



US Army Corps  
of Engineers  
Mississippi Valley Division



## Corps Hurricane Response

Task Force Hope Status Report Newsletter

October 5, 2011

# Corps, partners and LSU Ag Center testing HPTRMs

Levee test will measure *grass establishment* and evaluate *maintenance and operations* of **High Performance Turf Reinforced Mats**

By Susan Spaht

**T**hroughout the design and construction of the Hurricane and Storm Damage Risk Reduction System, the Corps of Engineers has developed and/or utilized many new and innovative designs, construction processes and building materials to get the best-possible risk reduction system for the Greater New Orleans area within its compressed timeframe.

The latest new methodology being considered by the Corps and its partners is **High Performance Turf Reinforced Mattresses**.

"This is a new process and new product for the New Orleans area," said Mike Park, Chief of Task Force Hope. "This method has been used with success on levees elsewhere in the country, but never on Federal levees in this region, and never so broadly applied over miles and miles



Click here to view a HPTRM video:  
[http://www.mvn.usace.army.mil/hps2/trm\\_test\\_video.wmv](http://www.mvn.usace.army.mil/hps2/trm_test_video.wmv)

**Crews anchor High Performance Turf Reinforced Mats on a levee section in St. Charles Parish. The Corps is testing HPTRMs for grass establishment capabilities and maintenance and operations activities.** USACE Photo/Video by Tom Durel

of levees. We have high expectations for its suitability and beneficial application here."

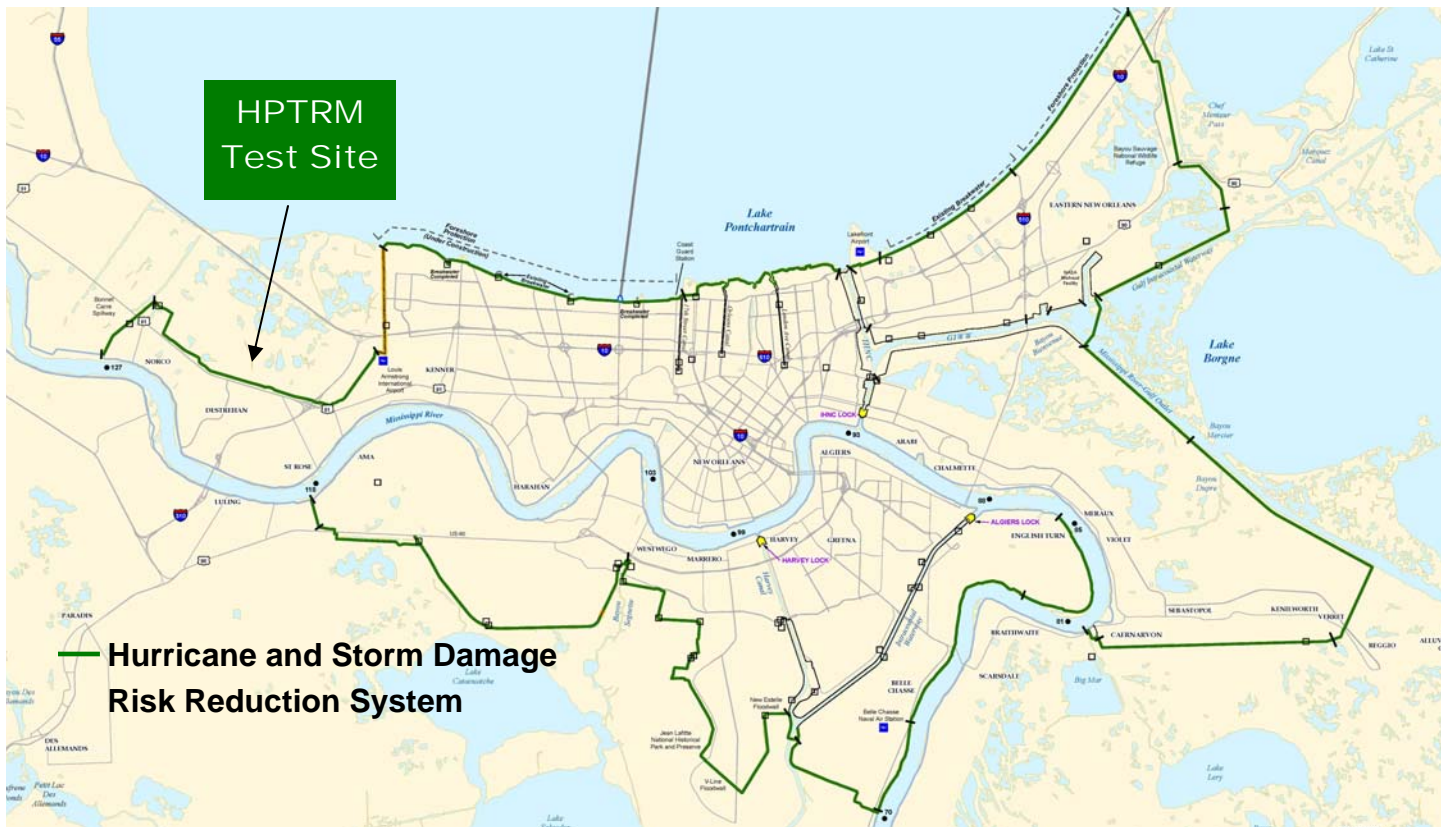
High Performance Turf Reinforced Mats, or HPTRMs, are made of a woven and porous plastic material which is rolled out over the crown and protected side of a levee like a carpet. "High Performance" indicates the TRM is a stronger and more durable product. HPTRMs will be used in certain levee sections as part of

the armoring phase that the Corps is preparing to implement throughout the HSDRRS. Armoring is the last phase of construction for the 133-mile perimeter system and will provide levees with added resilience, even up to a 500-year storm surge

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event. The purpose of high performance turf reinforced mats on levees is to reinforce the soil and grass that is placed on earthen levees. HPTRMs will provide greater erosion resistance from wave overtopping and, therefore, make the levees more resilient and more robust.



**Dr. Jeff Beasley and Todd Granier**

The Corps is conducting the performance evaluation test on a section of levee in St. Charles Parish. This section of levee was chosen because it offered a steep slope and a sharp curve, features that will challenge the test material during maintenance procedures.

The test is being supervised by Dr. Jeff Beasley, an agronomist with the Louisiana State University Agriculture Center in Baton Rouge. In addition

to Dr. Beasley's expertise, the LSU team also assisted with the selection of the sod, fertilizer, seed and watering rates for the test. The sod being used for the test is the same material that was used in the wave overtopping tests performed last year at Colorado State University by the Corps.

**Collaboration**

"This project will evaluate a HPTRM

that will be used for improved levee strength," said Dr. Beasley. "The results from this test will help revolutionize levee protection against storm surge overtopping.

"And this is a good opportunity for the Corps, the levee boards and the State of Louisiana to be collaboratively involved in a test for the Hurricane and Storm Damage Risk Reduction System in which they all have an important role."

Every step of the HPTRM test has involved the collaboration of the state's office of Coastal Protection and Restoration and the Louisiana Flood Protection Authorities- East and West, the Corps' partners in risk reduction for the five-parish area that makes up the HSDRRS (see map). Also, participating in the HPTRM test is the Pontchartrain Levee District

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HPTRM with soil, and sod being added



HPTRM anchor in place



Trimming the sod

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which is providing the water, the soil and the Right of Entry to the levee test site.

### HPTRM Test Process

The levee site in St. Charles Parish has three test sections.

1. a HPTRM covered with a layer of sod applied directly on the mat,
2. a HPTRM covered with a layer of soil and then a layer of sod, and
3. a HPTRM covered with soil and hydroseeded .

Basically, for all test sections a HPTRM carpet was spread over a de-grassed earthen levee section

and anchored; next a layer of sod or soil was placed on top of the HPTRM; then the soil was sodded or seeded for grass. The LSU agriculture team provided an irrigation routine for the test site. Over the next two months as the grass grows, the grass roots will grow through the HPTRM to the levee soil below.

When this process is accomplished, the HPTRM, soil and grass become one unit with the levee and provide added reinforcement and resilience that can stand up to a storm surge greater than a 100-year level surge.

“The High Performance TRM that we applied to the levee test site was easy to work with,” said Todd Gran-

tier of Task Force Hope, who is leading the HPTRM test field work. “Now that our test sections are in place, we will be closely monitoring and documenting the grass rooting.”

### Two-Part Test

Since HPTRMs have never been applied to levees in this area, there are two processes that will be evaluated and documented in this levee test.

The first process is **turf establishment**. This test will measure the ability of the grass to grow through the HPTRM and establish roots in the

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HPTRM with sod being added



HPTRM with soil and sod being sprayed with hydroseeding.



Mixing seed and mulch

USACE Photos by Tom Durel

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soil below. This melding action must be successful to provide resilience to the levee. Dr. Beasley and the LSU team will evaluate the performance of the grass and document such things as watering rates and schedules, and fertilizer rates and schedules.

In about 60 days, the second test will be conducted. This test will evaluate the

**operations and maintenance** process, such as mowing impacts, mowing schedules and tractor loads, i.e. how the HPTRM holds up under the weight and working of a tractor and mower. Since the levee boards will eventually take over responsibility for maintenance of levees in their jurisdictions, they are watching this test closely to learn how the HPTRMs withstand standard mowing actions.

“Over the next two months we will be watching the grass grow - literally,” said Grantier. “And when the grass is ready for the mowing operation, we are going to ask the parishes to use their tractors to mow the levee test site so they can observe how their existing equipment can handle the maintenance operations.

“That will be the real test.”



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The *Status Report Newsletter* supports the information program for Task Force Hope and its stakeholders. It also serves as the primary tool for accurately transmitting the Corps' hurricane risk reduction efforts to stakeholders.

*This is an online publication that is open to public distribution.*

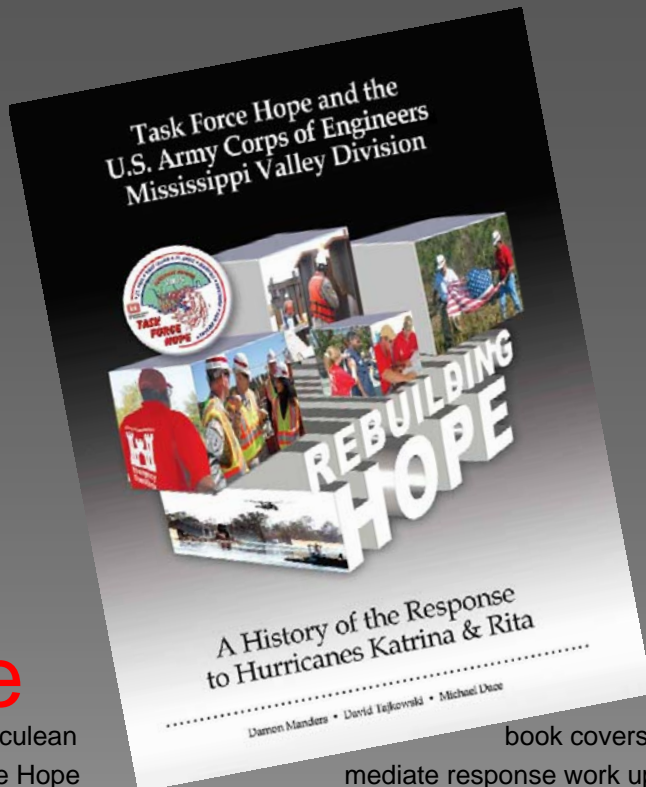
This issue and past issues can be found at: <http://www.mvn.usace.army.mil/hps>

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**Status Report Newsletter**

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# The

Corps' herculean Task Force Hope accomplishments have been chronicled in a history book that is now available to the public online (please see link below.) The Corps got the job done right because of the hard work, dedication, talent and excellent teamwork of everyone involved in this mission. The system is now stronger and more resilient than at any time in history, and our success will be confirmed as public confidence grows and people continue to return to the southeast Louisiana region.

The history of Task Force Hope begins with the emotional story of the Corps' initial response to Hurricanes Katrina and Rita. Our early mission was multifold and huge in scale, including emptying millions of gallons of water from the City of New Orleans, repairing hundreds of miles of levees and floodwalls, and removing millions of tons of debris.

<http://www.mvn.usace.army.mil/INCLUDES/REBUILDINGHOPEWEB.PDF>

Our new history book covers the immediate response work up to the initial planning work involved with delivering a comprehensive hurricane risk reduction system to defend the Greater New Orleans area against a 100-year storm surge. On Sept. 9, 2011, we recognized many of the key partners and stakeholders who made this accomplishment possible.

I am proud that we used the overall resources of the entire Mississippi Valley Division and other Corps expertise across the Nation to deliver this essential system. We completed the work with scientific rigor, and we leveraged the knowledge and capabilities of our many partners to deliver state-of-the-practice engineering solutions to the citizens of Southeast Louisiana. Essays!

*Michael Walsh*

Major General Michael Walsh, Commander  
Mississippi Valley Division