

Geologist: Engineering plans for Reach 8 are 'problematic'

By WILLIAM KELLY, Daily News Staff Writer

Friday, August 29, 2008

A geologist testified at a hearing Friday that engineering plans to rebuild the Reach 8 beach are deeply flawed.

Dr. Robert Young, director of the Program for the Study of Developed Shorelines at Western Carolina University, testified that it's impossible to predict how renourished beaches will perform.

He was the first witness to take the stand in support of petitioners fighting plans to dredge sand onto the beach, a project the town hopes to perform at the end of this year or early in 2009.

Young is not a coastal engineer. As a geologist, he evaluates the models engineers use to predict how sand will move on rebuilt beaches, where reefs will be covered, and how long reconstructed beaches can be expected to last before additional sand is needed.

Much of Young's testimony Friday focused on Genesis, a numerical computer model used by engineers to predict sand movement on rebuilt beaches. Genesis was one of the models used by Coastal Planning & Engineering to help design Reach 8.

"Genesis is largely a failure," he said. "It is an overly generalized model rendering results of indeterminable accuracy."

Young said the Genesis model, with its focus on sand and wave action, doesn't account for the "geological control" of the Reach 8 beach: the preponderance of rock covered by a thin layer of sand.

"There is a thin veneer of sand that is over the rock," he said. "The rock controls how sand moves, whether shoreline is eroding, and how storms impact the beach."

Engineers "use the Genesis model to make it look like they used some sophisticated tool, when in fact all they're doing is using the model to back up their opinion," he testified. "There is a tremendous difference between what is predicted and what actually happens."

The hearing before Administrative Law Judge R.E. Meale began Monday in the town's Emergency Operations Center and resumes Tuesday. It is scheduled to last up to 11 days over a three-week period.

The town and Florida Department of Environmental Protection are defending the DEP's Feb. 29 notice of intent to grant the town an environmental permit for the project.

The petitioners — the Surfrider and Snook foundations and three individuals — contend the relatively fine, gray sand the town proposes to use is of poor quality and will wash away, burying nearshore reef.

The town says the sand is compatible with the native sand and that Reach 8 must be widened to defend oceanfront property from wave damage during storms.

The town proposes to dredge 724,000 cubic yards of sand to widen and elevate the shoreline and rebuild dunes. The project area is roughly between Phipps Ocean Park and the south town limit, excluding the Lake Worth Municipal Beach.

Young also disputed the engineers' estimated "depth of closure" for Reach 8.

Depth of closure is the point where it is assumed that offshore sand movement stops. In the case of Reach 8, it has been estimated at 22 feet in depth and 1,100 feet from shore. Young testified that is far too shallow to be accurate. He said he dove 30 feet deep at Reach 8 and observed signs of sand movement.

"Engineers have to simplify things to come up with an answer," he said. "Their job is to build a project."

Young testified that the "sand borrow" area designated for the dredging is too close to shore, will fill up with sand and could alter wave action in unpredictable ways.

"To me, that is problematic and not optimal scientific design," he said.

The proposed permit for Reach 8 anticipates 7 acres of reef will be buried by dredged sand. Young said that's just a guess.

"It is impossible to predict where sand will go," he said. "It's beyond our capabilities."

The town has agreed to a DEP permit condition that it build an 8-acre offshore reef to make up for the loss of the natural reef.

The permit conditions require that sand movement be monitored for at least three years. But Young said that is an after-the-fact check that doesn't protect reef that is supposed to be protected.

"Monitoring will only tell you that additional hard bottom (reef) has been covered, after it has happened," he said.

It is difficult and expensive to prove that a beach fill project is responsible, he said. Once a reef is covered, the only remedy is to create additional artificial reef to mitigate for the loss.

"Monitoring almost never leads to additional mitigation," Young testified. "You would have to admit the project is a failure. That's bad for business."