SAND BEACH INJURY ASSESSMENT PLAN
January 31, 2014

Mississippi Canyon 252

SAND BEACH INJURY ASSESSMENT PLAN

Approval of the Assessment Plan is for the continued technical support for the Sand Beach Injury Assessment for the purposes of obtaining data for the Natural Resource Damage Assessment. Each party reserves its right to produce its own independent interpretation and analysis of any data collected pursuant to this work plan.

This plan will be implemented consistent with existing trustee regulations and policies. All applicable state and federal permits must be obtained prior to conducting work.

The trustees have developed a preliminary conceptual model of the DWH release, potential pathways and routes of exposure, and potential receptors. This preliminary model has informed the trustees' decision to pursue the studies outlined in the work plan. By signing this work plan and agreeing to fund the work outlined, BP is not endorsing the model articulated in the work plan.

Department of the Interior Trustee Representative	Date
Louisiana Trustee Representative	Date
BP Representative	Date

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INTRODUCTION

This assessment plan is for continued technical support for the *Sand Beach Injury Assessment* ("Assessment Plan") as part of the ongoing Natural Resource Damage Assessment ("NRDA") for the Deepwater Horizon/Mississippi Canyon 252 Oil Spill ("Oil Spill"). Beaches across the Gulf have experienced surface and subsurface oiling as a result of the Deepwater Horizon/Mississippi Canyon 252 (MC252) release. Re-oiling from the re-mobilization of buried oil and submerged oil mats in the nearshore environment is still continuing today in some parts of the Gulf. These oiling events have exposed natural resources to oil and have required response actions to remove the oil from sand beaches from Florida to Texas. Response actions have used and are using various manual and mechanical methods to remove oil and debris from the sand beaches that have resulted in modification or impairment of these habitats causing injury to natural resources ("Response Injury"). Additionally, a literature review on the effects of oil in beach habitats further supports some level of impact due to habitat modification and oil fouling compared to unoiled or modified beaches. Impacts noted in the studies were generally associated with declines in the invertebrate community species abundance and diversity as oiling increased. Sediment and soil compaction by hydrocarbon residues tends to create a physical barrier for burrowing animals and reduced the oxygen supply of the deeper sediment layer, preventing recovery and re-colonization of the beach invertebrate communities (Barth, 2007, Satoh et al., 1999). As a result oiled beaches have been observed to have lower macrofauna diversity than reference sites (Jones et al., 2008b). Thus, as the response continues in some areas of the Gulf, the need to assess the impacts to sand beach habitats due to both MC252 oiling and the Response Injury due to response actions continues.

Since studies have demonstrated a direct relationship between oiled and non-oiled beach invertebrate communities and habitat quality, it is important to determine the areas impacted by MC252 oiling and the duration of that oiling. Oil-related sand beach injury is being assessed based on the shoreline oil exposure map currently under development. This map outlines the extent, duration and degree of oiling the shoreline has received to date from the MC252 incident. The oil-related sand beach injury assessment will include evaluation of the likely impacts for the different oiling exposure categories and will determine the degree of impacts to sand beach ecosystem services.

Along with oil-related injuries, assessing and quantifying the effects of response injury on the sand beach habitats is an important component in evaluating the overall effects of the MC252 spill on this habitat type. Response Injury is an injury type separate from, and in addition to, oil exposure and, in some cases, may significantly affect the recovery rates of different habitats and resources, even those that were not directly oiled. The overall objective of the sand beach Response Injury assessment is to compile the various sources of information that may be used to assess injury related to response actions on the shoreline and to categorize and rank the effects of the response action on the sand beach habitat. However, the information on the temporal and spatial extent of response-related injuries is scattered among many organizations, is usually not collected consistently, and has been difficult to obtain.

Significant work in data collection and assessment remains to be completed to support the sand beach habitat assessment. Results from these efforts as well as oil toxicity studies currently underway will need to be consolidated into an updated comprehensive sand beach habitat assessment. For 2014, the Trustees are proposing to continue data collection and oil exposure evaluations. While the data collection efforts of this report are intended to be cooperative, the interpretation of the data collected as part of this work plan are intended to be an independent Trustee activity.

ACTIVITIES

The 2014 Assessment Plan continues the sand beach assessment in three assessment categories within the context of the ongoing NRDA: 1) Sand Beach Oil Exposure and Injury Quantification; 2) Sand Beach Response Injury Exposure and Injury Quantification; and 3) Comprehensive Sand Beach Injury Quantification.

Activity 1: Sand Beach Oil Exposure and Injury Quantification

Contractor support for 2014 will include an updated analysis of sand beach injury resulting from the MC252 historic and current releases as part of the ongoing NRDA. Oil-related sand beach injury is being assessed based on the shoreline oil exposure map under development. The associated oiling categories and extents within that map will be utilized, along with literature-based evaluations and other studies currently underway, to determine the degree of impacts to sand beach ecosystem services. This work will include evaluation of the likely impacts for the different oiling exposure categories for sand beach habitats. The contractor will also work collaboratively (in order to avoid any duplication of efforts) with the PIs of relevant studies to characterize the impacts of oiling to beach fauna.

Activity 2: Sand Beach Response Activities Exposure and Injury Quantification

The identification and collection of information about previous and ongoing response efforts for the MC252 incident are not completed. Work is just now beginning on cooperative response injury data management with BP. To more clearly define the extent and duration of injury to the sand beach habitat, the contractor, working with DOI and its co-trustees, will acquire and organize new information obtained as part of the response injury data management efforts that are responsive to the categories of potential injury and/or correlating response actions previously identified.

Activity 3: Comprehensive Sand Beach Injury Quantification

To fully evaluate the effects of the MC252 release on the beach habitat, the contractor will update the comprehensive beach injury assessment technical report with information gained from the ongoing response and coordination with the response injury data management efforts. This comprehensive report will join the oiling component of injury using the degree and spatial extent of oil-related injuries to sand beaches over time (Activity 1) with the assessment of response injury (Activity 2). This assessment activity will result in a comprehensive beach injury assessment technical report for 2014.

BUDGET

The total costs for this Assessment Plan are $306,837. The Parties acknowledge that this budget is an estimate, and that actual costs may prove to be higher. BP's commitment to fund the costs of this work includes any additional reasonable costs within the scope of this approved work plan that may arise. The trustees will make a good faith effort to notify BP in advance of any such increased costs.

REFERENCES

Barth, H. (2007). Crab Induced Salt Marsh Regeneration after the 1991 Gulf War Oil Spill. Aquatic Ecosystem Health & Management 10(3): 327-334.

Jones, D., M. Hayes, F. Krupp, G. Sabatini, I. Watt and L. Weishar (2008b). The Impact of the Gulf War (1990-91) Oil Release Upon the Intertidal Gulf Coast Line of Saudi Arabia and Subsequent Recovery. Protecting the Gulf's Marine Ecosystems from Pollution: 237-254.

Satoh, H., K. Tshuchiya, R. Tsujimoto, T. Hirano, R. Kado and H. Tokuda (1999). Long-Term Effect of Massive Crude Oil Spill During the Gulf War on Intertidal Invertebrates. Mer 37(1): 11-19.