil engineering. She is past state president and an active member of the Texas Society of Professional Engineers and a member of the Texas Engineering Foundation, American Council of Engineering Companies, Association of Water Board Directors and a board member of the Houston Northwest Chamber of Commerce.

"We're delighted to welcome Nancy Blackwell to the board," said Chairman Frank Jones. "Her background in the



GCA Board Chairman Frank Jones welcomes incoming Board Member Nancy Blackwell.

management of utility and facility construction projects is invaluable to our organization as we strive to stay ahead of demand for our services."

Jones had high praise for outgoing board member Matt. "Gloria has been an outstanding presence on our board.

She is stepping down due to a family move to Beaumont and we wish her the very best." During her tenure with GCA, Matt worked as a mechanical engineer for E.I. du Pont De Nemours and Company in La Porte, Texas.

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