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of Engineers
Mississippi Valley Division

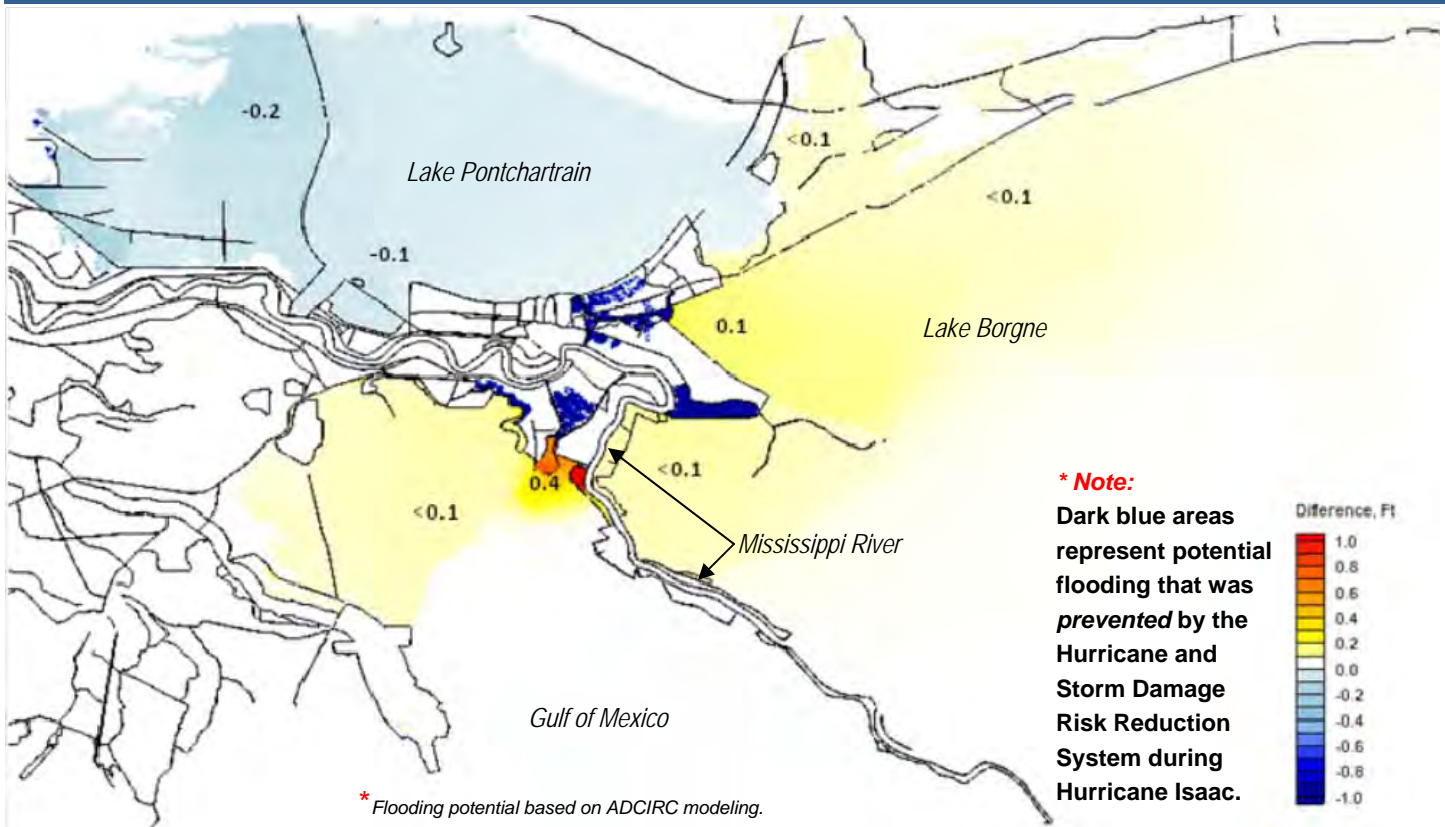


Corps Hurricane Response

Task Force Hope Status Report Newsletter

November 29, 2012

HSDRRS defends Metro New Orleans during Hurricane Isaac



by Susan Spaht

(Editor's Note: Information for this article was excerpted from the Corps of Engineers' official **Post-Hurricane Isaac Assessment** released on November 9, 2012)

According to the Saffir-Simpson Hurricane Wind Scale, Hurricane Isaac was a minimal Category 1 (74-95 mph winds) hurricane, reaching maximum

sustained wind speeds of approximately 80 mph immediately before making landfall over the Metro New Orleans area on August 29. However, the storm's ability to move water into the low-lying areas of coastal Louisiana and Mississippi was much greater than this wind speed suggests. The long duration of tropical force winds, the storm track and slow forward motion, the storm size, the

high tide conditions and significant rainfall occurring at the same time as the maximum storm surge, resulted in large amounts of water being pushed into the coastal areas of the northern Gulf. In many cases, water levels exceeded those from more intense storms such as Hurricanes Katrina and Gustav. Hurricane Isaac,

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therefore, was a real test of the new 100-year Hurricane and Storm Damage Risk Reduction System (HSDRRS).

Based on analysis of the data collected immediately after the storm, the Corps of Engineers found that there was no indication of wave overtopping or surge overflow along the 2012 100-year Hurricane and Storm Damage Risk Reduction System, including the Mississippi River Levees between river mile 80 and 130 which are co-located with the HSDRRS. The data show that the HSDRRS did what it was designed and constructed to do: reduce the risk of surge entering the perimeter defense system.

The majority of the 2012 100-year HSDRRS levees, floodwalls, and structures were constructed generally following the existing alignment of the Lake Pontchartrain & Vicinity, and the West Bank & Vicinity features that comprised the pre-2012 HSDRRS.

When the Hurricane Isaac peak gauge and high water mark data were compared to elevations without the 100-year HSDRRS, it was concluded that the surge was below the old system elevations in all but three areas: St. Bernard Parish – Caernarvon to Highway 46, St. Charles Parish - West Return Floodwall reach, and the Inner Harbor Navigation Canal-Gulf Intracoastal Waterway corridor. Additionally, surge could have inundated short reaches of the Harvey and Algiers Canals and the Western Tie-In where Federal levees did not exist prior to the 100-year HSDRRS being built.



The New Orleans District Emergency Operation Center mobilized on August 25 and remained active throughout Hurricane Isaac. District staff and the various levee districts closed more than 280 access gates, structure gates, road gates, railroad gates, drainage, and other closures. Between August 26 and August 29, major HSDRRS structures, such as the IHNC Surge Barrier Sector Gate and the West Closure Complex

(WCC), were closed according to their elevation triggers.

St. Bernard Parish – Caernarvon to Highway 46

Given the peak surge stages in the vicinity of the Caernarvon Sector gate, it can be assumed that surge overflow would likely have occurred

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over a portion of the 2,600 feet of levee and floodwall without the 2012 100-year HSDRRS in place.

St. Charles Parish - West Return Floodwall Reach

The pre-2012 100-year HSDRRS elevations ranged from 6.5 feet to 14 feet. Peak surge during Hurricane Isaac at a Corps gauge at Cross Bayou was measured at 8.02 feet. Given the peak stage at Cross Bayou, it can be assumed that surge overflow likely would have occurred over this portion of the levee without the 2012 100-year HSDRRS in place.

IHNC-GIWW Corridor

Debris was noted on the top of the guide walls of the IHNC Surge Barrier verifying that water levels exceeded 12 feet during Hurricane Isaac. The surge barrier wall and gates are at elevation 26 feet; therefore, there was no evidence that surge overflow took place at the IHNC surge barrier wall or gates.

Given the peak surge during Isaac at the IHNC Surge Barrier and the elevation of the levees and floodwalls along the IHNC-GIWW corridor, i.e. 11-15 feet, wave overtopping may have been possible. If the peak surge during Isaac at the IHNC Lock would have reached 11 or 12 feet, portions of the floodwall along the IHNC probably would have experienced surge overflow.

Algiers and Harvey Canals

Along Harvey Canal, the levee on



the west side between the Sector Gate and New Estelle Pumping station was higher than 6 feet. On the eastside there was no "levee", just a spoil bank around elevation 5 or 6 feet. Given the levee and ground elevations along Harvey Canal south of the Harvey Sector Gate and the Algiers Canal, surge inundation from Hurricane Isaac might have been possible without the presence of the West Closure Complex.

Western Tie-In – Lake Cataouatche Reach

The 2012 100-year HSDRRS elevations are 10 to 14 feet. Pre-2012 HSDRRS elevations ranged from 5 to 6 feet. There was no HSDRRS levee present in a portion of the reach prior to the 2012 100-year HSDRRS.

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Peak surge during Isaac at the Davis Pond Freshwater Diversion Structure was measured at 4.63 feet. Other gauges in the area had maximum surge levels ranging from 4.71 feet to 5.12 feet from Hurricane Isaac. Given the peak surge level of 4.63 feet and ground elevations in the area where there was no 2012 HSDRRS levee present, surge inundation would have been likely. Furthermore, culverts under Highway 90 would convey water north of the highway and possibly would have caused some flooding there.

Conclusion

“Based on observations of Hurricane Isaac storm surge elevations around the perimeter of the HSDRRS,” said Mike Park, Chief of Task Force Hope, “the 2012 100-year HSDRRS performed as it was designed and

constructed to do. We most certainly would have experienced overtopping around three significant areas of the system without the HSDRRS, and possibly in several other areas as well.

“It is gratifying to know that all the

hard work and effort exerted by Team New Orleans over the past seven years has returned the rewards we foresaw. My congratulations to all of our Corps employees and contractors for a job well done.”



Mike Park



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<http://www.mvn.usace.army.mil/hps>

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