
Mississippi Canyon 252

ADDENDUM: ASSESSMENT PLAN TO DETERMINE POTENTIAL EXPOSURE AND INJURIES OF NESTING AND HATCHLING LOGGERHEAD TURTLES AND THEIR NESTS - 2013 FIELD SEASON

Approval of this Loggerhead Sea Turtle Plan Addendum is 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. Each party agrees that 1) all such independent interpretations and analyses of work plan data will be clearly identified as those solely of the interpreting party and 2) they will further clearly indicate that such interpretations or analyses do not necessarily represent the interpretation or analyses of any other party 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.

Kevin D. Reynolds May 30th 2013
Department of the Interior Trustee Representative: Date

[Signature] 6/27/13
Louisiana Trustee Representative: Date

[Signature] June 10, 2013
Florida Trustee Representative: Date

Joyce Miley June 5, 2013
BP Representative: Date

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Introduction:

Potential impacts of *Deepwater Horizon*/Mississippi Canyon 252 (MC 252) oil and dispersants on Gulf coast Loggerhead sea turtles may range from mortality to sub-lethal stress and chronic impairment, including potential deleterious effects on reproduction and recruitment.

A Technical Working Group (TWG), composed of technical experts and trustee agency representatives has been assembled to draft a work plan to carry out post-discharge assessment of Loggerhead sea turtles along the Alabama and Florida coastlines in the Gulf of Mexico in support of the ongoing Natural Resource Damage Assessment (NRDA) for the MC 252 Oil Spill. Additionally, BP Exploration and Production, Inc. (BP) has participated in a review capacity.

This *Addendum: Assessment Plan to Determine Potential Exposure and Injuries of Nesting and Hatchling Loggerhead Sea Turtles and Their Nests - 2013 Field Season* (Plan) is a component of the NRDA for the MC 252 Oil Spill. The data collected in this new NRDA effort will supplement data collected in the 2010, 2011, and 2012 Loggerhead nesting seasons and will be similar to data collected pursuant to the Kemp's ridley nesting NRDA Preassessment plans. The Kemp's and Loggerhead nesting plans were signed by BP and Trustees in 2010 and 2011; but only by Trustees in 2012. The work described in this Plan is a subset of the USFWS loggerhead monitoring program, and includes collection of data that supplement the typical information collected annually.

Purpose:

The purpose of this Plan is to document potential exposure to MC 252 oil and dispersants (hereafter referred to as MC 252 oil) and associated impacts to the adult, hatchling and egg life stages of loggerhead sea turtles.

Objectives:

1. Assess nesting female physical condition, conduct satellite tracking of inter-nesting and post-nesting movements, and collect blood samples.
2. Collect samples to assess possible toxicological and physiological effects and impairments in nesting females, eggs, and hatchlings along the specific Florida and Alabama beaches in the Gulf of Mexico where NRDA efforts to assess nesting female physical condition and movements are focused.

The intent is to achieve these objectives by conducting nesting female physical evaluations; satellite tracking of nesting female inter-nesting and post-nesting movements; collecting blood samples; collecting residual tissue samples from eggshells, non-viable eggs, and hatchlings. Nesting materials (sand) will be collected at natural nesting sites to identify potential impacts from MC 252 oil.

Post-collection sample analyses to be conducted will be described in a separate addendum. The Analytical Addendum for the 2013 field season will be similar in nature and scope to the 2010/2011 and the 2012 Turtle Analytical Plans and will include similar analyses for Polycyclic Aromatic Hydrocarbons (PAHs) and fingerprinting for MC252 oil, where technically practicable. Modifications may be made to the new analytical plan as lessons are learned from implementation of these Plans.

Background:

The general background material for this Plan has not changed from the previously approved 2010 work plan.

General Study Approach

The study approach for this Addendum is similar to that used in the previously approved 2010, 2011, and 2012 work plans. As during 2012:

1. Carapace swipes, blood samples, carapace biopsies, and tissue biopsies will be collected from nesting adult loggerhead female sea turtles. Blood samples will be assessed for hematological and immune endpoints at the time of collection due to their requirement for fresh rather than frozen blood.
2. Nest-associated sand, egg composite, and associated samples will be collected during this field season.

Modification details, where appropriate, can be found in the Sampling Design section, below.

Study Area:

The study area includes all loggerhead nesting beaches from Alabama to the Dry Tortugas, Florida (study area). The Plan includes study sites in Baldwin County, Alabama, which includes the Perdue Unit of the Bon Secour National Wildlife Refuge and adjacent private lands, a site encompassing approximately 17-km of beach along the St. Joseph Peninsula in Northwest Florida, and the Dry Tortugas National Park in southwest Florida.

This Plan represents the fourth year in what is proposed to be a multi-year effort to assess the potential impacts of the MC 252 incident on nesting and hatchling loggerhead turtles and loggerhead turtle nests.

Sampling Design:

Nesting Loggerhead Assessments

Intensive nighttime surveys for nesting loggerhead turtles will be conducted at the study site in Baldwin County, Alabama (Perdue Unit of the Bon Secour National Wildlife Refuge and adjacent private lands) and along the St. Joseph Peninsula, FL. The study site in Alabama hosts about 7 to 20 nests per year while the Florida site hosts approximately 80-200 nests per year.

Following collection of carapace swipe samples for analysis of external oil exposure, satellite transmitters will be attached on up to 15 nesting turtles in Alabama and up to 5 nesting turtles in Florida in 2012. A portion of turtles at each site will be fitted with Wildlife Computers SPOT5 satellite tags and the others will be fitted with Wildlife Computer Mk10 Fastlock GPS satellite tags (for a total of up to 20 satellite transmitters deployed), using established methods for sea turtle satellite telemetry (Hart et al. 2012). The Fastlock tags will be programmed to provide dive data, as well as to obtain GPS locations once per week. Turtles will also be outfitted with acceleration data-logging tags (ADLs) that will log depth, acceleration, and position of animals within the water column. Finally, 6 mm biopsy punches will be used to obtain both tissue and scute samples from each female (per approved FWS protocol) in the same manner as described in the previously approved Kemp's ridley 2010, 2011, and 2012 work plans.

Each nesting turtle encountered at the Alabama and Florida study sites will be given a complete physical examination, including examination of eyes and nostrils. Any lesions and abnormalities will be photographed and described on the data sheet. Field personnel will also collect 20 milliliters of blood from the cervical sinus using Vacutainer® needles and tubes (Becton, Dickinson and Company, Franklin Lakes, and New Jersey). The examination and blood collection will occur only after the turtle has completed laying eggs and is covering her nest or returning to the water. Blood samples will be partitioned for clinical chemistry, hematology and chemical analyses to be described in a separate analytical addendum. At the time of blood collection, subsamples will be processed for hematological endpoints requiring fresh blood.

Extent of potential exposure in nests in Alabama, Florida Panhandle, and Dry Tortugas

The nests used by these females will be marked and monitored throughout incubation. Three days after first signs of hatchling emergence, the nests will be excavated and up to 10 randomly selected unhatched eggs will be collected per nest and sent to the lab for processing and analysis; limited opportunistic sampling of additional nests may also occur. Following hatching and emergence, all remaining nest contents (unhatched eggs, hatched eggs, pipped eggs) and live and dead hatchlings and embryos will be processed in a similar manner as described in the previously approved 2010, 2011, and 2012 work plans. Briefly, during nest inventories after hatchlings have emerged, a sand core will be collected from the inside of the nest cavity. Cores will extend to a 50-cm depth and will be immediately examined for signs of oil distributed throughout the core. The entire sample will then be placed into a stainless steel container, mixed to produce a homogeneous sample, and transferred to a chemically clean, sterile, glass jar for temporary storage on ice or in a refrigerator as per the SOP until shipment to the appropriate laboratory.

The purpose of these collections is to assess the nesting turtle physical condition and blood chemistry, and the possible transfer of MC 252 oil and constituents [e.g., polycyclic aromatic hydrocarbons (PAHs)] to the eggs. In 2013 a total of 50 nests will be selected randomly from the study area beaches in Alabama, the Florida Panhandle, and the Dry Tortugas.

Permitting:

The appropriate state and federal permits, including special use permits for U.S. Fish and Wildlife Service Refuge lands, will be secured prior to any field activities.

Sample and Data Handling:

MC 252 NRDA chain-of-custody procedures will be observed for all samples. All samples will be transferred with appropriate chain of custody forms, and all samples that will undergo chemical or other analysis will be shipped to appropriate laboratories for processing and analysis. Camera memory cards (to include GPS locations) will be handled under Chain-of-Custody after a card is full or after the study is completed pursuant to the National Ocean and Atmospheric Administration's DWH NRDA protocol for transferring and uploading digital photos.

All field and laboratory data will be collected, managed and stored in accordance with written SOPs. The appropriate training on particular equipment or in the conduct of specific field studies for all personnel involved with the project shall be documented and those records kept on file for the duration of this project.

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.

Data Sharing

Copies of all data collected in accordance with this Plan, including raw data, field sheets, and field notes, will be provided to BP and its representatives and the Louisiana Oil Spill Coordinator's Office (LOSCO) within a reasonable timeframe once data collection, QA analyses and data entry procedures are complete, and no later than 45 days after the non-analytical data are collected. *Non-analytical data* include: field sheets, photos, photologger forms and GPS files. For non-analytical data collected before the Plan is signed, such data shall be shared not later than 45 days after the Plan is signed. All non-analytical data generated from this Addendum will

be provided to BP and co-trustees by November 15, 2013 with the exception of the telemetry data. Telemetry data will be made publicly available on www.seaturtle.org after a 7 day delay for QA/QC review and will be provided until such time as the telemetry devices cease to operate. Raw telemetry data will be provided to BP upon request.

Pending completion of necessary training and finalization of permits, BP representatives will have the opportunity to accompany Trustee field teams to observe field work. Copies of field notes and any data collected by BP/Entrix observers while observing the Kemp's Ridley field work will be provided to the DOI, NOAA and LOSCO within a reasonable timeframe once the field season is complete, and no later than 45 days after the field season has ended.

All samples collected pursuant to this plan will be submitted to laboratories that are operated in a manner that is consistent with the guidelines of the Analytical Quality Assurance Plan for the Mississippi Canyon (Deepwater Horizon) Natural Resource Damage Assessment (version 3.0 or later).

Budget:

The contract cost for this 2013 Addendum is \$625,139, plus associated Department of the Interior salary costs. 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.

Durable Goods: All durable equipment (such as camera, GPS, etc.) purchased by BP for this study will be returned to BP or their designated representatives at the conclusion of its use for this study unless otherwise agreed. Radio tags that are recovered or are not deployed will be returned to BP or its designated contractor at the end of this study, unless otherwise agreed.

Some equipment needed for this study may be in BP's existing inventory. BP-owned equipment will be used if available and when appropriate to the needs of the proposed work.

Principle Investigator:

Kristen Hart
Ecological Science Center

, U.S. Geological Survey, Southeast

Other investigators:

Margaret Lamont
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Michael Hooper
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U.S. Geological Survey, Columbia

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USFWS, Bon Secour National Wildlife

Dianne Ingram
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USFWS Ecological Services,

Primary Responsibilities of Lead Investigators

Name	Role
Dr. Kristen Hart U.S. Geological Survey	Principle Investigator/Project Coordinator, Lead Investigator for AL nesting female sampling
Dr. Meg Lamont U.S. Geological Survey	Lead Investigator for St. Joseph Peninsula (nesting female and nest sampling)
Dr. Michael Hooper U.S. Geological Survey	NRDA, Restoration and toxicology support
Jackie Isaacs U.S. Fish & Wildlife Service	Egg collection in Alabama, sample/data management
Dianne Ingram U.S. Fish and Wildlife Service	Egg collection in Alabama, sample/data management

Data Collection Summary Outline

Turtles

- Collect blood from nesting females
- Collect hematological and immune function data
- Satellite track inter-nesting and post-nesting movements
- Collect scute samples from nesting turtles
- Collect tissue samples from nesting turtles
- Take carapace swipes from satellite transmitter-tagged nesting turtles and oiled turtles
- Take additional samples of oil from nesting turtles with visible signs of oil
- Describe and photograph any signs of illness or lesions on nesting turtles

Nests

- Collect tissue samples from unhatched eggs and dead hatchlings
- Collect sand samples from sampled nests

Nesting data

- Collect GPS points for every nest in the two study areas.

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