

Drinking Water Well Sampling in the Aftermath of Hurricanes Katrina and Rita along the North Shore of Lake Pontchartrain, Southeastern Louisiana

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ABSTRACT

In September and October 2005, the Louisiana Geological Survey, Louisiana Department of Environmental Quality, and the U.S. Geological Survey collected samples from 14 water wells along the north shore of Lake Pontchartrain, southeastern Louisiana. Along the lakeshore, and inland near Lacombe and Slidell, water well casings and associated plumbing were sheared-off, primarily by the storm surges of Hurricane Katrina on August 29, 2005, and, to a lesser degree, by Hurricane Rita on September 21, 2005. Wells sampled (with the exception of one well) were in the area inundated by the storm surge of Hurricane Katrina. Wells were selected because of their accessibility and proximity to the storm surge area. Water samples were collected to assess if storm surge water entered the aquifer and the effects of storm surge water on quality of water in shallow aquifers of the Southern Hills Aquifer System.

Water from wells was analyzed for volatile organic compounds (VOCs), common anions and cations, fecal coliform bacteria, total coliform bacteria, *Escherichia coli* and *Enterococcus*. Analyses indicate that VOCs were not present in the water. However, several parameters indicate surge water entered the aquifer, probably through storm-damaged water wells inundated by the storm surge. Analyses of the groundwater shows a decrease in Ca/Mg ratio from approximately 5.4:1 pre-Katrina (average historical value for the Upper Ponchatoula Aquifer in St. Tammany Parish) to approximately 2.4:1 post-Katrina (average for wells sampled). Chloride concentrations also became elevated, from pre-Katrina average values of about 13 mg/L, to 476 mg/L average post-Katrina. The low Ca/Mg ratios and elevated chloride concentrations are indicative of saltwater intrusion. Finally, most wells showed evidence of the presence of bacteria, including, in some cases, fecal coliforms, *Enterococcus* and *Escherichia coli*.