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Corps tackles new threat to giant ports

At Mississippi River's mouth, for once shallower is better

NEW ORLEANS – Ships have been confronting a novel hazard at the front door of the world's largest port complex, the mouth of the Misissippi River. Coastal erosion is a prime suspect.

The trouble is a deep scour hole at Burrwood Bayou, a little-known outlet on the 20-mile-long Southwest Pass, the river's main entrance for the big, oceangoing ships.

"The scour hole could pose a long-term threat to navigation, and the Army Corps of Engineers is working to solve it," said Col. Peter J. Rowan, district engineer, New Orleans District.

One of the Corps' top jobs nationwide is to keep open the five ocean ports on the Mississippi from Baton Rouge to the Gulf of Mexico. They include four of the 10 largest U.S. ports.

"Usually, the task is to keep the river from getting too shallow, and to maintain the 45-foot authorized depth up to Baton Rouge," Rowan said. "For the first time, shallower is better. This hole has been as much as 130 feet deep."

Ship pilots who guide big vessels at the Mississippi's mouth think the flow diversion is so dangerous they have limited the traffic to one way.

Michael Lorino Jr., president of the Associated Branch Pilots, said the suction created is so strong that it tries to pull ships toward Burrwood Bayou.

Why did the scour hole, first identified as a potential threat in the late 1990s, develop?

"It was likely a combination of coastal erosion and the force of water escaping from Southwest Pass," said Del Britsch, a Corps geologist. "We would still like to know more about the timing. There's no obvious answer to, 'Why now?' "

Coastal erosion has eaten away the land between the river and the Gulf of Mexico at Burrwood Bayou since the 1930s. Meanwhile, the outlet has become a wider gap in the river's bank.

Burrwood Bayou at the river is now about 400 feet wide, compared with 200 feet in the 1930s. Meanwhile, the land separating the river and the Gulf of Mexico has eroded from about one mile to one-half mile wide.

When Burrwood's depths reached an average of 130 feet in March 2003, the Corps acted quickly, said Joaquin Mujica, the Corps' operations manager for navigation Baton Rouge to the Gulf.

"We responded by placing 3.5 million cubic yards of dredged material in the hole," Mujica said.

Hauling this much material would require enough big dump trucks to stretch bumper-to-bumper from New Orleans to Kansas City – and back.

That reduced the scour hole's depth to about 60 feet, but did not solve the problem. Even so, Burrwood Bayou was capturing 37 percent of the flow of Southwest Pass during the spring 2004 high water.

"The hole is much shallower, but it's become a moving target. This year for the first time the scour cut its way right up to the edge of the navigation channel," Mujica said.

As the Corps was preparing plans for a long-term solution, a tragic ship collision underlined the importance of safe passage in Southwest Pass.

On Feb. 21, the 178-foot offshore-oil boat Lee III sank with the loss of all five crewmembers after colliding with the considerably larger ZIM Mexico III, a 534-foot container ship.

The Coast Guard was forced to close Southwest Pass to navigation for four days during the recovery work, and considerable disruption followed. The movements of grain, chemical, petroleum and other cargo came to a halt, and cruise ships' passengers were stranded.

On March 5 the Corps committed to a long-term solution, awarding a $2.7 million contract to Creole Chief Inc. of Belle Chasse to build a 2,400-foot-long rock dike.

The dike is an arc of limestone chunks astride Burrwood's outflow, about 4,000 feet from the navigation channel. It's anchored to land at either end and has a 200-foot navigation gap for oilfield and fishing boats. More than 140,000 tons of rock were placed.

The dike, completed in May, has achieved its goal: a significant reduction of the percentage of flow captured by Burrwood Bayou, said Harley Winer, chief of coastal engineering in the New Orleans District.

“This should alleviate the pull felt by passing ships,” Winer said. “And the dike will stop further scouring.”

Colonel Rowan said, “It’s unclear why Burrwood Bayou became a much bigger problem – nothing is clear at the bottom of the Mississippi – but we have a new way to see underwater.”

“Our new eyes are multi-beam surveys using a kind of sonar. Through the work of our modelers, the enormous data thus created give us a 3-D visualization. This capability made it easier to define the problem and convey the need for immediate action. This technology provides another tool that helps to make decisions,” Rowan said.

Channing Hayden, president of the Steamship Association of Louisiana, said taming Burrwood Bayou is crucial to passage of the roughly 6,000 ocean ships that enter the river each year and their economic contribution to the region.

“Burrwood Bayou is the river equivalent of a black hole, trying to suck everything out of the river. If two big ships collided in that area it would be very ugly.”

One-way traffic was an essential safety device but with its attendant delays, dampens the financial vitality of the steamship trade, he said, making the long-term solution crucial. “The Corps has done a bang-up job,” Hayden said.

U.S. ports by tonnage http://www.iwr.usace.army.mil/ndc/wcsc/portton02.htm

Southwest Pass depth charts (Burrwood Bayou is in sheet 10)
http://www.mvn.usace.army.mil/ops/odt/sw_pass.htm

Photo maps, 1940 and present, page 4.

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Burrwood Bayou scour hole

1940 and present