

# **Slosh and Berm: Building Sand Barriers off Louisiana's Coast to Hold Back Oil Spill Has Low Probability of Success**

**The oil spill will not just have an environmental impact—the catastrophe, along with efforts to stop it, may reshape the geography of Louisiana's Gulf coast**

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In an effort to stem the tide of oil washing ashore in Louisiana, small "berms" of sand now plug gaps in barrier islands along the coast. Such structures are intended to provide a barrier to oil penetrating into marshes and other wetlands, where it can persist for decades. Already, more than 250 kilometers of coastline have been touched by the output of the ongoing oil spill, which has now spewed as much as 170 million liters of petroleum into the Gulf of Mexico.

Now the U.S. government has given its approval to a plan to build as much as 70 kilometers worth of such sand walls—90 meters wide at the base tapering to nearly eight meters at the top and a little less than two meters higher than high tide—in front of barrier islands off the coast. It will be a colossal undertaking that would result in 3,900 hectares of sand barriers and could take at least six months and \$360 million to complete. The only problem: it may not work and it definitely will not last.

"If we build these berms, one tropical storm that either crosses the berm or even sends large waves towards the berm from offshore could do tremendous damage to the structure before it's even completed," says coastal geologist Rob Young of Western Carolina University. "It might not make it through hurricane season," which ends November 30.

Nor does it require a storm for these man-made sand barriers to shift. Normal wave action—potentially exacerbated by the offshore dredging of the sand itself—will erode the berms. "They are immediately susceptible to erosion," Young says. "It's a question whether this first portion of the [70 kilometers] will still be there when they get to the end."

Various agencies of the U.S. government urged caution during the formal evaluation of the project before the Army Corps of Engineers approved the experimental plan on May 27. "The most basic question is whether the proposed project can be constructed in time to prevent oil from reaching interior waters and wetlands," the U.S. Environmental Protection Agency noted in its response.

The Corps approved the plan "to enhance the capability of the islands to reduce the inland movement of oil," but even national incident commander U.S. Coast Guard Admiral Thad Allen noted "doubts" about the plan as he announced its approval as a "prototype." As a result, the U.S. government will pay for only one such berm near Scofield Island, although it gave permission to build as many as six and will force BP to foot the bill for the construction.

The project will also employ sand that had been slated to restore barrier islands, such as the Chandeleur Islands wiped out by Hurricane Katrina. "This isn't barrier island restoration. The sand is being placed just offshore," Young notes. "Placing some of the sand up on the barrier islands would at least increase longevity and durability."

And the berms will impact the coastline in other ways, potentially sending saltwater in new directions. Dredging of channels already permits saltwater intrusions into the Louisiana coast, occasionally killing the marsh grasses that literally hold the land in place.

In fact, the sand berm effort is just one way the oil spill may literally reshape the Gulf Coast. If a thick coating of oil reaches the marshes, it could suffocate the grasses that hold them together or block photosynthesis, even though experiments in the 1980s showed that such marsh grasses tolerated hydrocarbon exposure when scientists sprayed them with Louisiana sweet crude. "They can take a lot of hydrocarbon pollution but I don't know how they are going to respond to this oil that could smother them," says ecologist John Fleeger of Louisiana State University, who participated in the experiments.

Fortunately, as of yet the oil has not penetrated into the marshes much. "The marshes in Louisiana are many miles in depth, just a small fraction of that has been impacted at this point," Fleeger notes. But "if a hurricane or tropical storm comes and sweeps all the oil inland it's going to be a big change overnight."

A big storm might therefore kill the marsh and wipe away Louisiana's efforts to build a sand berm against the oily tide. "What they're proposing to do isn't going to work. It's not going to stop a significant part of the oil from reaching the wetlands or the estuaries," Young says. And "it's not simply that it's a project that may not work. It's going to divert a lot of resources away from other efforts."