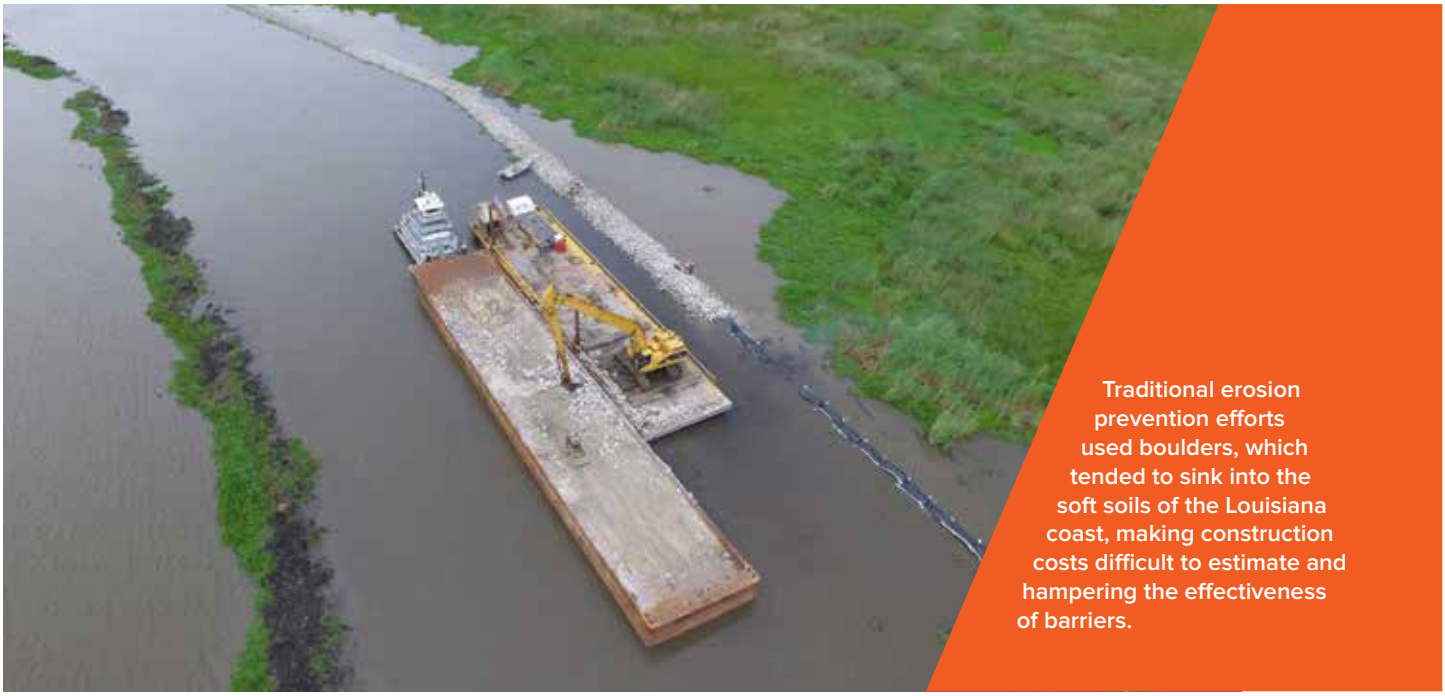

Traditional erosion prevention efforts used boulders, which tended to sink into the soft soils of the Louisiana coast, making construction costs difficult to estimate and hampering the effectiveness of barriers.

BARATARIA RESTORATION USES ENCAPSULATED LIGHTWEIGHT AGGREGATE

Louisiana is shrinking. By some estimates, the state loses roughly 16-square miles of coastline every year. Bays and bayous marked on nautical maps for centuries have vanished, washed away by decades of erosion and storm surge. A series of projects hopes to change that.

One such long-term project is the Barataria Basin Landbridge Shoreline Protection. The restoration campaign is conducted by the United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS), and is designed to protect vital marshes and wetlands from further damage.

In this coastal preservation project, large bags of geotextile fabric are filled with lightweight aggregate produced at ARCOSA's Erwinville, Louisiana facility. The bags, armored with rip-rap, help reduce wave energy impacting shorelines and protect adjacent marshes.

COOK

NEW ORLEANS FIRM CHOSEN FOR PROJECT

Pontchartrain Partners, LLC, based in New Orleans, was the engineering firm chosen to work on the Barataria restoration. "The project was needed to alleviate loss of land for the most part," says Bart Cook, P.E. and Managing Partner, Vice President of Pontchartrain Partners.

"Building barriers is the most important part to preventing wave action and energy surges that eat away at the land masses. This has caused major issues in the state and we lose a lot of land every day. This land bridge project is part of a major effort to protect the New Orleans area and Lafourche Parish." Arcosa Lightweight's Jeff Speck says in the past, ordinary boulders were used in such projects. But that was always a problem, especially in Louisiana's soft, compressible soils.

"Prior to using lightweight, ordinary normal weight rock was used for those types of projects. And the problem was, you never knew exactly how much material it was going to take to build the protection berm.

Courtesy: Pontchartrain Partners

Since the soil is so soft, the heavy rock would just sink into the mud," says Speck. "The nice thing about lightweight is it doesn't sink."

A bulk shipment of lightweight material was sent by barge to a staging area where the contractor placed the aggregate in giant fabric bags. Once they were sewn shut, the bags weighing roughly 3,500 pounds, were placed on another barge and shipped to the remote location along the Louisiana coast. "On the barge we had a crane with four load points lift up the bags," says Cook. "You had three different operations going on. First you laid down a fabric base, then you laid down the lightweight bags and then you put rock on top of that to armor the bags and the land behind it. They were placed in the water based on a specific sequence. It was just like a train."

PROJECT A FIRST FOR PONTCHARTRAIN PARTNERS

Using lightweight aggregate encapsulated in geotextile bags was a first for Cook's firm.

"In a typical design, you just put the rip-rap on top of the natural ground but in South Louisiana, that rock will just disappear. At first, I wasn't aware of lightweight aggregate. But using this light material as soft core is smart. " says Cook. "This is the only product I've seen that really alleviates the sinking, and I saw it firsthand."

Cook explains, "It's lighter weight with less direct forces on the soils to sink in and penetrate."

The $13.5 million project used an estimated 28-thousand cubic yards of lightweight aggregate, 123-thousand square yards of geotextile fabric and around 124-thousand tons of rip-rap.

"After doing that four-mile stretch, this project was a great learning process for us," says Cook. "We've got a great team of folks set up now and I can't see not using lightweight again."