

**Deepwater Horizon/Mississippi Canyon 252 Spill**

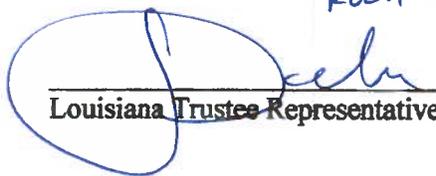
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**Addendum to the Sampling and Monitoring Plan for the Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation in the Gulf of Mexico**

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Approval of this work plan is for the purposes of obtaining data for the Natural Resource Damage Assessment (NRDA). Each party reserves its right to produce its own independent interpretation and analysis of any data collected pursuant to the work plan.

**APPROVED:**

*FOR ROLAND GUIDRY*  
  
Louisiana Trustee Representative: \_\_\_\_\_ Date 4/10/2012

  
BP Representative: \_\_\_\_\_ Date 3-16-2012

*Jessica Whole for Lisa DiPinto*  
NOAA Trustee Representative (on behalf of all other trustees) \_\_\_\_\_ Date 3/16/2012

## **Deepwater Horizon/Mississippi Canyon 252 Spill**

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### **Addendum to the Sampling and Monitoring Plan for the Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation in the Gulf of Mexico**

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#### **Protocol for Sampling and Monitoring Marsh Response Cleanup Areas**

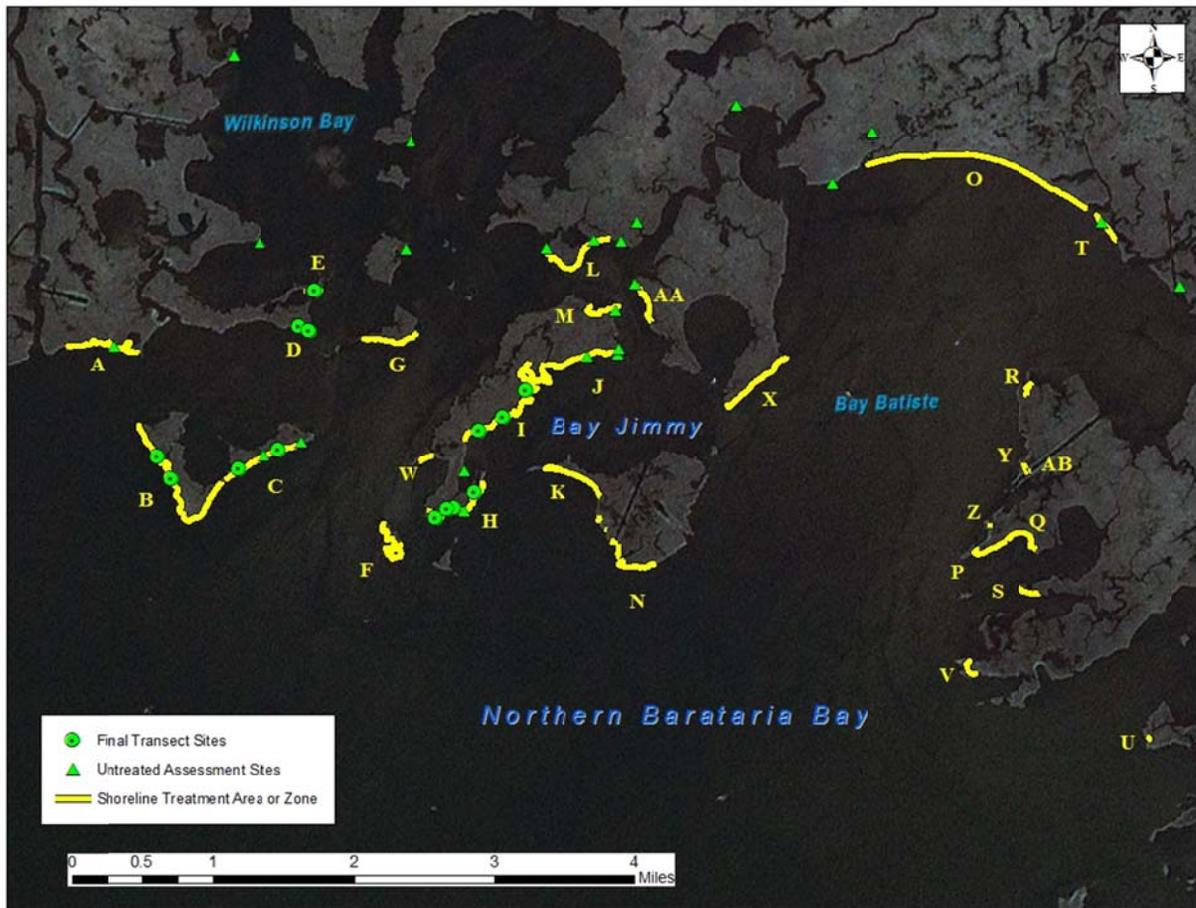
The Deepwater Horizon response led by the US Coast Guard (hereafter referred to as the Response) identified marsh areas within North Barataria Bay for cleanup of oiled marsh, including removal of oiled vegetation wrack and boom. Areas targeted for cleanup included those characterized by heavily-oiled vegetation mats, heavily-oiled high-water wrack lines, and the presence of thick or pooled oil (primarily mousse) on the marsh surface or shallow subsurface. Under this addendum, such areas slated for cleanup were sampled both before and after treatment in order to assess the combined effects of oiling and treatment. The aim of this investigation is to establish a mechanism by which to evaluate these combined effects of oiling and oiling-related cleanup, including wrack removal, on herbaceous coastal wetland vegetation health along the Gulf Shoreline, and thereby supplement the objectives of the *Sampling and Monitoring Plan for the Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation in the Gulf of Mexico* (herein referred to as the Coastal Wetland Vegetation Plan).

The cleanup assessment sites were established separately from those sites monitored under the Coastal Wetland Vegetation Plan in the fall of 2010. These latter sites are not slated for treatment and hereafter will be referred to as untreated sites. The sites comprising the cleanup assessment category were established prior to cleanup treatment to allow for the collection of baseline information on the existing oiled conditions. Following pre-cleanup characterization, these sites were integrated into the regularly scheduled sampling events per the Coastal Wetland Vegetation Plan and were sampled for the standard suite of measurements as outlined in Sections VII, IX, X, and XIII of the Coastal Wetland Vegetation Plan, with modifications as described below.

The Response established a series of Zones (denoted as A through AB in Figure 1) which were under consideration for various types of cleanup treatment. A maximum of 14 sites were selected by the NRDA Shoreline TWG for pre-cleanup characterization with the intent that at least 7 of these sites would be treated. In fact, 12 of the 14 sites were eventually treated by the Response. These 12 treated sites were subsequently monitored to assess the combined effects of oiling and cleanup treatment.

In order to maximize the likelihood that selected sites in the Zones would eventually be treated, sites were selected in Zones that the Response had already investigated for treatment (Zones B, C, D, E, H, and I in Figure 1). Coordinates within these Zones were randomly selected as starting points for the site selection process. In accordance with the aforementioned primary intention to increase the probability of a site being treated by the Response, survey teams inspected the oiling conditions at these random locations and either rejected or accepted the sites based on the similarities of the oiling conditions observed with those conditions previously identified by the Response as likely to receive treatment. If a location was rejected, adjacent

areas were inspected to identify a site that was likely to be treated. All cleanup assessment sites were selected such that a distance of at least 100 m existed between the clean assessment sites themselves, as well as between the cleanup assessment sites and existing untreated marsh assessment sites (green triangles in Figure 1). Figure 1 illustrates the 14 locations (green circles) where transects were established.

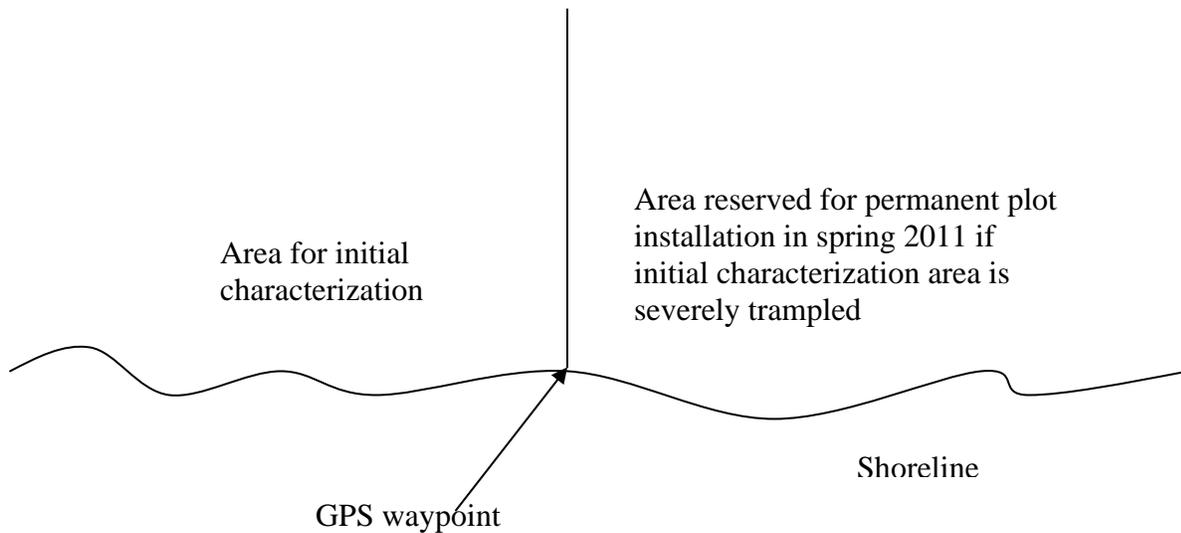


**Figure 1:** Treatment zones established by the Response (Areas A-AB), existing untreated assessment sites (green triangles), and the 14 transect sites (green circles) selected for pre-cleanup characterization.

### Pre-Cleanup Characterization

The initial pre-cleanup (baseline) characterization occurred in February 2011. Transects were established per Section VI in the Coastal Wetland Vegetation Plan with modifications as described below. Survey teams in boats were instructed to pull up at the selected site location and record the GPS waypoint. The marsh area to the left of this entry point (when facing landward) was identified for pre-cleanup characterization. Permanent plots were established in this area for post-cleanup sampling (as described in the Permanent Cleanup Transects section below) if the site was treated by the Response. Note that permanent plots were not established prior to the cleanup being completed to avoid interfering with the efficacy of the cleanup process. If substantial trampling was observed upon return to establish the post-cleanup permanent plots, the area to the right of the waypoint was established as the sampling area instead (see Figure 2 below). Therefore, walking and other disruptive activities were prohibited on the right side of the GPS waypoint to allow for the establishment of a future permanent plot if necessary. Guidance for transect establishment and site characterization follows:

Transects should extend the length of observed oil penetration into the coastal wetland vegetation at the time of the present survey up to a maximum length of 30 m. If 10% or greater oiling of visible plant surface is observed at 30 m or beyond, this will be recorded on the datasheet to indicate that further assessment may be required. If the extent of oil penetration is uncertain, the transect should be established as 20 m long. Transects will be identified by inland stakes and shoreline Trimble GPS readings. Field teams should write "NRDA pre-cleanup assessment" on the landward (inland) stakes to identify sites.



**Figure 2:** Diagram of transect establishment for pre-cleanup and post-cleanup sampling.

Instead of the paired productivity and cover plots established for the untreated sites under the Coastal Wetland Vegetation Plan, only 1 m<sup>2</sup> quadrat cover plots will be established for pre-cleanup characterization. All metrics collected from the cover and productivity plots of untreated sites will be collected entirely from this cover (C) plot in the treated sites during pre-cleanup characterization. In addition to the edge (Zone 1), mid (Zone 2), and inland (Zone 3) C plot locations, a 4th plot (Zone 4) has been added to the pre-cleanup assessment transect. This plot will be placed such that the back (landward) edge of the 1 m<sup>2</sup> plot is abutting the front (seaward) edge of the main wrack line. The purpose of including this additional plot is to capture any impacts resulting from the removal of wrack, an expected cleanup activity. This plot should be denoted as the C-4 plot on the datasheets. As the Site Visit/Set Up datasheet only provides space for describing three plots, the pre-cleanup assessment data for the C4 plot will be entered on an additional Site Visit/Set Up datasheet.

A subset of metrics collected in permanent transects will be sampled during pre-characterization. The following metrics will be collected from each C plot for pre-cleanup characterization using the methodology described in the Coastal Wetland Vegetation Plan (unless otherwise specified below):

1. Plot-wide vegetation information, including dominant species canopy height and live and dead vegetative coverage by species
2. Oiling impact extent, including vegetation condition and sediment surface oiling
3. Soil core for bulk density (1 core immediately outside C plot)
4. Soil scoop for contaminant (TPH/PAH) analysis (4 scoops immediately outside each of the corners of the C plot)

In addition to the metrics defined in the Coastal Wetland Vegetation Plan, the percent cover of coarse organic material in the plot and the distance from the shoreline to the landward edge of the cleanup zones A, B, and C (defined below) will be recorded in the datasheet comment section.

Zone A: shoreline stubble

Zone B: stubble with laid over dead vegetation

Zone C: wrack line (the main wrack line)

*Regarding sample collection, please note the following:*

All materials associated with the collection or analysis of samples under these protocols or pursuant to any approved work plan, including any remains of samples and including remains of extracts created during or remaining after analytical testing, must be preserved and disposed of in accordance with the preservation and disposal requirements set forth in Pretrial Orders (“PTOs”) # 1, # 30, #35, # 37, #39 and #43 and any other applicable Court Orders governing tangible items that are or may be issued in MDL No. 2179 IN RE: Oil Spill by the Oil Rig "DEEPWATER HORIZON" (E.D. LA 2010). Destructive analytical testing of oil, dispersant or sediment samples may only be conducted in accordance with PTO # 37, paragraph 11, and PTO # 39, paragraph 11. Circumstances and procedures governing preservation and disposal of sample materials by the trustees must be set forth in a written protocol that is approved by the state or federal agency whose employees or contractors are in possession or control of such materials and must comply with the provisions of PTOs # 1, # 30, # 35, 37, #39 and #43.

### **Permanent Cleanup Transects**

Pre-cleanup sites were integrated into Coastal Wetland Vegetation Plan sampling events, beginning with the spring 2011 sampling event. Pre-cleanup sites were sampled if treatment had occurred. The metrics sampled were consistent with the standard suite of metrics for herbaceous marsh sites in this and future sampling events.

Guidance for permanent cleanup transect establishment and site characterization follows:

Permanent transects should be established according to Section VI in the Coastal Wetland Vegetation Plan with the following modifications. The field teams will inspect the pre-cleanup transects. If a transect appears to be representative of the general location, both in terms of natural and vegetative characteristics and in terms of oiling extent at the time of the survey, the transect should be reoccupied to establish a permanent transect. If not, the transect location should be shifted up to 5 m to the right of the pre-cleanup GPS waypoint. Unlike the modification made for the pre-cleanup transects, permanent cleanup transects will include paired productivity and cover plots. Any observed erosion should be noted (and the original shoreline plot location should be sampled).

As determined during the pre-cleanup characterization, transects should extend the length of observed oil penetration into the coastal wetland at the time of the present survey up to a maximum length of 30 m. If 10% or greater oiling of visible plant surfaces is observed at 30 m or beyond, this will be recorded on the datasheet to indicate that further assessment may be required. If the extent of oil penetration is uncertain, 20 m is the default transect length. Field teams should write "NRDA cleanup assessment" on the landward (inland) stakes to identify sites.

Both productivity and cover plots will be established at standard locations along the transect as described in the Coastal Wetland Vegetation Plan. In addition, a cover plot and productivity plot (C4, P4) should be established at the wrack line. The wrack line location should be established per the pre-cleanup characterization guidance. Distances recorded at pre-cleanup should be used as a guide to establish this plot pair. If the wrack line position is apparent but C4/P4 plots would need to be shifted slightly landward or shoreward from their pre-cleanup position to capture it, minor adjustments should be made and distances clearly noted on the datasheets.

As with the pre-cleanup characterization, the percent cover of coarse organic material will be noted in the comment section of the datasheet during permanent transect sampling. If A, B, and C zones as defined below are still apparent, the distance from the shoreline to the landward edge of the zones will also be recorded in the datasheet comment section.

Zone A: shoreline stubble

Zone B: stubble with laid over dead vegetation

Zone C: wrack line (the main wrack line)