

Mississippi Canyon 252

**PLAN TO DETERMINE POTENTIAL EXPOSURE AND INJURIES OF SEA
TURTLES WEST OF THE MISSISSIPPI DELTA UTILIZING
ENTANGLEMENT NETTING SURVEYS**

Approval of this Sea Turtle Nearshore Entanglement Netting Survey 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 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.

Lennie Sullivan 10/20/2010
Department of Commerce Trustee Representative: Date

Donna J. Shaver 10/21/2010
Department of Interior Trustee Representative: Date

[Signature] FOR ROLAND GUNBY 10/26/10
Louisiana Trustee Representative: Date

Joyce Meloy 10/20/2010
BP Representative: Date

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PLAN TO DETERMINE POTENTIAL EXPOSURE AND INJURIES OF SEA TURTLES WEST OF THE MISSISSIPPI DELTA UTILIZING ENTANGLEMENT NETTING SURVEYS

Introduction:

Potential impacts of the Mississippi Canyon 252 (MC 252) oil and dispersants on the Gulf coast population of sea turtles could range from mortality to sublethal stress and chronic impairment, including potential deleterious effects on reproduction and recruitment. Response and cleanup efforts may also cause sea turtle loss and impairment.

A Technical Working Group (TWG) composed of technical experts and trustee agency representatives has been assembled to draft a work plan to carry out a study of sea turtles west of the Mississippi Delta to support the Natural Resource Damage Assessment (NRDA) process established by the Oil Pollution Act of 1990 (OPA). Additionally, BP has participated in a review capacity.

This Sea Turtle Entanglement Netting Plan ("Plan") includes collection of ephemeral data, i.e. those parameters that are anticipated to change or disappear within a relatively short period of time. The data collected pursuant to this plan will provide information that could be useful to the Trustees in performing future assessment activities. The Plan provides for data collection to document post-discharge conditions consistent with the standard operating protocols (SOPs) referred to in this document (see 15 C.F.R. § 990.43).

Purpose:

The purpose of this Plan is to provide assessments of possible impacts of MC 252 oil and dispersants (hereafter referred to as "MC 252 oil") on sea turtles that use the nearshore and inshore waters of Louisiana and possibly Texas (as part of Phase II of this study) by conducting nearshore entanglement surveys and biotelemetry assessment throughout selected beachfront, tidal pass and estuarine/bay habitats west of the Mississippi River Delta. In-water surveys and tracking studies indicate that the nearshore and inshore waters of Louisiana and Texas serve as developmental and inter-nesting foraging areas for Kemp's ridleys (*Lepidochelys kempii*), whose diet consists primarily of blue crab (*Callinectes sapidus*) (Ogren 1989, Shaver 1991, Renaud 1995, Landry and Costa 1999, Metz 2004, Seney and Landry 2008, Shaver and Rubio 2008). Survey techniques proposed in this workplan will target sea turtle sizes, life-history stages, and habitats not typically accessed by the aerial and on-water directed offshore surveys being conducted as part of the National Oceanic and Atmospheric Administration's (NOAA's) response

activities. These entanglement surveys are also part of a larger collaborative NRDA effort and, as such, should provide additional assessment data to fill data gaps and supplement ongoing aerial surveys, on-water directed offshore surveys, and recovery of sea turtle strandings. Data generated by the proposed research are expected to provide initial information on sea turtles occupying the region that has been potentially affected by the MC 252 discharge and provide access to sea turtles from which samples (blood and tissues) can be taken to enable an initial assessment of their potential exposure to MC 252 oil. Possible changes in the spatial distribution and density of sea turtles in shallow inshore and nearshore Gulf of Mexico (GOM) waters, in response to the discharge of MC 252 oil, will be monitored with the goal of providing data to support future NRDA claims.

Objectives:

- 1) To characterize sea turtle species composition, spatial distribution, catch-per-unit-effort (CPUE), size/age structure, site fidelity and habitat preferences at high energy (beachfront) and low energy (estuarine) nearshore habitats, as well as in selected oiled and lesser or non-oiled areas along the Louisiana coast, west of the Mississippi River Delta, and potentially along the upper Texas coast as part of Phase II of this study.
- 2) To utilize satellite telemetry to assess post-capture/release movements and habitat use patterns, and potentially relate this movement and behavior to the areal extent of MC 252 oil in the environment.
- 3) To assess potential exposure of sea turtles to MC 252 oil and the possibility of associated injury via visual inspection of captured turtles for external (i.e. skin, carapace or plastron) evidence of MC 252 oil as well as the observation of potential oil-related adverse effects on their overall external body condition and behavior at study areas along the Louisiana coast and potentially Texas coast as part of Phase II of this study.
- 4) To provide blood and other tissue samples for chemical, toxicological and sex ratio analyses (to be conducted by other investigators under an addendum to this plan), which may provide evidence related to the potential impact of the MC 252 oil on nearshore sea turtle populations along the Louisiana coast, west of the Mississippi River Delta, and along the upper Texas coast.

Background:

Five sea turtle species - loggerhead (*Caretta caretta*), green (*Chelonia mydas*), Kemp's ridley (*Lepidochelys kempii*), leatherback (*Dermochelys coriacea*), and hawksbill (*Eretmochelys imbricata*) - and multiple life stages are known to inhabit the region of the Gulf of Mexico (GOM) potentially impacted by the MC 252 discharge (Ogren 1978; Turtle Expert Working Group 2000). On 28 April 2010, the NOAA Southeast Fisheries Science Center (NOAA SEFSC), as part of the Marine Mammal and Sea Turtle technical work group (TWG) activities, initiated a series of aerial surveys to assess potential MC

252 oil exposure of the marine mammal and sea turtle species occurring within areas likely to be oiled by the MC 252 discharge. Directed capture surveys in offshore oiled habitats were also initiated in May 2010 through NOAA's oil spill wildlife response activities (to document and collect turtles, if possible). These two surveys documented presence of the aforementioned species in areas that could be impacted by MC 252 oil. Aerial surveys have primarily documented larger juvenile and adult sea turtles, whereas, on-water directed offshore surveys have primarily documented the presence of oceanic stage juvenile sea turtles.

In-water surveys and tracking studies indicate that the nearshore and inshore waters of Louisiana and the upper Texas coast serve as developmental and inter-nesting foraging areas for Kemp's ridleys, whose diet consists primarily of blue crab (*Callinectes sapidus*) (Ogren 1989, Shaver 1991, Renaud 1995, Landry and Costa 1999, Metz 2004, Seney and Landry 2008, Shaver and Rubio 2008). Kemp's ridleys exhibit strong site fidelity to these foraging grounds (Renaud 1995, Landry and Costa 1999). Potential MC 252 oil impacts to these foraging areas could adversely affect the Kemp's ridley and other sea turtle species (Lutcavage *et al.* 1997, Shigenaka *et al.* 2003). Potential pathways for sea turtle exposure to oil include: 1) external (skin, eyes, carapace, plastron, and mucus membranes); 2) ingestion; and 3) inhalation (Shigenaka *et al.* 2003). Previous studies indicate that external exposure to oil may result in skin and eye irritation, mucus membrane burns and increased susceptibility to infection (Shigenaka *et al.* 2003). Internal exposure to oil may result in respiratory irritation, tissue and organ damage, gastrointestinal inflammation, ulcers, bleeding, diarrhea, maldigestion, anemia, and immune suppression, or may lead to reproductive failure or death (Shigenaka *et al.* 2003).

Study Areas

Large-mesh entanglement nets will be set in MC 252 oil-impacted and additional areas of the Louisiana, and possibly Texas, coast to assess possible impact of the MC 252 discharge on sea turtles. Currently anticipated study sites are Grand Isle, Louisiana (MC 252 oil-impacted site) and Lake Calcasieu/Calcasieu Pass, Louisiana. Texas sites may be considered for Phase II of the study, if appropriate. The degree of oiling and exposure at Calcasieu Pass is thought to be less than that at Grande Isle but Calcasieu cannot be definitively classified as an un-oiled area.

Grand Isle and Lake Calcasieu/Calcasieu Pass are known foraging grounds for Kemp's ridley and, potentially, loggerhead sea turtles (Ogren 1989, Renaud 1995, Landry and Costa 1999, Metz 2004). Establishing a study site at Grand Isle will provide access to Barataria and Caminada Passes that serve as ingress and egress points to and from Barataria and Caminada Bays. Barataria Bay and surrounding waters are known to have been impacted by MC 252 oil. Calcasieu Pass is an ingress and egress point to Calcasieu Lake, wherein constituent habitats may be impacted by MC 252 oil to a lesser extent or may be free of MC 252 oil. Calcasieu Pass was sampled by Texas A&M University at Galveston from 1993-2002, providing a dataset for historical comparisons of sea turtle CPUE, distribution and habitat use patterns in this location. Comparing data from Grand Isle and Calcasieu Pass may be helpful in assessing potential impacts of MC 252 oil on sea turtles.

Sampling Design

Sample Site Selection:

Entanglement nets will be set in the study areas according to the following site selection methodology. Two boat launch locations have been identified at each of the targeted study areas (i.e. Grand Isle and Calcasieu; see Figures 1-3). Launch locations for Grand Isle include the Bridge Side Marina (29.20362, -90.04036) on the west side of the island and Sand Dollar Marina (29.26265, -89.96134) on the east, as well as the possibility of utilizing the boat launch at the Louisiana Department of Wildlife and Fisheries (LDWF) Research Laboratory in Grand Isle. The launch locations for Lake Calcasieu and Calcasieu Pass include the Calcasieu Ship Channel boat launch (29.80461, -93.34913) and the Cameron Parish boat launch (29.7678, -93.89231). Netting sites within each study area will be randomly selected via the selection process described below from habitats that are 1.2 – 2.1 m (4 – 7 feet) deep and within 6.4 km (4 miles) of these four launch points. All sites meeting the above criteria will be identified and outlined by one or more geographic information system (GIS) polygons on study maps.

Sample sites will be represented as a uniform grid of closely spaced points placed over GIS digitized polygons surrounding each access location. The GIS polygons over which the grid is placed will be constructed as the intersection of waters 1.2 – 2.1 m (4 – 7 feet) deep and within 6.4 km (4 miles) of the boat launch point. An equal probability generalized random tessellation stratified (GRTS) spatially balanced probabilistic sample of grid points will then be selected (McDonald 2004; Stevens and Olsen 1999, 2004). Entanglement net locations will occur with equal probability in all areas within the GIS polygons and will not depend on *a priori* estimates of the boundaries between MC 252 oiled and MC 252 lesser or un-oiled zones. Equal probability samples will be drawn because the boundaries between MC 252 oiled and lesser or un-oiled areas may change between surveys and/or during a survey; the boundaries may be inaccurately estimated; and there may not be a clear delineation between MC 252 oiled and lesser or un-oiled areas (i.e., the “boundary” may not be hard, but may consist of a continuous gradient of MC 252 oil concentration).

Data concerning MC 252 oil contamination levels in the proposed study areas will be obtained from other sources, such as NASA, NOAA submerged oil modeling, the Louisiana Department of Environmental Quality (LDEQ), LDWF and NRDA TWGs tasked with assessing water, sediment, and forage contamination (i.e. blue crabs). All effort will be made to coordinate with entities such as LDEQ and LDWF to ensure that sampling of these other parameters coincides with the timing and location of entanglement netting operations proposed herein. Netting locations may also be post-stratified as being conducted in MC 252 oiled or lesser/un-oiled areas based on maps of MC 252 oil distribution produced by component(s) of NOAA’s response and NRDA work, among others (for example - see maps available through the Environmental Response Management Application (ERMA)

<http://gomex.erma.noaa.gov/erma.html#x=90.42000&y=28.03000&z=6&layers=3023+3813+3795+497>).

The ability to set nets at a given location will also depend on water depth, wind and wave action at the site, topology, tides, and other factors that cannot be assessed with accuracy from existing maps. Thus, the feasibility of deploying entanglement nets at each of the GRTS sample locations will be assessed in the field. Sites exposed to winds >20 kts and seas >0.6 m (2 feet), or with currents strong enough to pull the floatline of the nets underwater will be rejected. Navigation channels will also be excluded due to unfavorable depth and to avoid safety risks to the sampling crew from shipping and other boat traffic, as well as to prevent the creation of an impediment to said traffic. Inability to locate entanglement nets at a GRTS location will be recorded and the location discarded. Additional randomly selected locations will be added to the GRTS list, if necessary.

Timeline:

Assessment of possible impacts of MC 252 oil on inshore and nearshore GOM sea turtle assemblages is anticipated to occur in two phases over four sampling periods (early fall 2010, early summer 2011, late summer 2011, and early fall 2011). Phase I (which this Plan addresses) will consist of a reconnaissance trip conducted during early fall 2010 (no later than October/November) and will serve as the first sampling period to assess sea turtle assemblages at MC 252 oiled and lesser or un-oiled study areas along the Louisiana coast in addition to providing reference data for three subsequent assessment periods, which comprise Phase II, scheduled through 2011. Phase II will assess the potential impact of MC 252 oil on sea turtles during sampling periods scheduled for early summer 2011, late summer 2011 and early fall 2011. Similar sampling trips will be conducted in each of these Phase II sampling periods. Warmer seasonal periods have been selected for entanglement netting surveys due to peak recruitment and foraging activity occurring during late spring to early fall, thus placing the sea turtles in habitats sampled by this capture methodology (Renaud 1995, Landry and Costa 1999).

Sampling and Data Collection at Netting Locations

One netting crew consisting of 10 people and 3 boats will conduct entanglement netting at the proposed study areas sequentially, with Calcasieu locations likely being sampled first and Grand Isle second. Nets will be deployed daily at one of the randomly selected GRTS locations during daylight periods for up to 6 days per study area – 3 days of nearshore/beachfront habitats and 3 days of estuarine locations per study area. Extra days may be scheduled for each study area in case unfavorable weather conditions [i.e. winds >20 kts and seas >0.6 m (2 feet)] prevent sampling on other days and also to repair nets for reuse at the second study area. Nets will be inspected between deployments. Any nets that are oiled will be replaced to prevent cross-contamination of any captured turtles at different study areas.

Large-mesh, entanglement nets (91.4-m long and 2.5-m to 4.0-m deep, with 12.7-cm bar mesh of #9 twisted nylon) will be deployed at GRTS sample locations where feasible, for a minimum soak time duration of 6 hours per day (see “Sample Site Selection” section above for feasibility criteria). Netting effort at all locations will consist of 4 nets at each site, set in pairs (i.e., 2 nets hooked together in tandem) and one boat checking each pair

of nets (182.8 m of net) during every net check. Two vessels will be used to check the nets every 20 minutes, or more frequently, as splashes or other signs of potential capture dictate, in order to minimize risk to turtles while entangled. Pinger devices emitting high-frequency sounds will be attached to nets to minimize the potential for incidental capture of bottlenose dolphins (*Tursiops truncatus*). Crews are experienced in dealing with incidental captures, and will remove dolphins and other incidentally captured animals from nets as soon as possible. Hydrographic data including water temperature (°C), salinity (ppt), conductivity (mS/cm), dissolved oxygen content (mg/L), depth (m), turbidity (m), and tidal flow, as well as other environmental parameters (i.e. air temperature, wind speed, sea state, cloud cover, etc.) will be taken three times daily. A YSI meter will be used to collect these hydrographic data, unless MC 252 oil in the environment renders the probe ineffective at obtaining accurate measurements. If this occurs, back-up instruments and methods can be employed to collect the hydrographic data (e.g. thermometers, refractometer, Hach kit for dissolved oxygen content, etc).

Immediately upon capture, all sea turtles will be visually inspected for any external abnormalities and/or presence of oil (i.e. on skin, carapace or plastron). A 10 cm x 10 cm swab will be performed on the outside of the carapace 3 cm posterior to the head. Each swab will be done once and archived/collected/stored for transport to a lab. Any other obvious or visible oil on the sea turtle will be sampled using the same NRDA swabbing method. All sea turtles will be weighed and measured for straight and curved carapace length (SCL and CCL, respectively), visually inspected for flipper and living tags (the latter distinguishes headstart individuals), and electronically scanned for PIT and metal-wire tags as a means of detecting individuals that have been previously tagged.

A third vessel will be utilized to transport sea turtles to shore for additional data collection procedures and satellite transmitter attachment. It is anticipated that the LDWF Research Laboratory in Grand Isle and the Rockefeller Wildlife Refuge in Grand Chenier will serve as onshore facilities for these activities at Grand Isle and Calcasieu, respectively. Where appropriate (i.e. for healthy turtles that have not previously been tagged), the shore-based team will apply inconel-style 681 flipper tags (issued by Archie Carr Center for Sea Turtle Research at the University of Florida in Gainesville) and unencrypted 125 kHz PIT tags to turtles that have not received them previously. Blood will be drawn from the dorsal cervical sinus utilizing standard sampling practices that include measures to prevent cross-contamination of samples (Owens and Rutz, 1980). The blood samples will be collected per NRDA SOPs (NRDA Standard Operating Procedure for Blood Collection, Processing, and Shipping 2010) and sent to laboratory facilities agreed upon by trustees and BP for sex determination analyses and hydrocarbon exposure analyses. The specific analyses to be conducted will be described in an addendum to this Plan. The correlation between sea turtle exposure to oil and elevated blood hydrocarbon levels has been documented (Shigenaka et al. 2003; Kucklick et al. 2010). The shoreline team also will apply satellite transmitters to sea turtles according to the protocol described below. All sea turtles deemed healthy will be transported back to and released at their respective capture locations. Any sea turtles exhibiting a high degree of oiling or significant injuries needing medical attention will be transferred to the closest rehabilitation facility (e.g. the Audubon Aquarium of the

Americas in Louisiana, via coordination and cooperation with Mandy Tumlin of the LDWF and Aquarium staff, or the NOAA Galveston Lab Sea Turtle Facility in Texas). If the health status of a captured sea turtle cannot be determined by field personnel, they will consult with staff at the closest rehabilitation facility to determine whether or not to send the turtle for rehabilitation. Dead turtles will be considered evidence per protocols for carcass retention; fresh carcasses are to be transported to Audubon immediately on ice (not frozen) to be shipped to Dr. Brian Stacy for necropsy.

Biotelemetry Monitoring

Turtles that are considered healthy and releasable will be deemed candidates to receive a satellite transmitter. As specified by the NOAA permit requirements, transmitters will not exceed 5% of the turtle's body weight; however, field teams conducting this study will attempt to have tags not exceed 3% of the turtle's body weight (kg). Kemp's ridley, loggerhead and green turtles (juvenile through adult life stages) captured during the entanglement netting surveys may be fitted with Wildlife Computers' Fastloc GPS tags (130 g 2xAA Back Mount MK10-AF type, <http://www.wildlifecomputers.com/products.aspx?ID=4>). The Fastloc GPS satellite tags are intended to allow fine-scale assessment of turtle use of MC 252 oil-impacted and lesser or non-impacted habitat via transmission of both GPS positions and satellite (ARGOS) positions. These transmitters can also generate data on a sea turtle's time at the surface, depth and dive duration profiles, time-at-depth, time-at-temperature, depth-temperature profiles, and other timelines. The surfacing behavior data obtained from these tags may be used to correct surface densities for availability bias in aerial surveys being conducted under other NRDA projects.

Barring any equipment failure or turtle death, tagged turtles will be tracked for a minimum of 6 -12 months during which time movement and behavior may be characterized via GIS spatial analyses of track data as a function of the past or current extent of MC 252 oil in the environment. Satellite tags will be attached to turtles >30 cm SCL following the techniques employed by Seney *et al.* (2010). The neoprene method also developed by Seney *et al.* (2010) will be utilized to attach satellite tags to turtles 30-40 cm SCL.

Depending on availability of tags and the number of turtles captured, up to 30 turtles will be targeted to receive satellite tags during the Phase I netting period to be completed in the fall of 2010. Previous sea turtle research in nearshore Louisiana and upper Texas coast waters (Landry and Costa 1999, Metz 2004, unpublished data) indicates that tracked turtles may be comprised primarily of Kemp's ridleys, and could include a few loggerheads and greens. The total number of available tags will be evenly distributed among study areas, and tags will be deployed on a first-caught-first-tagged basis. A collaborative effort with other research teams located in the GOM will be made to document recaptured turtles and identify and retrieve lost tags.

All satellite tags not used, or retrieved, during the study will be returned to BP or its representatives, unless otherwise agreed.

Summary Outline of Logistical Approach

Phase I – Initial Sample Period/Recon Surveys (covered by the budget included with this Plan)

Sampling conducted during fall 2010 will serve as an initial assessment of sea turtle assemblages at the Calcasieu and Grand Isle study areas, and will provide data for the first of the four proposed study periods. Additional objectives for this phase are as follows:

- 1) Implement the methods described above for entanglement netting in order to establish the logistical workability of methods and protocols outlined.
- 2) Assess rough estimates of turtles to be encountered – dead, alive, MC 252 oiled (needing rehabilitation assistance), or un-oiled (no rehabilitation assistance needed).
- 3) Re-evaluate final plans regarding protocols and logistics for:
 - a. Processing captured turtles (MC 252 oiled versus lesser or un-oiled turtles)
 - b. Transport vessels and procedures, as appropriate
 - c. In/nearshore turtle triage/processing stations
 - d. Field chain-of-custody requirements
 - e. Collection procedures and data requirements for bycatch specimens
 - f. Coordination of data collection for bycatch (shark/ray/sturgeon) with associated NRDA field groups
 - g. Data collection techniques and forms for MC 252 oiled environments
 - h. Identification of any potential personnel and animal safety and health issues
 - i. Identification of additional equipment/vessel/personnel needs

Phase II – Subsequent Sample Periods

The trustees and BP recommend, and BP agrees to fund, three sampling periods in 2011 under Phase II. The budget for Phase II will be provided as an addendum to this Plan. A scope describing any substantial changes from the approach employed in Phase I will be submitted as part of this addendum, if necessary.

Sample and Data Handling:

MC 252 NRDA chain-of-custody procedures will be observed at all times for all NRDA samples. All samples will be transferred with appropriate chain-of-custody forms.

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 shall be kept on file for the duration of this project.

Each laboratory shall simultaneously deliver raw data, including all necessary metadata, generated as part of this work plan as a Laboratory Analytical Data Package (LADP) to the trustee Data Management Team (DMT), the Louisiana Oil Spill Coordinator's Office (LOSCO) on behalf of the State of Louisiana and to BP (or ENTRIX on behalf of BP). The electronic data deliverable (EDD) spreadsheet with pre-validated analytical results, which is a component of the complete LADP, will also be delivered to the secure FTP drop box maintained by the trustees' Data Management Team (DMT). Any preliminary data distributed to the DMT shall also be distributed to LOSCO and to BP (or ENTRIX on behalf of BP). Thereafter, the DMT will validate and perform quality assurance/quality control (QA/QC) procedures on the LADP consistent with the authorized Analytical Quality Assurance Plan, after which time the validated/QA/QC'd data shall be made available simultaneously to all trustees and BP (or ENTRIX on behalf of BP). Any questions raised on the validated/QA/QC results shall be handled per the procedures in the Analytical Quality Assurance Plan and the issue and results shall be distributed to all parties. In the interest of maintaining one consistent data set for use by all parties, only the validated/QA/QC'd data set released by the DMT shall be considered the consensus data set. In order to assure reliability of the consensus data and full review by the parties, no party shall publish consensus data until 7 days after such data has been made available to the parties. Also, the LADP shall not be released by the DMT, LOSCO, BP or ENTRIX prior to validation/QA/QC absent a showing of critical operational need. Should any party show a critical operational need for data prior to validation/QA/QC, any released data will be clearly marked "preliminary/unvalidated" and will be made available equally to all trustees and to BP (or ENTRIX on behalf of BP).

All analytical and non-analytical data associated with cooperatively funded work under this work plan will be provided to BP/Entrix within a reasonable timeframe.

Permits:

The Sea Turtle and Fisheries Ecology Research lab, under the direction of Dr. André M. Landry, Jr., currently has saltwater/oyster and freshwater scientific collection permits from the State of Louisiana (LDWF) to conduct sea turtle research activities and collect fish and macroinvertebrate species in Louisiana waters (Permits: LNHP-10-023; S-112-OYS-2010, Freshwater Scientific Collecting Permit #75). STFERL also has a Permit to Take Endangered and Threatened Species from the National Marine Fisheries Service (NMFS Permit No. 1526-02), but sea turtle research activities are primarily restricted to Texas waters (with the exception of satellite tracking of relocation trawled turtles in Gulf waters west of the MS delta). A new NMFS permit application, including provisions for NRDA-related sampling activities and locations, was submitted by Dr. Landry on 23 July 2010 and is currently under review. Lastly, the STFERL has a USFWS Threatened and Endangered Species permit (Permit no. TE776123-1) for conducting sea turtle research activities along the Texas Gulf coast. A new permit application is in preparation by Dr. Landry and will include provisions for NRDA-related sampling activities in both Texas and Louisiana.

Lead Investigators:

Tasha Metz: Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab [REDACTED]

Andre Landry: Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab [REDACTED]

USACE Coordinators:

Dena Dickerson: USACE Engineer Research and Development Center-Environmental Laboratory [REDACTED]

Chuck Dickerson: USACE Engineer Research and Development Center-Environmental Laboratory [REDACTED]

Description of Duties for Lead Investigators

Name	Role
Dr. Tasha Metz Texas A&M University at Galveston	Principal Investigator
Dr. Andre Landry Texas A&M University at Galveston	Technical Advisor; Director of the Sea Turtle and Fisheries Ecology Research Lab
Dena Dickerson USACE	Collaborator
Chuck Dickerson USACE	Collaborator

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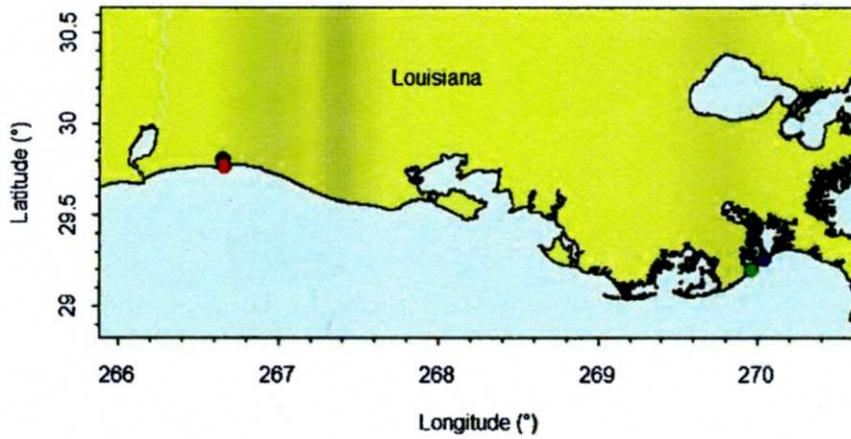


Figure 1: Location of study area access points proposed for entanglement netting operations to potentially assess the impact of MC 252 oil on nearshore sea turtle assemblages. Black and red dots represent the northern and southern access points for the Calcasieu area, while the blue and green dots represent the eastern and western access points at Grand Isle, respectively.

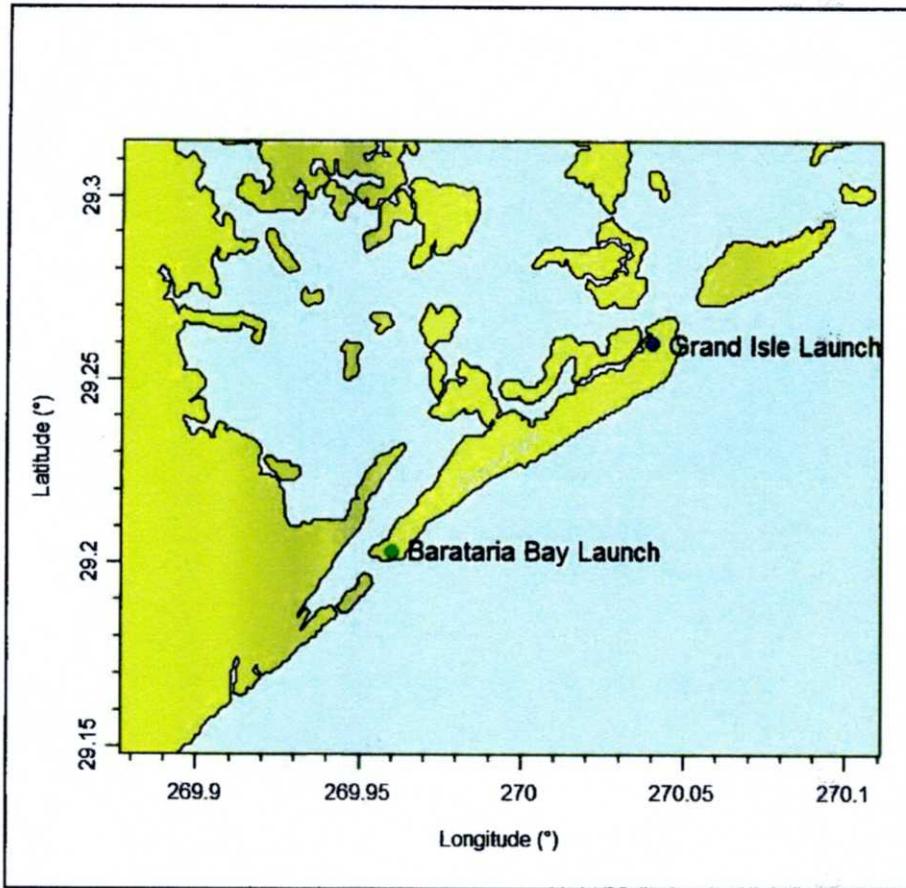


Figure 2: Locations of the study area access points on Grand Isle, Louisiana, proposed for nearshore entanglement netting study. Green dot = Barataria Bay access point ; Blue dot = Grand Isle access point

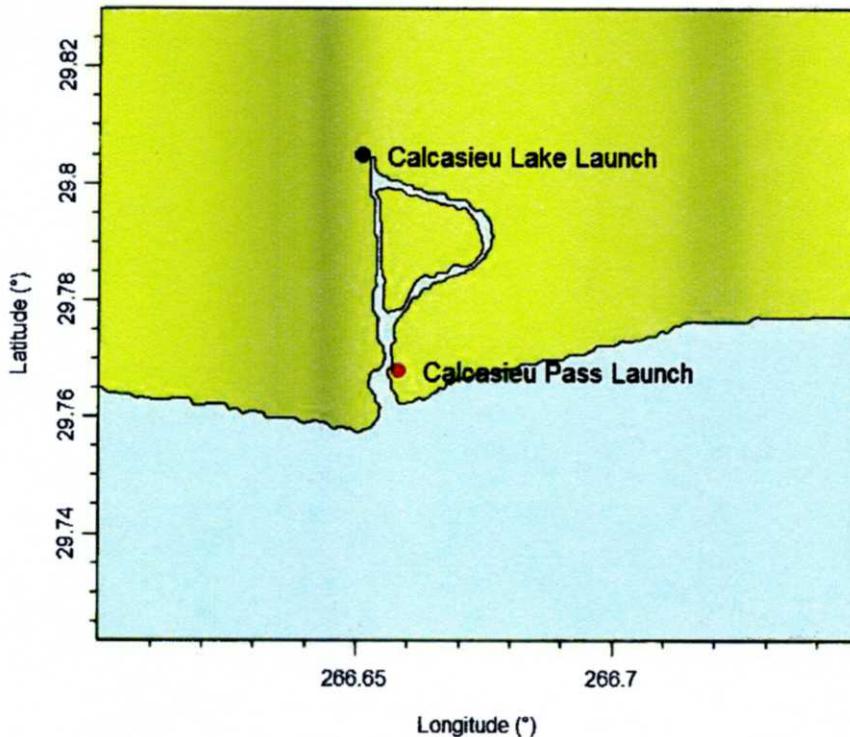


Figure 3: Locations of the 2 study area access near Calcasieu Pass, Louisiana, proposed for nearshore entanglement netting study. Black dot = Calcasieu Lake access point (northern access); Red dot = Calcasieu Pass and beachfront access point (southern access).

SUMMARY OF EXPECTED BUDGET AND REQUESTED RESOURCES

NEARSHORE ENTANGLEMENT NETTING SURVEYS – WESTERN GULF OF MEXICO

PHASE I – INITIAL SAMPLING PERIOD/RECON SURVEYS TO BE CONDUCTED BY OCTOBER/NOVEMBER 2010

Phase I - One Sampling Period

Salaries

Tasha Metz - Principal Investigator [REDACTED] 15,007

Research Assistant [REDACTED] 8,340

Graduate Assistant [REDACTED]	12,000
Student Workers [REDACTED]	11,200
Total Salaries and Wages	46,547
Fringe Benefits [REDACTED]	[REDACTED]
Total Personnel Costs	[REDACTED]
Materials & Supplies	
Entanglement Nets	24,200
Buoys and Net clips	500
Sea Turtle Tagging and Measuring supplies	2,000
Ropes and Anchor Lines	1,000
Personal protective equipment supplies	1,500
Travel	
Truck rental [REDACTED]	3,750
Galveston - Calcasieu and Grand Isle (driving)	1,500
Lodging and Per Diem - Calcasieu/Cameron Parish	7,380
Lodging and Per Diem - Grand Isle/Jefferson Parish	10,400
Meals - Calcasieu/Cameron Parish	5,490
Meals - Grand Isle/Jefferson Parish	7,100
Other Costs	
Vessel Usage Fee [REDACTED]	21,600
Fuel	1,800
Misc. Equipment/Maintenance	10,000
24-hour HAZWOPER Training	4,000
Satellite Phone and airtime	2,000
Modified Total Direct Costs (MTDC)	161,486
Tuition @ [REDACTED]	3,096
Fastloc Satellite Tags (30 at \$5,000 + [REDACTED])	198,000
Total Direct Costs	[REDACTED]
INDIRECT COSTS	
Indirect Costs [REDACTED]	[REDACTED]
<hr/> TOTAL PROJECT COSTS <hr/>	<hr/> \$404,568 <hr/>

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 work plan that may arise. The trustees will make a good faith effort to notify BP in advance of any such increased costs.