# JCUA's PASCAGOULA-MOSS POINT PLANT RECEIVES NATIONAL RECOGNITION

## Plant Ensures Quality Effluent Through Sound Maintenance and Continuing Education for Staff

Age is no barrier to performance at the Pascagoula/Moss Point Regional Treatment Plant. Sound maintenance and continuing education for staff ensure quality effluent.

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- By Ted J. Rulseh
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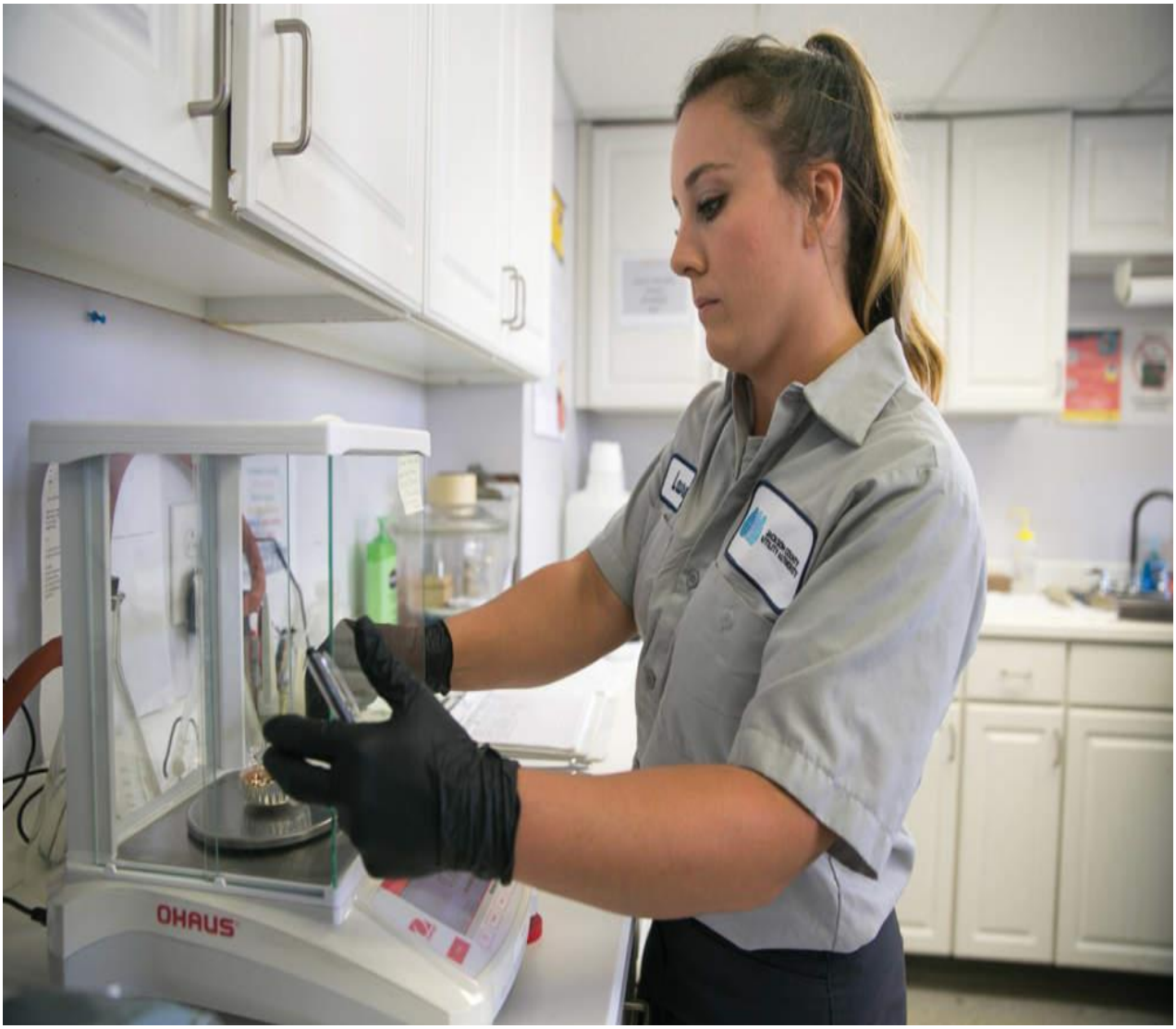
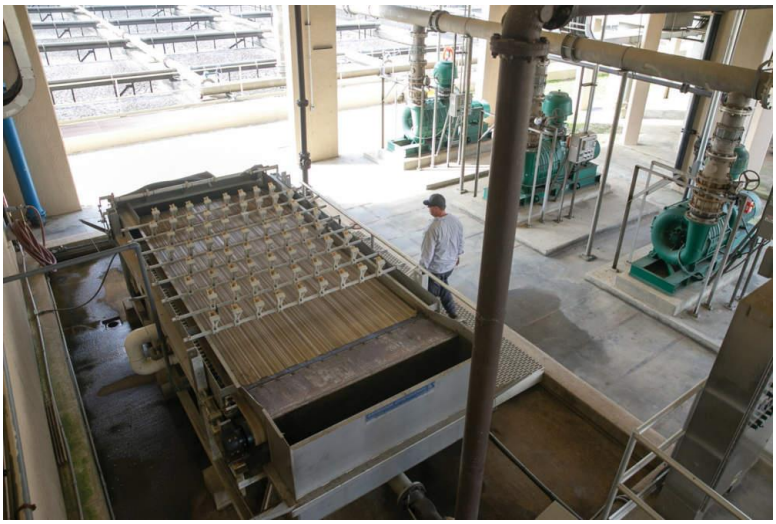
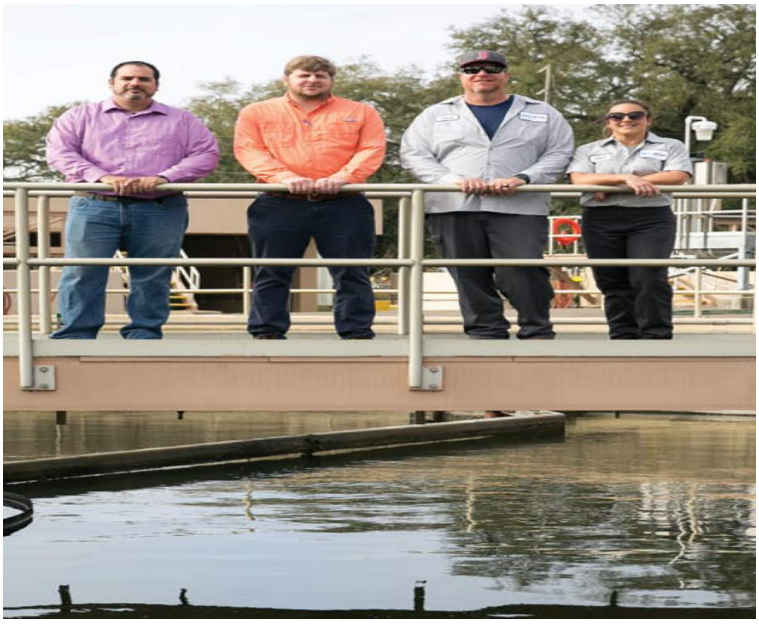



**Lauren Smith, PMP Plant Operator**



**Chuck Redmond, PMP Plant Supervisor in the Sludge Thickening & Dewatering Building**

**Carrie Dennis, Operations/Maintenance Manager**



**L to R:**
**Christian Nevarez, Lab Manager; Chase Glisson, Engineering Manager; Chuck Redmond, PMP Treatment Plant Supervisor; and Lauren Smith, PMP Plant Operator**


An Evoqua biofilter unit contributes to odor control in consideration of nearby residential development.

There's nothing fancy about the Pascagoula/Moss Point (Mississippi) Regional Wastewater Treatment Plant. Day by day, year by year, it churns out clean effluent to help protect water quality and fisheries in the Gulf of Mexico.

It has done that for 35 years, treating wastewater from a mix of domestic, commercial and heavy industrial sources. Its nine team members fully embrace the mission of its owner, the Jackson County Utility Authority: to protect public health and the environment and ensure the wise, beneficial use of public resources.

Pascagoula/Moss Point is the only plant to receive the Mississippi Water Environment Association Most Outstanding Wastewater Treatment Facility award three times, most recently for 2017. "Even though it's older, it's been very well taken care of," observes Carrie Dennis, wastewater operations manager. "We're improving the facility to continue providing the best treatment quality possible. Having our own lab helps. Because we have a lab that can get us our numbers quickly, we can make adjustments quickly."

That's a precious capability because the plant sees significant and sometimes unpredictable flows from the area's chemical and petrochemical industries. Staff members, developed in a diligent training program, have long experience with the plant and have seen it through a variety of challenges, including hurricanes Katrina and Nate.

**Diverse communities**

The facility serves the Gulf of Mexico cities of Pascagoula (population 25,000) and Moss Point (13,000), not far west of the Alabama border. The area combines oil refining and related chemical businesses with natural beauty and recreation.

The Jackson County Utility Authority received millions of dollars in hurricane repair and recovery funds to repair and expand its clean-water capacity and is now investing in a multiphase capital improvement plan that includes upgrades at Pascagoula/Moss Point (10 mgd design, 5.2 mgd average).

The process is basic activated sludge. Influent enters through a bar screen and grit removal system and passes directly to three aeration basins, each with four surface aerators. The flow then enters two secondary clarifiers, followed by chlorine disinfection and discharge to the Pascagoula River, which feeds the Gulf a short distance downstream.

Waste activated sludge is dosed with polymer and passes through a gravity belt thickener (Alfa Laval) before dewatering on a belt press (Andritz Separation). Class B biosolids at 18 to 20 percent solids are applied to 75 acres of district land planted to Bermuda grass, which is harvested as hay and sold as livestock feed. Biosolids production is about 400 cubic yards per month.

**Upgrades in progress**

The plant is in the second phase of its upgrade, according to Chase Glisson, an authority engineer. The headworks upgrade includes a biofilter (Evoqua Water Technologies) for odor control in recognition of residential and commercial development close by. An aging grit removal process has been replaced with a new gravity system from Smith & Loveless. An extensive piping upgrade is complete, and the mechanical bar screen is scheduled for replacement.

The aeration ditches are being rehabilitated one at a time; work on the first basin is in progress. New surface aerators (Philadelphia Mixing Solutions) have been installed. The basin has been drained and cleaned and the equipment refurbished.

Automated dissolved oxygen control (Evoqua Water Technologies) will be added using Hach oxygen sensors. The aerators will be able to speed up or slow down based on the DO level and will also be controllable by way of timers. Operating data will be displayed on the workstation of the cellular-based SCADA system (Mission Communications) in the control building.

Provision has also been made to simplify regular basin maintenance. “Some of the valves were over 30 years old and no longer operated the way we would expect,” Glisson says. “Instead of digging down 20 feet and replacing those valves, we added pumps (Weir Specialty Pumps (WEMCO)) that can empty out the wastewater to a level where staff can go in to work on the equipment.” All three basins will ultimately be upgraded in essentially the same manner.

Meanwhile, in the clarifiers, the walkways are being rehabilitated; the tanks drained, cleaned, sandblasted, and repainted; and the drivetrains and arms refurbished. Two years ago, the chlorine system was updated with automated valves and automatic shut-off.

## Keeping it running

While upgrades continue, plant team members provide diligence daily to keep clean effluent flowing. “The least-experienced operator we have, Lauren Smith, has been here one year and is already Class 2 certified,” says Chuck Redmond, plant supervisor and certified Class 4 (highest).

Other team members with Class 4 certification are Billy Scara, lead operator (10 years); Curtis Evans, second shift lead operator (10 years); Curtis Hartzog, operator (six years); and James Jones, collections systems operator (10 years). The remaining team members are Richard Weathers (15 years) and Will Brown (8 years).

“We do basic preventive maintenance,” says Redmond, who has been with the authority for 27 years. “Each operator is given a set of PM tasks to do monthly. If something happens to break down or needs attention, we write a work order and send it right over to our maintenance department. They jump on it, depending on what priority we assign, and get it back in service for us. It’s all about day-to-day operations, general housekeeping, cleaning equipment, cutting grass, doing plant checks.

“We have a very dedicated team. They work hard, and they are very knowledgeable about the process we have. We handle most of our process sampling in-house. We have a mixed liquor monitor on our splitter box. We run our own cake and filtrate samples from the press. We take digester and mixed liquor samples and do DOs and pHs where needed.”

## Minding the flow

A key responsibility for the team is keeping a handle on the industrial flows coming through the city-owned collections systems and adjusting the process as necessary. “We don’t own the collections systems that discharge to us, so we have to take more of a reactive posture,” Redmond says. “We don’t have a pretreatment coordinator, but we do have a compliance team working on that issue.”

Christian Nevarez, laboratory manager, observes, “Over the years, we’ve started a monitoring program where we went to all the pumping stations and ran specific tests to see what was going on with our facilities. We determined which ones are our problem areas, and we keep those on the monitoring program.

“The main problem areas are still monitored monthly and some on a quarterly basis. We’ve been able to establish when high solids are coming to a facility, or high ammonia levels, or loadings of fat, oil and grease. Then we have time to find the sources and try to get them to help us out.”

The lab is instrumental in maintaining compliance and process consistency. “We have a quality control program where we enter the data to make sure it meets our standards,” Nevarez says. “We recently put in a quality assurance/quality control officer into the lab. We run duplicate tests on a daily basis. Standard deviations are established at certain limits depending on the tests being run. The lab has its own quality assurance plan.”

All process control testing is performed in-house, as are compliance tests other than for metals, oil and grease, and bioassay. These are sent to a contract lab. The lab also looks at microscopy samples from the process when requested by plant operators.

## Making careers

Operator training is at the heart of effective plant performance and of career paths that help keep top talent within the organization. “When we bring in new employees, two or three of us work hands-on with them day to day,” Redmond says. “We take them out into the plant so they know what we expect of them and gradually train them on the process.” In their first six months, they’re required to complete Volume 1 of the Sacramento operator course.

“They start out on a 90-day probationary period. After that, with the training they receive, they are able to work independently and can do anything we ask of them, short of collecting permit samples, which they can’t do until they become certified. We also have a cross-training program where we send new employees to our other plants. They spend time in the lab and with the engineering and maintenance departments to get an understanding of what the departments do.”

Authority leaders encourage team members to raise their certification levels. Training is company-paid and covers events such as math workshops, day training sessions, and an annual short course hosted by the state Department of Environmental Quality and presented by the Mississippi Water and Pollution Control Operators Association. Typically, operators take four years to attain Class 4.

Employee retention runs high. “Usually, the biggest turnover our plant has is through promotion,” Redmond says. “People move to another of our facilities, or some might be more maintenance-inclined. We’ve had a couple switch over to become lab technicians. There’s a lot of opportunity once they get their foot in the door.”

That kind of continuity makes for a strong and resilient operation. Redmond observes, “Our structure has played a part in our ability to maintain our infrastructure and our assets. We have operations, compliance, laboratory and engineering. Our management, for the most part, I would say that whenever we need something, we get it in a timely manner to continue to provide the quality service that we do.”

Nevarez concludes, “We have a staff that really does care what they produce. It doesn’t only affect the environment. It affects the industry in our area, the fishing, the recreation. We do our best to put the highest water quality out into the ocean.”

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## Part of a network

**The Pascagoula/Moss Point (Mississippi) Regional Wastewater Treatment Plant is one of seven clean-water facilities operated by the Jackson County Utility Authority. The major facilities are:**

**The** Escatawpa Wastewater Treatment Plant, **a 3 mgd (design) activated sludge facility that treats flow for the city of Moss Point and the Escatawpa Utility District. Final effluent is discharged to the Escatawpa River.**

**The** Gautier Wastewater Treatment Plant, **a 4 mgd facility, uses an oxidation ditch process. It treats wastewater for the Gautier Utility District. Final effluent is discharged to the West Pascagoula River.**

**The 5 mgd** West Jackson County Regional Land Treatment Facility **uses a lagoon and constructed wetland treatment process with spray irrigation. It lies within the U.S. Fish and Wildlife Service Mississippi Sandhill Crane Refuge and treats wastewater for the city of Ocean Springs and the West Jackson County Utility District. It discharges to Bayou Costapia.**

**Aerobically digested biosolids from the three mechanical treatment plants are received at the West Jackson County facility before being taken to the authority's land application site.**

**In addition, in 2011, the authority constructed three decentralized treatment facilities serving the communities of Big Point, Wade, and Hurley. These facilities are considered green infrastructure, as they are small-scale systems used for natural treatment that reduces pollutant discharges and replenishes aquifers through surface absorption.**

**Over the years, each of the authority's treatment plants has received a Mississippi Water Environment Association Most Outstanding Wastewater Treatment Facility award.**

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**Weathering storms**

**A plant team gets tested when adversity strikes. And adversity struck hard back on Aug. 29, 2005, when Hurricane Katrina hit the Gulf Coast.**

**The Mississippi coastline wasn't affected as severely as New Orleans, but still, the storm inundated the Pascagoula/Moss Regional Wastewater Treatment Plant. "That was a time when everybody worked together to get the plant back up and the pump stations running," says Carrie Dennis, wastewater operations manager.**

**Chuck Redmond, plant supervisor, states, "I was at another facility at the time, but probably 90 percent of the equipment here went under water. Contractors had to come in and redo all the electrical, pumps, motors. They were back providing treatment by the end of the week — not the way we typically treat wastewater, but in some form or fashion, all our plants were functioning by the end of one week."**

**Dennis adds, "I think we learned our lesson from Katrina, because when Hurricane Nate happened in October 2017, we were back up and going within a day." That was with help from permanently installed diesel backup generators (Kohler Power Systems) serviced by Taylor Power with a total 700 kW capacity.**