



# HURRICANE KATRINA

*One Team: Relevant, Ready, Responsive, Reliable*

## Quick, coordinated efforts reduce environmental impact on Lake Pontchartrain

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**New Orleans**--Immediately following Hurricane Katrina's massive flooding in the City of New Orleans Aug. 29, numerous media focused on the polluted waters, containing what they called a "toxic soup." The mix consisted of water from nearby Lake Pontchartrain, refuse from the overwhelmed sewer system in New Orleans, oil and industrial chemicals, as well as thousands of vehicles, boats and homes.

As the U.S. Army Corps of Engineers made efforts to close levee and floodwall breaches and begin pumping out the more than 224 billion gallons of water from the city, federal and state scientists monitored the flows and made recommendations to avoid environmental impacts to Lake Pontchartrain and surrounding areas.

Scientists with the U.S. Environmental Protection Agency and Louisiana

Department of Environmental Quality took the lead to document and monitor the environmental effects triggered by Hurricane Katrina. Other agencies also responded with environmental expertise.

Several New Orleans District biologists were sent to various offices to assist with the response to Katrina.

Biologists Gib Owen and Bob Martinson arrived at the Emergency Operations Center in Vicksburg, Mississippi shortly after the flooding in New Orleans had reached its peak. From there, Owen was able to make initial contacts with the other environmental resource agencies, while Martinson reached out to other district biologists and made arrangements for them to begin work.

Initially Mike Salyer and later Casey Rowe were placed on the Unwatering Team at the New Orleans District. They provided on-the-ground reports from the city and made environmental recommendations to the project managers on site.

"Mike Salyer and I were able to relay environmental conditions to other biologists working with DEQ (Louisiana Department of Environmental Quality) and EPA," said Rowe. He said the process allowed them to coordinate quickly and provide rapid response to environmental conditions, which changed daily and sometimes hourly.

Christopher Brantley and Laura Lee Wilkinson were embedded with the Unified Incident Management Team, run jointly by EPA and LDEQ headquarters in Baton Rouge. Their responsibilities were to enhance the flow of data to other agency personnel and submit environmental recommendations to the field personnel based on near real-time water quality data.



**New Orleans District employee Casey Rowe (r), environmental resources specialist, gives coworker Edward Wrubluski, quality assurance representative, an overview of the aerators on the 17<sup>th</sup> Street Canal. The aerators put oxygen back into the water to avoid fish kills and to keep organic matter decomposed. Photo by Alan Dooley, St. Louis District**

Linda Mathies reported to Mississippi Valley Division-Forward on the Motor Vessel Mississippi to check with other environmental team members and provide situational updates to Brig. Gen. Robert Crear, commander of the Mississippi Valley Division and of Task Force Hope, his staff and USACE Headquarters personnel.

One of the first items the team tackled was coordination with the U.S. Coast Guard to place sorbent and debris booms across pump discharge locations, especially in canals where flood and stormwater was being pumped directly into Lake Pontchartrain. Booms, used to contain and recover spilled oil and gasoline, limited the impacts of the contamination.

At last report, the Coast Guard said over eight million gallons of petroleum were spilled due to Hurricane Katrina. This approaches quantities in the Exxon Valdez, which dumped 11 million gallons of oil into Alaskan waters. However, the Coast Guard estimates that only about 11 miles of shoreline were affected, mostly within the levee system in St. Bernard and Plaquemines Parishes. Fewer than 200 animals were estimated to be affected by the spilled oil, but many were recovered, cleaned and released by Fish and Wildlife Service personnel.

The debris booms limited the amount of floating organic material and debris from entering Lake Pontchartrain as well. When this type of material begins to decompose, dissolved oxygen levels in the water decrease and can lead to fish kills. Collecting and removing floating woody debris by these booms before it entered Lake Pontchartrain was critical to maintaining satisfactory water quality in the lake.

In addition to removing oil and debris, the foul-smelling and bacteria-laden floodwater in New Orleans needed to be aerated to promote beneficial microorganism growth and to increase dissolved oxygen levels before the water entered Lake Pontchartrain. This was done to prevent harmful algae blooms or creating an anoxic "dead-zone."

The environmental team worked with the Unwatering Team to bring in more than 25 aerators to the drainage canals leading into Lake Pontchartrain. The aerators circulated the canal water, spraying it to increase dissolved oxygen in the water. Daily monitoring of the water quality at the discharge locations provided information on how many aerators were needed and where they could be most effective.

Lake Pontchartrain has experienced several large algae blooms in past years due to large inputs of nutrients during the summer months. These blooms are usually created when fresh water and large amounts of nutrients, such as nitrogen and phosphorus enter the lake from rivers, outfall canals, industrial discharges and other sources. In combination with the area's long, hot, sunny days, this can encourage an explosion of harmful algal growth.

Too much algae can throw an ecosystem out of balance and harm organisms like fish and shellfish. Algae produce oxygen during the day, but consume it at night. When the algae die, their decomposition is fueled by oxygen, further decreasing the amount of dissolved oxygen in the water. Summer days can also raise water temperatures, causing a further decrease in the amount of dissolved oxygen water can hold.

Placement of the booms and aerators helped to increase dissolved oxygen concentrations along the south shore of Lake Pontchartrain and avoid subsequent environmental impacts.

As of 45 days after Hurricane Katrina, there have been no adverse water quality impacts to the lake from the unwatering of New Orleans. No oily sheens have appeared on the lake surface and no fish kills have been observed.

Biological monitoring of the discharge canals and Lake Pontchartrain will continue for the next several weeks. EPA and LDEQ will continue to monitor the region affected by Katrina for environmental impacts.

Non-scientific reports are encouraging. One commercial shrimper told Corps' monitors at the 17<sup>th</sup> Street Canal on Oct. 17 that he was catching unusually large numbers of shrimp from Lake Pontchartrain and seeing large crab harvests as well.

LDEQ observations confirmed the commercial shrimper's statement.

"Fishing in the lake is as exciting and fast-paced as ever. When we were gathering fish-tissue samples on Oct. 12, the shrimp trawl was loaded with hot-dog-bun-size shrimp and big, healthy crabs," said Rodney Mallet, LDEQ communications director. The LDEQ and the FDA were sampling in the southwestern part of Lake Pontchartrain between the Bonnet Carre Spillway and the Causeway Bridge.