VIOLET - A day after Hurricane Katrina hit Louisiana, the Lake Borgne Levee District staff went to open the floodgate at Bayou Dupre and help drain water out of the area.

They couldn't find the structure, said Kevin Wagner, project manager for the U.S. Army Corps of Engineers levee construction work in St. Bernard Parish.

The next day, workers found handrails sticking out of the water; everything else was covered by storm surge, he said.

Located in the levee that runs along the Mississippi River Gulf Outlet channel, things look a lot different at the floodgate today.

As part of Task Force Guardian's work to rebuild damaged New Orleans area levees before June 1, $43.6 million will be spent rebuilding and heightening levees in the parish.

During the storm, areas to the north and south of the floodgate were scoured to a depth of 25 feet on either side. Those holes have been filled in, the area immediately around the structure has been rebuilt to 20 feet and covered with rock. Soon, contractors will begin pumping a slurry concrete into the rocks to help bind the entire armoring together, Wagner said.

These "transition points" between dirt levees and concrete structures were a weak point in many areas during Katrina, Wagner explained.

So far, the work is about 86 percent complete and levees will be back to authorized heights in time to meet the deadline, Wagner said. That work includes building 11.8 miles of new levee, repairing 7 miles of levees and repairing two water closure structures.

State Sen. Walter Boasso, R-Arabi, said he's comfortable the corps will build the levees before the start of hurricane season. "The only thing I want to see is these things get armored," he said.

Although federal money to place concrete or other erosion prevention material on the levees is being discussed in Congress, the money to do that armoring isn't available yet.

"That's going to be key to the full stability of those levees," he said.

To the north and south of the Bayou Dupre Control Structure, contractors continue to build the levees to a height of 20 feet, about 2.5 feet above the authorized level of 17.5 feet to account for sinking.
Some of the building material has come from a "borrow pit" on the land side of the levee, but more than one million cubic yards is coming from Mississippi, Wagner said.

This clay material - between 14,000 and 20,000 cubic yards of dirt a day - is barged to the site and then moved to land through a series of backhoes, dump trucks and bulldozers. But some dirt is needed to build access roads and some is lost in transportation, he said.

Rich Varuso, corps geotechnical engineer, said the dirt brought in by barge has one advantage over the dirt they can dig locally - it allows the levees to be built much faster.

Normally, when material is dug out of the ground it needs to sit to help drain water that makes for a weaker building material. Then the dirt needs to be moved again and allowed to sit and the process is repeated at the levee site, he said.

The clay barged to the levee construction along MRGO has gone through this process so it can essentially be unloaded and used almost immediately, Varuso said.

In addition, using the barged dirt helps to avoid pipelines that cross certain areas of the borrow pit.

Earlier this year, the strength of some of the local soil was questioned by researchers who said it was not strong enough for levee material.

Robert Bea, professor of engineering at the University of California at Berkeley, said things have improved between a January visit and a March follow-up.

Good soils were capping the levees and the area was "overrun" with knowledgeable people, equipment and workers, he said.

However, Bea said he's still concerned that the base and interior of the levee structures are a potential weak spot. Soil samples taken in March show that below the cap of clay soil, much of the levee is sand, he said.

In addition, Bea shared Boasso's concern that the levee needs to be armored against erosion.

"A good engineer is a worrier - and worries until there is nothing important to worry about," he wrote.

Varuso said the local soil and the Mississippi soil have been tested within the last two weeks by the corps and both types have had good results for resistance to erosion and soil strength. The soil also is tested after being placed on the levee.

Other work being done in St. Bernard includes shoring up floodwalls that did not fail by placing concrete and other hard material on the land side to prevent erosion if the walls are overtopped in a future storm.
"Even with those walls that didn't fail last time, we feel it will be better," Varuso said.

In addition, the corps received permission to elevate 22-miles of non-federal levees in the parish from between 5 to 8 feet, to 10 feet, Wagner said.

This effort provides a second layer of levee protection and helps form a "bowl" of marsh that can help hold water between the MRGO levee to the east and the 10-foot levee to the west, he said.