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The City of Gulf Breeze
Deep Water Horizon Oil Spill Response Plan

Prepared for the City of Gulf Breeze
By Ecological Consulting Services Inc.

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Deep Water Horizon Oil Spill Response Plan

Final Report

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Executive Summary

This report will address the direction, methods, and strategies used by the City of Gulf Breeze regarding practices to be implemented in conjunction with protection plans and Emergency Mission plans that have already been placed in response to the environmental threats created by Deepwater Horizon oil spill that took place on 4/20/10. Federal oil spill response methods were drawn from other area oil spill plans and modified to fit the Florida Panhandle mission of Pensacola Bay and Santa Rosa Sound, which surround the City of Gulf Breeze. The modified methods provide the best available practices for this environment and its sensitive areas. Additionally, standard management practices are discussed which are considered best management practices for the City of Gulf Breeze.

This report does not include the copy-and-pasted information from other reference material, but may refer to other sources listed in the resources section of this report. The suggestions and methods described in this report are site-specific to The City of Gulf Breeze and offer appropriate actions in regard to oil impact prevention and cleanup. This report began as a recommendation report for Gulf Breeze and then evolved daily into an overall report of actions suggested and applied as time progressed (see dates implemented). The plan outlined in this report is to be used as a general guide and is intended to be modified as lessons are learned during this response and revised for use in other locations.

This plan is not intended to be a standalone plan for solo response. Communication with local, State, and Federal regulatory agencies—such as E.P.A., N.O.A.A., U.S. Coast Guard, FDEP, and neighboring county governments—is vital to improve the success of response actions.

Introduction

Due to being centrally located in Pensacola Bay and Santa Rosa Sound, the City of Gulf Breeze was the first to be impacted by the oil breached through Pensacola Pass. The lack of oil spill response funding resources caused the City of Gulf Breeze to develop a response plan in case oil spill resources could not be allotted in the appropriate time frame to protect The City of Gulf Breeze's environmentally sensitive areas and residential property. Standard Federal response protocol to a major oil spill is the creation of a Unified Command structure to coordinate information, resources and deployments among Federal, State and Responsible Party departments. In the case of Deepwater Horizon, the City of Gulf Breeze developed its plans in response to a delay of communication with affected municipalities of the Unified Command structure to recognize record or respond to threats to the City in a timely manner. As a result of foresight and preparedness from previous disaster events, the City of Gulf Breeze oil response team has been pro-active in locating and observing the behavior of the oil which has breached the Pensacola Pass than any other County or State resources. This fast response and planning is due to the fact, the City of Gulf Breeze is in a direct line of impact if the local Area County plans, if any, to protect the pass, fail. Because the Gulf Breeze response team has fewer resources in comparison to other Counties, resource funding must continue in order to protect the City of Gulf Breeze and its environmentally sensitive areas.

To date, there has been no implemented County plan to protect the only area in which oil can breach through and impact the City of Gulf Breeze. The county the City of Gulf Breeze resides in is not the County where the Pass is being addressed. Other counties have areas vulnerable to oil impact, such as Perdido Pass, Destin, or Panama City and have developed plans for protection to prevent impact of the bays. The information given for the State incident reports being published were incorrect. These reports stated the Pensacola Pass (pass in the vicinity of Gulf Breeze) has been closed during incoming tides. This report was left on the State website for weeks (6/12/2010 -7/02/10) and had not been verified by the responsible agencies as whether this was being continued. In fact, this closing has only been observed one time (6/12/2010). The City has asked for a Pensacola Pass Plan (Appendix 4) which would boom off the areas where the water current flow is the weakest and would still be able to maneuver oil into the catchment booms. The City also requested reviews of other area county plans which

have risked possible failure in order to chance success. The request was to listen to those counties/cities advice of pros and cons of their defense plans and what lessons we can learn from their mistakes, but the past requests have gone unheard from local counties in charge of the pass and have not received responses or immediately without review or technical expertise evaluation told the City of any idea brought up, will not work.

It was not until a later date; the US Coast Guard recognized the efforts of the City of Gulf Breeze and recommended agencies to incorporate the City's strategies for protection of Pensacola Bay from oil impact (Appendix 16). Therefore, because of the uncertainty of protection, lack of communication and the delay in needed response, the City needed to take action to protect the natural resources and resident property of the City of Gulf Breeze. This report outlines the response plan and protection and prevention strategies developed to protect the City of Gulf Breeze.

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The City of Gulf Breeze Oil Spill Response Plan

June 26, 2010

The City of Gulf Breeze was impacted by oil breaching through Pensacola Pass. Pensacola Pass is the entry point to Pensacola Bay, Big Lagoon, Santa Rosa Sound, Escambia Bay and East Bay. The initial oil spotted in the Bay was located by the volunteer Coast Watchers of the City of Gulf Breeze six miles from Gulf Breeze. The City of Gulf Breeze has been a first responder when oil initially (June 2010) breached Pensacola Pass.

British Petroleum (BP), the responsible party, was contacted by the dispatch of the City of Gulf Breeze Police Department and instructed to call the appropriate agency phone numbers; however, the response from the responsible party did not occur in a timely matter due to lack of confirmation from Unified Command in Mobile Alabama. When BP did arrive on scene, the Oil Spill response teams stopped skimming and returned to Gulf Breeze to allow BP to continue with their operations. After several oil spill sightings within the Bay and weeks later, the Coast Guard and BP engineers were in close communication with the City of Gulf Breeze. This initial delay of response and communication has concerned The City of Gulf Breeze because the Gulf Breeze area is geographically inline for any the impact an oil spill in the Gulf of Mexico due to a six-mile fetch and the currents of Pensacola Bay and Santa Rosa Sound. Currently, the first areas impacted from oil during the Deepwater Horizon oil spill have been the west side of Gulf Breeze, Woodland Bayou, Shoreline Park, Deadman's Island and Grassy Point. The protection plan encompassing the south end of Deer Point, to the north end of Peakes Point, is called the West Side plan, while the response plan encompassing the rest of Gulf Breeze belonging to individual homeowners is called the Shoreline Wetland Protection Plan. All areas surrounding the City of Gulf Breeze were evaluated for protection from oil impact, especially environmental sensitive areas.

1.0 Purpose

The primary goal of this report is to address the oil spill response plans of the City of Gulf Breeze.

a. An assessment of current defenses (turbidity curtain and tier three boom), west side defense, and protective boom of the wetlands.
b. The current risk areas (environmentally sensitive areas, resident area riprap, boat traffic carrying oil into an area, ecological impact of oil flowing past or under the boom and into the canal).
c. The current and future risk of an event involving larger quantities of oil getting into the bay and sound (the current, wind, tide, and oil conditions that present the greatest risk of oil getting past the existing defenses and into the bayous).
d. Pre-assessment soil testing.
e. Biological observations during each breach of oil into Pensacola Bay and Santa Rosa Sound.
f. Coast Watchers and Agency communication.
g. A recommendation on the closing of entrances to the bayou and the related maintenance measures and biological monitoring.
h. Protecting the area of Gulf Breeze using limited resources and deflection methods.
i. Skimmer methods, including boats and personnel training.
j. Decontamination of equipment.
k. Community involvement.
l. The underwater surveys of post oil spill

2.0 Summary of Findings

a. **An Assessment of current defenses (curtain boom and tier 3 boom), west side defense, and protective boom of the wetlands -** Additional boom is needed in case of predicted submerged oil.
b. **The current risk areas (environmentally sensitive areas, resident area riprap, boat traffic carrying oil into an area, ecological impact of oil flowing past or under the boom and into the canal) -** The current risk areas have been protected by various protection plans and emergency missions (Section 4).
c. **The current and future risk of an event involving larger quantities of oil getting into the bay and sound (the current, wind, tide, and oil conditions that present the greatest risk of oil getting past the existing defenses and into the bayou -** Protection plans and monitoring plans have been implemented to protect future risks.
d. **Pre-assessment soil and water quality testing -** All results showed no PAH or existing oil in the soil and water prior to the oil spill.
e. **Biological observations during each breach of oil into Pensacola Bay and Santa Rosa Sound -** Biological observations were observed two weeks before the major oil impact of the Pensacola Beach and Johnson Beach area. Health indicator species such as horseshoe crabs were found dead on the shoreline. With the exception of a few pelicans, birds normally in the area disappeared, sharks were not swimming in a normal hunting mode but were sporadically darting while swimming disoriented, dead turtles and dolphins were found and the fishermen were reporting ocean dwelling fish were being caught in the bay.
f. **Coast Watchers and Agency communication -** Using Gulf Breeze Police dispatch and the Coast Watchers which is an organized group of volunteers trained by the Gulf Breeze Police department along with the skimming operations and HAZWOPER response from the volunteer Gulf Breeze Fire Department responded and communicated effectively to prevent oil impact to the City of Gulf Breeze shoreline (Section 5.0).
g. **A recommendation on the closing of entrances to the bayou and the related maintenance measures and biological monitoring -** Closing the entrances to the bayou long term was recommended only if the oil reaching the Pensacola Pass was consistently ongoing and the bayous were in imminent danger (Section 4.5).
h. **Protecting the area of Gulf Breeze using limited resources and deflection methods -** Shoreline and large area protection plans were implemented and provided protection from rogue oil patches (Section 4.4).
i. **Skimmer methods, including boats and personnel training -** Equipment and training was sufficient for oil spill cleanup (Section 5.1).
j. **Decontamination of equipment** - Staging areas and decontamination stations were set up to address oil removal from equipment and materials.
k. **Community involvement** - Over 1000 people total participated in creating absorbent boom to help aid in prevention and cleanup of environmental resources.
l. **The underwater surveys of post oil spill -** Qualified personnel were deployed to spot oil underwater on fixed structures using gloves and an ultraviolet flashlight to spot the florescence given by oil. No oil was found on these dives. Sunken oil was discovered within the sediment at a depth of three feet into the sand in Fort McRae and Barrancas Beach. (Sept 2010)

Figure 1. Site Location, The City of Gulf Breeze

3.0 Site Description

Gulf Breeze (Figure 1 and Appendix 1) is a city located on the Fairpoint Peninsula in Santa Rosa County, Florida, United States. It is a suburb of Pensacola, which lies to the north across Pensacola Bay. The population was 5,665 during the 2000 United States Census, and 6,455 during the 2005 United States Census. Gulf Breeze is located at 30°21′36″N 87°10′41″W (30.36°N 87.17806°W) (30.359933, -87.178190).

According to the United States Census Bureau, the city has a total area of 23.5 square miles (61.0 km²). Of that area, 4.8 square miles (12.3 km²) is land and 18.8 square miles (48.7 km² or 79.79%) is water.

Growth of the city itself is geographically restricted, as it is surrounded by major water bodies on three sides. The City of Gulf Breeze is six miles from the Pensacola Pass entry point and located centrally in Pensacola Bay and Santa Rosa Sound. Additionally, the eastern portion of Gulf Breeze is occupied by the Naval Live Oaks Reservation.

Gulf Breeze has Emergency Response preparation experience from other natural disasters in the past years. From 1995 to 2005, Gulf Breeze has received several direct hits and severe blows from numerous hurricanes. In 1995, Hurricanes Erin and Opal made landfall just south of the city. While Hurricane Erin caused mild damage to the area, Hurricane Opal devastated much of the neighboring Pensacola Beach and Navarre communities. Nine years later, in 2004, Hurricane Ivan made landfall west of the Gulf Breeze but caused widespread damage in the city, destroying many homes and businesses. In 2005, Hurricane Dennis passed just east of the city. Damage from this storm was more severe than that received in communities lying further west.

3.1 Gulf Breeze Current Risk Areas

The aerials of Pensacola Bay and Santa Rosa Sound (Figure 2) show the entire area of Gulf Breeze to be a central and first impact site of any potential oil breaching into the mouth of the Pensacola Pass, which is located approximately 7 miles from the central west point of Gulf Breeze. The fetch distance of the waves traveling through the rest of bay varies from one mile from Santa Rosa Island and three miles to Escambia County and the City of Pensacola to 11 miles from Escambia Bay, has the potential to cause impacts of various sizes due to lack of wave attenuation and protection.

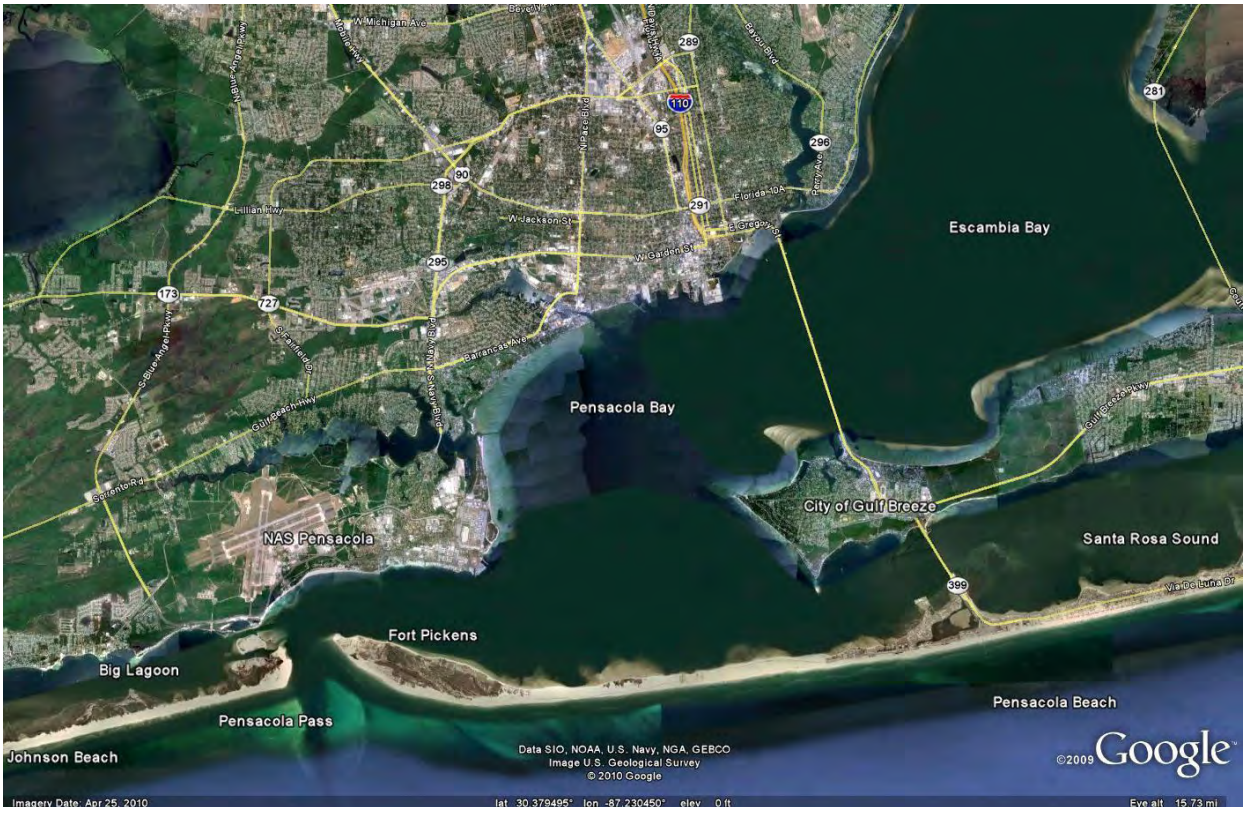


Figure 2. Aerial Site Descriptions in Pensacola Bay

Although the extending tip of Fort Pickens affords some protection by causing a decrease in speed of the currents of the pass, the long shore current is constant. The long shore current along Fort Pickens, along with the shallow depth and long fetch, causes the speed of the water to increase. The divergent layer (tide line) where two currents meet has already split into stronger currents separating into Pensacola Bay and Santa Rosa Sound. Thus, a direct west wind will bring any oil on the surface along the shore and cause it to take the path of least resistance into the City of Gulf Breeze. Therefore, as oil comes into the bay through maximum flood tide, the currents cause the oil to flip around long shore and then break off the current pattern in four ways. All four directions target Gulf Breeze's long shore currents. This deflection of oil can cause Gulf Breeze to act as a catch basin.

a. Gilmore Bayou is located on the north side of Gulf Breeze behind Deadman's Island and west of Highpoint Drive. Gilmore Bayou is a small nursery for aquatic life and a pristine juncus salt marsh.

b. Woodland Bayou became an openly dredged area in the 1970s. The majority of homes support natural living shorelines as water-front erosion protection.

c. Hoffman Bayou is an established area with vegetative shorelines that provide nursery ground for fish and migratory birds.

d. Zamara Canal is a five-foot opening that leads into a pristine wetland that expands into a majority of Gulf Breeze and the associated water table. A spillway has been established to prevent washout of the channel and to control tidal action. Zamara Canal leads into one of the largest wetland areas within Gulf Breeze.

e. West Side of Gulf Breeze consists of riprap and sandy shoreline. The area contains seagrass that has stabilized the underwater shoreline and contains a nursery ground for marine wildlife, including rather large horseshoe crabs (20 inches from carapace to tail).

f. Peakes Point is an area subjected to northern, western, and southern winds and currents. Peakes Point contains a rather large and shallow sandbar (Fig.3). The nearest channel distance to Peakes Point is less than one mile. The end of Peakes Point is a resident who has chosen to not harden the shoreline, thus allowing the natural accretion and vegetation for stabilization. Protective grasses are more upland and prevent additional erosion. The north side of Peakes Point contains mostly riprap due to heavy wave action, which has the potential to cause much erosion without the rock.

g. Deer Point is an area that receives slightly more current velocity and impact due to the vicinity to a navigational channel. Deer Point also contains a shallow sand bar, which can cause further impact to the shoreline. Deer Point does not have natural protection and is surrounded by riprap. Area residents on the east side of Deer point have both sandy coastline and riprap set back from the shoreline protecting resident homes.

h. Grassy Point is considered an environmentally sensitive area due to seagrass, emergent shoreline grasses, and wetlands. Some homeowners have chosen not to fill their lots with soil and leave the wetland as a natural landscape. These wetlands connect to the larger portion of the wetlands located in Gulf Breeze.

i. The Area Contingency Plan designates Deadman's Island as a triple diamond site priority along with the environmental sensitive areas and aquatic preserves. Deadman's Island is a local, State, and Federally funded restoration project whose main purpose is to protect natural and historical resources and preserve area wildlife and habitat. The Deadman's Island Restoration Project is a grant funded community based restoration project funded by the various partners including National Oceanographic Atmospheric Administration (NOAA) and the Army Corps of Engineers (ACOE).

j. Shoreline Park is the main area for boat launching and contains a large parking lot for boaters and a picnic area for the general public. This area is frequented by the general public. Shoreline Park is in close proximity to wetlands and seagrass beds.

k. Gulf Breeze Environmentally Sensitive Areas contain seagrass, saltmarshes, wetlands, and oyster reefs. This area also serves as habitat for terrestrial wildlife, and has been documented by the Audubon Society such as a migratory bird drop zone with hundreds of species of birds. Gulf Breeze is surrounded by limited development in conjunction with natural resources and environmentally sensitive areas.

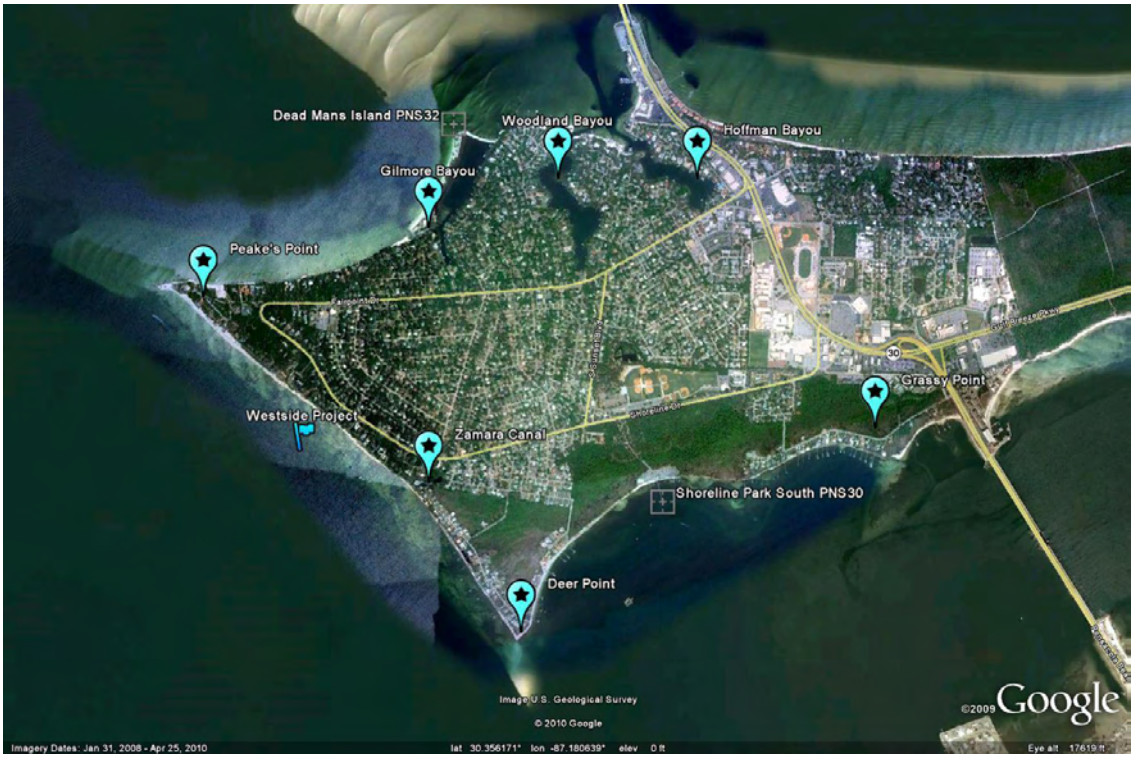


Figure 3. Aerial Site Descriptions in the City of Gulf Breeze

4.0 Prevention Strategies

The impact of oil on resident property and the environmentally sensitive areas of Gulf Breeze are currently unknown, and precautions and prevention strategies need to be considered. Protection strategies such as boom deployment and continued cleanup methods were the main focus for the protection of Gulf Breeze.

4.1 Gulf Breeze Approved Protection and Prevention Maintenance Plans

Oil spill response strategies needed to be approved by the Unified Command and submitted as Emergency Missions (EM). The EM were approved by the Unified Command, was the best plan to protect all of the city of Gulf Breeze using resources already present. The following are the EM proposals (Appendix 5).

- EM 27 – initial boom placement
- EM 97 – boom placement across canal & bayous
- EM 197 – project for initial protective measures – sound & bay reconnaissance, emergency response, environmental consulting
- DEP agreed to fund those costs directly through July 15, 2010
- EM 271 – request best practices white paper - Requested resources available to Unified Command to determine best practices feasibility for the City of Gulf Breeze
- EM 610 – Boom Modification-request to substitute non-curtain boom for curtain boom

- EM 632 – West face protective booming; creation of retractable turbidity curtain series of booms along west face of gulf breeze including prototype deflection installations to the north and south.

- EM 702 – Request of containment boom

- EM 915 – protective measures beyond July 15, 2010 – continuation of 197

  Unapproved:

- EM 827 – Deflection Boom

- EM 641 – Scuba Recon

- EM 505 – Request Boom change to span Hoffman AND Woodland bayou

- EM 273 – Wayside to be disposal site

- EM272 – Create city disposal plan-

- EM 76 – Additional boom placement locations – superseded by EM 97

4.2 Recommendation of Boom for the City of Gulf Breeze

Current boom defenses of the areas encompassed by the Area Contingency Plans, along with the turbidity curtain that was subsequently purchased and deployed, are sufficient to protect the mouth of the bayous on calm to moderate days. The additional boom acts as an attenuator for waves with higher velocity and impact. The curtain boom prevents any underwater plumes from breaching the mouth, and the deflection boom is designed to trap, any oil sheen or petroleum products. The first tier boom should block the initial impact and prevent mass entrapment of oil in the bayou. Caution needs to be taken that the mouth of the bayous are not closed too long so that natural circulation can occur. If the mouth remains closed, natural circulation should be replaced with artificial circulation. Data sonde monitoring is recommended to monitor dissolved oxygen levels if the mouth is closed for a period of time longer than 14 days.

Currently (6/21/10), there is no plan for protecting the mouth of Pensacola Pass which is the main source for oil in Pensacola Bay. Therefore, a plan for protecting the bayous and wetlands was essential and included placing a boom at the mouth of each bayou. Further, an upland boom was planned for areas which had potential for oil contamination and tide influx from the bay to the wetland.

Curtained boom, such as standard turbidity curtain, will be more beneficial if it is placed behind the second tier boom, especially in the Bayou area. A first tier boom would collect floating solid matter, but there would be nothing to collect the subsurface oil. However, the turbidity curtain would collect the over washed and semi-submerged oil. A curtain boom at the mouth of the bayou requires maintenance due to flow of the ebb and flood tides. If the boom is completely closed for a long period of time, the potential exists for a drop in oxygen levels due either from the oil or from closing the bayou without aeration may result. Therefore, artificial aeration methods need to be considered when closing the bayou for a long period of time.

4.3 Boom Strategy (EM # 27, 610, 97, 702)

This section contains an assessment of current defenses at each bayou mouth consisting of three tier booms and maintained by state contractors. The additional boom was placed across the canals and bayous (EM 97, 6/2010). The tiered boom strategy provided by the State should remain as proposed. However, the risk of currently using all non-curtain booms limit containment of the oil should it enter the bayou. Surface oil carried by waves or heavy submerged oil can pass underneath non-curtain booms. Non-curtain booms are easier to maintain than curtain boom. Thus, it is likely that curtain booms may have not been used by the responsible party and state contractors due to the maintenance requirements of the curtains, chains, and anchoring.

Curtain booms have a heavy bottom chain and, depending on the type, a permeable or non-permeable curtain. The less expensive TYPE I curtain has a vinyl fabric non-permeable curtain. The more costly, Type III curtain boom is the most permeable and stronger in water flow current situations. However, the benefits of TYPE III do not outweigh their costs. The locations that need the TYPE III curtained boom are more open and exposed to under water and surface wind currents. Determining the scope of the anchor to deploy the curtain effectively in low-to-moderate wave action requires knowledge of the local currents and waves and special securing methods to prevent premature stress on the grommets of the curtain boom. Contractors who are paid by the State are providing a boom that has no curtain for submerged protection, making it easier to deploy quickly with less maintenance. The state contractors are currently paid to maintain the boom in incident command, EM approved areas. Separate maintenance would have to be allotted for turbidity curtains.

4.4 Best Strategy to Deflect or Catch the Oil for City of Gulf Breeze

Deflecting oil into the strategically placed boom will prevent and reduce impact of homeowner property and environmentally sensitive areas as well as aid in easier cleanup.

The best strategy to catch or deflect oil into an area easily accessible for cleanup is to use a catch curtain boom or non-curtain fabric design (which is easier to handle during wave action). A curtain boom deployed outside of the bayous would avoid direct current, but would allow deflection of the current to guide the oil into a less impacted area (EM # 27, 610). The mouths of bayous are small in width, which will cause an influx of water at a faster rate.

Another method of protection is covering the riprap. This method has been observed by Ecological Consulting Services Inc., to work in areas that do not have a strong tide influx or wetland area because the moderately permeable slick fabric type will allow more over wash during tidal action and prevent the oil product from being trapped before impacting the wetlands. This impact may cause contamination of the wetlands, effect the plants, habitats, groundwater and sediments. The sinking particles of oil have the potential of contamination of drinking water.

Deflection is ideal if the shoreline is near the boomed area and can be accessed for cleanup. The downside of deflection toward a shoreline is the concern by homeowners and residents, as oil may be deflected onto their property.

Using a deflection or catchment boom is an ideal solution for The City of Gulf Breeze. A drawback includes the response time for boat launching and readiness of cleanup crews and equipment. The contained oil can be at risk of over washing, pooling, and/or sinking due to wave action if cleanup crews cannot respond in a timely manner.

Deflection of Boom

The boom/deflection plan was to be implemented on an as-needed basis with temporary deployment. Preventative and protective materials were to be deployed only on sites of potential impact and were designed to be easily retrieved after the threat subsides. The boom/deflection plan protects the environment and the homeowners, while maintenance of the plan has the potential to cost less than initial claims from homeowners.

a. **The West Side project (EM # 632)**

The West Side plan is the best plan of action for the City considering the limited funding resources for protection of the majority of the Gulf Breeze Area (Appendix 5). Six thousand seven hundred feet of shoreline was protected using this plan. These plans were considered as pilot projects to test and if found efficient and cost effective, the rest of Gulf Breeze could be protected by the same manner. There are two pilot phases in the Pensacola Bay (Santa Rosa County) to monitor the durability of the resources used to protect the shoreline. The first phase of the project is to place the curtained boom along the west face of Gulf Breeze. Designed and implemented by ECS trade secrets, the same type project was implemented at the West end of Gulf Breeze which was in the direct pathway of breached oil in the bay. The curtain will be rolled up and bounded to prevent additional wear for use in the time of need. The curtain acts as a boom until the time is needed drop the curtain into the water for protection from surface and submerged oil. When an emergency of type occurs, the curtain may be deployed and unfurled for protection of surface and submerged oil.

The second phase involves filter fabric to be deployed as a permeable barrier in the time of need. The filter fabric is not intended to remain in the water, but only used in the event of a potential oil impact. Using ECS trade secrets of the RLMoore method as listed in the permit, one hundred feet of filter fabric was placed over existing pilings, rolled, and secured to the piling for easier and organized deployment. The time of need for deployment of the filter fabric will be dependent on the local Coast Watchers team who surveys the area for oil during scheduled intervals and predicted time of impact and location. If the spill is overwhelming for BP cleanup, and a majority of oil entered the currents path in the direction of the City of Gulf Breeze, our West End prevention method and response team will be deployed. Pilings have already been jetted into place for securing these materials. Existing docks have been used to reduce the number of pilings. Existing sea grass was avoided where possible.

During the mid-project inspection, it was determined that seagrass beds extended farther out than proposed and the entire area containing seagrass beds could not be protected. After inspecting the already placed pilings, the length of the spacing of the pilings was determined according to bare sandy areas containing no seagrass. For example, the original plan was 20’ spacing. However, due to seagrass and the location of the bare area, spacing of 15’, 20’ 25’ or 40’ may result. This spacing may limit the functionality and deflection of the curtain or filter cloth, however the best management plan was to avoid and minimize disturbance to any seagrass areas. Deflection of the end points along the Deer Point and Peakes Point, were limited due to current speed and impact of the water current, winds and tides. The short-term goal of shoreline and seagrass protection was sufficiently met under this plan. Foam and algae was observed to be blocked by the fabric and curtain. However, in areas where there were small gaps, foam and algae pushed through the gaps with wave action and impacted the shoreline. It was concluded if a large oil impact occurred along the West Side shoreline, the project would be successful in blocking the majority of oil whether submerged or oil floating on the surface oil.

The plan was extremely costly and required much maintenance. Due to the varying wave impact and high maintenance cost, this plan was not recommended in other areas unless the oil product was constantly

moving though Pensacola Pass for over a week. Besides the cost of maintenance, loose items in the water, such as absorbents or fabric, were not recommended long term due to unpredicted and premature wear and tear of the currents and tides.

ECS suggests preparations including having deployment cloth and materials to have on location and easily accessible to protect the shoreline. Removal of the project can be removed when the threat passes.

Figure 4. The City of Gulf Breeze West Side Protection Project and the three tier protection boom of Zamara Canal. Both protection strategies impede potential wetland breaching of oil.

b. Protection of private resident property (EM # 632)

According to the Florida Department of Environmental Protection (FLDEP) emergency response rule in permitting, once the area is declared a statement of emergency the homeowners had a right within reasonable means to protect their property (See Appendix 12). The majority of waterfront homes surrounding Gulf Breeze have riprap rock protecting and stabilizing the shoreline or uses a protective seawall behind the riprap for structural integrity to prevent erosion of the property. According to the BP Response Plan, once riprap is oiled, the only way to clean up the area is removal of the rock. If the riprap is removed, the structural integrity of the seawall could be compromised. Therefore, it was important to take action to protect homeowners' property. The West Side and South Side projects were designed to prevent impact to homeowners' property. Another method of protection is covering the homeowners' riprap. This method will work in areas that do not have a strong tide influx or wetland areas as the moderately permeable slick fabric type will allow more pull in tidal action and reduce the risk of the oil product being trapped before impacting the wetlands. This strategy is not be recommended for areas near Grassy Point or areas near Zamara Canal due to the environmental benefits

versus environmental costs. Fabric can aid in the transport of oil over wetlands and bayous. The living shoreline or snared riprap would be texturized enough to trap the oil and prevent over wash into the wetland. This impact may cause contamination of the wetland, sediment deposition, and if too much influx, the contamination of the residential water and the water table (see also Sections 6.2 Ecological Impact and Benefits Versus the Costs and 6.3 Impact on Homeowners' property).

4.5 A Recommendation to Completely Close the Entrance to the Bayous

The closing of the bayou mouth by allowing accretion or berming may allow, in the worst case scenario, water stagnation over a long period of time due largely to heat and low dissolved oxygen levels. It is therefore recommended that basic parameters including dissolved oxygen content are monitored daily in case a long-term deployment of turbidity curtain causes stagnation or hypoxic pockets within the bayou, due to lack of circulation from incoming and outgoing tidal action. Equipment such as floating air bubblers and other aeration devices may be used to maintain the oxygen levels in the Bayou. Also, placement of a flow pipe can be used for additional flood and ebb flow. The flow pipe can then be maintained and monitored for oil.

The oil spill watch in Pensacola Pass is expected to continue throughout the summer months. The oil found in Pensacola Bay, is mostly in a viscous state for three types of oil: sheen, oil mats, or emulsified and thick crude oil (Lunel 1995, Mackay 1980). Even if the Deep Water Horizon oil is capped, waves of rogue patches of oil product may still reach the shorelines and bays. It is unknown what plan, if any, the neighboring county has to monitor the Pensacola Pass. If public interest is not a problem and Gulf Breeze has the opportunity to close the mouths of the bayou, then doing so would be the best line of defense. However, as with any body of water that is closed off, depleted oxygen levels would occur. Given the circumstances, it would be extremely important to either pipe water into the mouth to add flow from the bay while screening and booming off the pipe opening, or to allow aeration paddles, pumps, and/or saltwater resistant aerators to allow flow. Aerators placed strategically under docks would allow circulation, as would bubblers in strategic low-traffic areas.

4.6 Protecting Wetlands

The plan to boom the bayous and the implementation of the Southside project was also designed to protect the wetlands within the City of Gulf Breeze (Appendix 6). The water table, which the wetlands filter, is a source of water for the well system drinking, irrigation and swimming pool water for some residents in the City. The residential water contamination is an ongoing issue today in other oil impact areas, such as Prince William Sound, Alaska from the Valdez Oil Spill Incident (NOAA 1992). Due to the over wash of potential oil impacts through the bay inlets, the natural habitat and vegetation benefiting wildlife and fisheries could be impacted and change the dynamics of the wetland ecosystems through oil impact (Spaulding et al., 1993).

5.0 Gulf Breeze Oil Spill Response Teams (EM #197)

The GB response team and City staff have coordinated and scheduled routine patrols of Pensacola Bay and Santa Rosa Sound to observe and report oil found in the Bay. The disaster response team is made up of City Staff, Volunteer Firemen, Gulf Breeze Police and dispatch, an Environmental Consulting Company, and Coast Watchers. City Staff and ECS developed prevention plans from contacting oil spill impacted areas around the world for advice and suggestions. City Staff and ECS have developed Emergency Missions that are site specific to the City of Gulf Breeze and with the assistance of Santa Rosa County, submitted the plans to the Unified Command in Mobile for approval (Appendix 5). Boom strategies have been modified along with oil spill response and clean up strategies as lessons were learned. Oil skimmers were purchased and have been deployed numerous times during oil spills to remove the oil found on the surface. As the current oil situation evolves, the Emergency Missions have been modified. Cleanup personnel have been certified in 29 CFR 1910.120 training. HAZWOPER Instruction establishes occupational safety and health training requirements for emergency response operations involving or potentially involving releases of hazardous materials. Because Pensacola Pass is not protected, the need for the GB Response team increases due to possible oil impact to residents and environmentally sensitive areas in the City of Gulf Breeze.

Natural resources have been protected from the initial impact of oil and tar balls by the boom deployed in the bays. According to the oil impacted GPS locations, if it were not for the deployed boom, the natural resources would have been impacted. Field observations show the need for protection is essential due to nature of the oil product.

MidWay Fire Department demonstrating how to assemble a mobile decontamination station during HAZWOPER training for the oil spill response team

5.1 Skimmer Team First Responder Level

The skimmer team consists of staff from the Fire Department who have been EMT trained and HAZWOPER certified. The team is able to identify and respond to any on site injuries or hazards. Members of the team are trained as first responders to contain and clean up any oil present and are also trained on the water. All team members have taken the skimmer out on the water in practice drills for preparation for an actual oil spill. This preparation allowed the team to respond quickly and efficiently to an oil spill in the area.

a. **Skimmer.** The drum skimmer and HAZWOPER certified personnel deployed at first response have been used numerous times and were essential in the oil spill response operation. The skimmer has prevented many shoreline impacts before the appropriate agencies and responsible parties arrived on scene. The Drum skimmer used is the main clean up

Figure 5. Mayor Beverly Zimmern (right) and Gulf Breeze Fire Chief, Shane Carmicheal (left) demonstrate the operation of the MBASS drum skimmer used for the City of Gulf Breeze oil spill response

equipment used for oil removal in the bay. The pontoon boat was custom designed for the skimmer to be secured to the topside of the hull during transport. A custom fixed rotating boom and winch system was designed to lower the drum skimmer into the water safely.

b. Shark skimmer. The "Oil Shark" is basically a large bag made out of an oleophilic nylon material, allowing water to pass through but trapping the oil. The bag is attached to an aluminum frame that is mounted to the front end of the pontoon boat. The bag is just wide enough to fit between the pontoon boat hulls and is 15' in length. This design allows the Response Team to maneuver the vessel so that the boat can travel down the tideline and collect the floating tar balls. Once the bag is full, it is detached from the frame and a choker collar is placed on the open end. It is then lifted out of the water with an electric davit mounted on the forward port side of the vessel. The contents are emptied into a 55 gallon poly drum for disposal to the decontamination site. The bag is then reattached to the frame and is ready to be used again. The price for the frame, 4 bags, and installation is significantly cheaper than traditional skimming equipment.

c. Decontamination of equipment and decontamination staging site. The method of decontamination for the skimmer and pontoon boat uses a concrete pad for decontamination with oil absorbent material placed on the concrete slab and a hot

water pressure washer for oil removal. As the hot pressure washer cleans the equipment, the oil washes onto the oil absorbent material for disposal.

5.2 Coast Watchers Awareness Level

Retired Coast Guard and Coast Watcher leader Bill Clark heads the Coast Watcher Operation. The boom being deployed is boom created by the community volunteers. The boom is placed on the water as marker for skimming operations to locate.

Evolving from the early suggestion to use volunteers and boats for spotting oil, the program referred to as Coast Watchers was formed. Instead of using personal boats which may be potentially damaged, the Gulf Breeze Police department developed the Coast Watchers team using the Gulf Breeze Police boat and dispatch. During the early dates of oil breaching (May and June 2010), only the City of Gulf Breeze Coast Watchers were in the area to spot this product, report to dispatch, and call City Staff and Volunteer Fire Department which had a skimmer readily deployed. The State or County did not observe this action until three weeks later, when the Coast Guard met with the City of Gulf Breeze and ECS. The Coast Guard turnover recommended that area agencies should listen and follow the City of Gulf Breeze's lead and contact ECS (Pers EComm Coast Guard 6/25/10-Appendix 16) for guidance in an effort to pre-stage recovery assets. The Coast Watchers were vital in the first line of defense for identifying potential oil threat to sensitive areas. If it were not for the Coast Watchers, the oil product would have went unnoticed and followed with the currents inside Santa Rosa sound and Escambia Bay and would likely have impacted areas that were not boomed. Scheduled patrols with ongoing dispatch communication to the appropriate State and County Agencies have been extremely important in the location of breached oil and rogue patches not identified by SERT Gator (, a computer mapping program led by State and Federal Agencies.

It was found during the first breaching of oil through the Pensacola Pass. The oil product adheres to plastic materials verses the oil absorbent samples of material. This observation launched a new method of clean-up design and materials.

The oil that is blocked by the boom may initially travel under the boom during lower temperatures and resurface in the heat of the day. Therefore, on-call response and skimming of the oil that passes this boom is necessary. No other County or State agencies other than the City of Gulf Breeze have been able to be on-call in an area and report with GPS and pictures to dispatch, who then reports oil sightings to BP and Unified Command**.**

During this crisis, the City of Gulf Breeze became a documented first responder with their skimmer many times during spills coming through Pensacola Pass (Appendix 2). If it had not been for the City of Gulf Breeze and their skimmer, more claims would have been made by homeowners who received oil in Escambia Bay, East Bay, and Santa Rosa Sound. Therefore, the Coast Watchers and the City of Gulf Breeze have saved the responsible party (BP) and the State of Florida further expenses in claims and maintenance.

Due to the upwelling of currents from deeper and colder depths and nature of this oil product being submerged when in lower temperatures, it is necessary to keep the Coast Watchers and skimming operations moving forward to be able to spot and prevent further impact of natural resources and increases in claims.

5.3 Gulf Breeze Police Dispatch

Members of the Gulf Breeze Police dispatch were part of the first responder team. As the oil sightings was reported by Coast Watchers and individual homeowners, dispatch called several phone numbers to the appropriate agencies to report and maintain communication between all agencies, thus allowing the fastest response. Dispatch also documented the GPS readings Coast Watchers reported and placed coordinates into a mapping program with the pictures associated with the report.

5.4 Community Involvement

When the media reported the news of the oil spill and the probable environmental impact, residents of the community were calling the City of Gulf Breeze to see if they could help in any way. Due to the hazardous nature of the chemical properties of the oil, the health, safety, and welfare of the general public were main priorities. The first suggestion given to community members interested in helping was to monitor the beaches and shoreline for any signs of oil, and the second suggestion was to be trained and educated in the nature of oil cleanup and facts about oil spills. Community volunteer events were put together for the general public who wanted to help create booms. During the events, the general public was educated about bioremediation and oil eating bacteria using a school laboratory science kit developed by NeoSCI. This lab exercise educated the general public about the use of microbes for oil degradation.

Oil absorbent boom was made using recyclable material. The material used to create booms was black mesh oyster bags that were used for the City's

restoration project. (http://www.youtube.com/watch?v=RqJeFk2sYOk filmed by Steve Milford, The City of Gulf Breeze. The black mesh bags could be cleaned, reused, and re-stuffed with oil-absorbent material. Other mesh materials such as orange plastic mesh sheets and cloth mesh were used. The Pall Life Science Corporation donated their oil absorbent material that would otherwise be used as waste and sent to a landfill. The Florida Gannet nationally advertised this event in the newspaper. This event brought over 600 people Washington DC TV. People traveled from Tampa, Miami, Louisiana, Tallahassee, Destin, Perdido, and Orange Beach, and locals from Navarre, Pensacola, and Gulf Breeze also participated. It was apparent since people traveled from all over, these kind of events were important and widely considered from many communities as a way of safely helping in the time of oil spill uncertainty. BP community outreach later sponsored drinks and donuts for these events.

5.4 a Outreach and Support for Coping with An Oil Spill

The oil spill has many effects on the public psychologically and physically. These lessons were learned from other area impacts. In an effort to prepare for these effects and any life changes, the City of Gulf Breeze sought out guidance from other area oil spill impacted areas. The Prince William Sound Regional Citizens' Advisory Council sent a guidebook called "Coping With Technological Disasters" (pdf available upon request).

5.5 Consultant

The City of Gulf Breeze hired Ecological Consulting Services Inc. (ECS) to help maintain the City's mission of protection from impacts of oil while protecting the environmentally sensitive areas of Gulf Breeze. The consultant conducted research of previous oil spill impacts and prevention strategies to areas similar to Gulf Breeze and created a recommendation plan site specific to the City of Gulf Breeze. The consultant acted as a liaison to other County, State and Federal agencies and representing the City of Gulf Breeze in agency meetings, performed pre-assessment studies and sampling of water and sediment from areas around Gulf Breeze and its environmentally sensitive areas. ECS organized community outreach events which were safe yet effective for the general public to help in the oil spill crisis. ECS assisted City staff with permitting, project design, and planning of the Emergency Missions with the safety and protection of the environment in mind. ECS educated the Coast Watchers and the City staff on the nature of the oil product and the transport of oil according the winds and the currents of the bays. Using oceanographic calculations and local knowledge to predict when and where the oil will breach the mouth of Pensacola Pass and transport along the tides lines, ECS gave the staff the knowledge of initially where and when the oil could be found in the bays and sounds. Due to the advice of ECS, Coast Watchers has gone directly to the predicted locations and spotted oil product to report.

With the help of the ECS, Coast Watchers and City staff has further knowledge of additional locations in which the oil will likely collect. This knowledge will help evolve the Emergency Mission plans. After meetings with the City's Response Team on times of first response and reports of oil, ECS and the City's proactive efforts were recommended to the Unified Command by members of the Coast Guard through emails and verbally in meetings (Pers EComm Coast Guard 6/13/10, 6/25/10-Appendix 16). BP has also contacted
Heather Reed of ECS for help using oceanographic calculations on determining when the Pensacola Pass would be breached with oil so the company could have their skimmers on site and ready for oil containment.

Documentation was provided by various local news broadcasting stations and newspapers, CNN, National Geographic, Santa Rosa insiders, Joe Davenport Productions, Washington DC AET news reporters and other independent production companies filmed and interviewed the City of Gulf Breeze, represented by ECS and the Coast Watchers.

6.0 Risk Areas

Areas of high ecological importance are areas with the potential of habitat loss. Soil, water and tissue testing and Pre-assessment monitoring was performed in specific areas around Gulf Breeze, emphasizing on the environmentally sensitive areas (Appendix 7, 8 and 9).

Deadman's Island contains an oyster reef breakwater that was put into place to prevent further erosion to a City owned piece of land used by the general public surrounded by historic resources such as, shipwrecks and an unmarked cemetery. Deadman's Island is an unique area containing three ecotones consisting of a Marine Oak Hammock, a dry area containing cactus and a unique juncus species, and Saltmarsh containing a nursery ground for marine wildlife.

The Deadman's Island samples were taken as three replicates for intertidal, shallow, and mid reef depth. Whole oysters were taken from the reef as representative tissue samples (Appendix 8 and 9). All collection methods followed the NRDA protocol designated as of May 5, 2010.

Zamara Canal is one of the larger area breaching points from the Bay into a large wetland area in Gulf Breeze. The wetland has many smaller breaching points that can be impacted by tidal action from the bays and sound system. A protection plan was implemented using an absorptive boom created by community residents and visitors.

The other sample areas were representative of Gulf Breeze and were located at various public accesses. Analyses of all samples did not detect petroleum products (raw data in Appendix 7).

6.1 Observations of oil characteristics

a. Oil Characteristics

Basic Crude oil properties and types can be found in Appendix 15. The oil product spotted in Pensacola Bay, which has been identified as tar balls, sheen and gel if compared to the properties of crude oil has a specific gravity the same as water at a temperature of 39.5ºF (Green 1989). As the water temperature increases, the oil product decrease in density and float to the surface. Response team field observations show, product is found on increasing flood tide, and the product has been observed underwater. However, as the temperature and water temperature increases throughout the day, more oil product is found in the Bay because the oil product is floating on the surface. Oil usually sinks at night; therefore, most oil is found in the heat of the day. Therefore, if oil has moved under the boom, the majority will be found on the surface in the heat of the day as temperature rises (Clark et al., 1977).

Rain plays an important factor when trying to identify the oil, the weathered oil which mixes with the saltwater will sink even further into the water column. The mixing of the salinities along with the Langmuir currents will force the oil towards the bottom of the water column and possibly cause the oil product to sink into the sediment (Delvigne 1988, Payne 1985).

b. Oil Product composition unknown

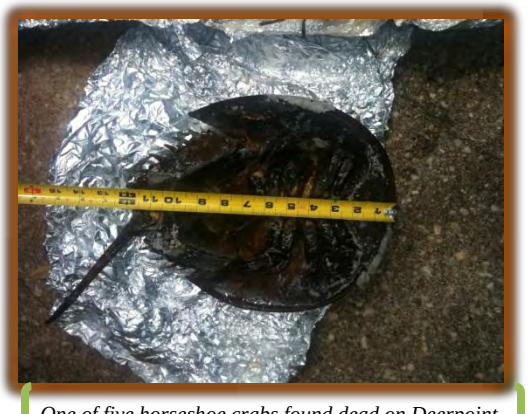
Currently, agencies are testing for standard elements found normally in water and sediment. Petroleum properties are being analyzed, however, new properties have been recently found in water samples. The EPA has recently found a high amount of nickel in Pensacola Bay water samples. This is not a normal water quality test result. Because this study only used samples collected over a four-day period, the results are

questionable. However, the results showed an element which is not commonly tested for, was present in the samples. The conclusion of this study also showed, the right tests are not being conducted, and the technology to assess the properties in the water when addressing the oil spill may not be up to date. It is suggested by ECS (6/12/10), to conduct a forensic analysis on several samples of the oil product before any biological sampling is performed. At the moment (6/26/10), it appears biological sampling is not the determining factor of the toxicity of the water or soil. The weathered oil can be seen visibly by the naked eye but when tested results show no presence of oil or oil chemical composition. It is currently unknown if there are other elements in this oil product contribute to the toxicity of the oil product. For health reasons, preventive practices are employed in order to keep the product away from the residents and the environmental resources.

6.2 Pre-impact Sediment and Water Quality Assessment

Pre-impact sediment and water samples were taken on 5/5/10. All sampling followed NRDA protocol. Tissue samples were taken from the oysters of Deadman's Island and sediment samples were taken along the intertidal shoreline of specific sites. Deadman's Island contained replicates of intertidal samples and samples from behind the oyster structures. Sediment, water, and tissue samples were sent to a British Petroleum (BP) certified laboratory (See Appendix 10). This laboratory follows BP protocol and quality assurance for BP sample testing standards. Sediment and water samples were tested for PAH only and showed no detectable PAH within the sediment, water or oyster tissue sample (Appendix 7, 8 &9)

Since State agencies and the neighboring County had two sites they were sampling in Gulf Breeze, a comparison study was performed to compare the results of the water and sediment testing. The analysis was performed by two different laboratories using similar sampling protocol. Both samples results showed undetected for petroleum products.



One of five horseshoe crabs found dead on Deerpoint 6/25/10

6.2a Biological Observations

Oil fluorescing under a UV light 6/2/10

Biological observations conducted during each oil incident in the Pensacola Bay and Santa Rosa Sound showed irregular behavior in sharks and birds. Mortalities were also reported by area residents, city staff, and Coast Watchers. Mortalities including horseshoe crabs, turtles, and dolphins. The deceased horseshoe crab was sent to a forensic laboratory for further testing.

The natural Sargassum sp. seaweed was the most efficient in regards to collection and retaining surface oil.

Odd algae blooms were observed in Pensacola Bay in June and July. The algae was black to gray and occurred about one week before the oil spill and later during the spill Pensacola Bay. The algae was reported as far north as Garcon Point and Blackwater Bay. Other algae observed was filamentous strings with somewhat of a mucus characteristics and submerged. Oil sheen was always present in the vicinity of this type of algae.

When monitoring the shoreline for oil and collection of oil on the water at night, it was found the best method to view the real impact and presence of oil is at night using an Ultraviolet light. The method was discovered by Heather Reed, on the first oil breaching of the Pensacola Pass (6/02/10) when the oil product was found floating on the water. Samples were taken for further observation. The product is a petroleum-based substance suspected of being mostly an odorless petroleum jelly mixed with oil, and since pure petroleum jelly emits a florescent glow under an Ultraviolet light (UV), it was suspected this product would also glow. The product did glow under UV is tinted with oil for a darker coloration of a florescent glow. This observation was reported to unified command and made local news in an effort to assist clean up techniques. Filming the glow the oil under UV was very difficult to film with an average camera lens. Television camera lenses appear to work better in capturing the orange color. However, the product does glow a bright reddish orange color and is easy to see among white sand. Experiments using three different wavelengths were performed and found that one wavelength works best for use on water and another for use on land (06/09/2010-8/14/2010). The UV light which has a lower wavelength number for frequency of 312-360 appeared to have been the only frequency emitting the fluorescence of the depleted weathered oil rather than 380-395 of the fresh crude oil. Fifty samples were taken from shoreline and observed under various wavelengths. It was found the refraction of the water skews the UV reflection of the light. Periodically, UV light tests are conducted by ECS to evaluate any sinking of the product into the sand, on the shoreline, or onto wildlife such as hermit crabs, coquinas, emergent grass, and riprap. Underwater surveys and sediment testing using a UV light was performed in concern for submerged oil. The oil glowed less underwater than on surface or land. It was also found oil which has been dried out emits a brighter glow than oil in saltwater.

6.3 Monitoring

Scheduled monitoring of the bayous and environmentally sensitive areas to check for any oil breaching or abnormal effects are performed by ECS and Coast Watchers. The seaweed in the tide lines became an indicator of oil transport. This monitoring should be conducted approximately monthly or be ongoing if an impact occurs within the area. Results and updates should be sent to NOAA for notification in case of a BP reimbursement claim situation is needed to be documented. If the Bayous are closed for a period of time, a routine monitoring plan checking dissolved oxygen, pH, temperature, and salinity is needed. Sediment and water samples should be sent to a lab on a quarterly basis to test for PAH and VOC (Benzene). Monitoring consists of observation during flood and ebb tide to evaluate the impact of the currents and during high and low tide to evaluate any possible oil breaching due to water depth. The pilot project will be evaluated on 6/29/10, when the underwater current in the Bay is anticipated to be between 2.0-3.0 knots. The results of the pilot project will determine feasibility and transferability elsewhere in the Gulf Breeze area and also determine the lifespan and maintenance of the barrier/boom resources. These results and whether any part of the plan should be modified will be reported to the regulatory agencies. All these methods are considered temporary and all items will be removed from the water when impacts are no longer anticipated.

6.4 Ecological Impact and the Benefits Versus the Costs

Covering the riprap can have an ecological impact because the biological environment within the riprap can be ecologically beneficial to animals and people. If the rip rap is covered by fabric, the biological component could die. The biomass is generally low in high-energy areas, but populations of attached organisms are greater in the more protected sites within The City of Gulf Breeze. However, the loss of the biological flora and fauna (beneficial bacteria, snails, mussels, barnacles, crabs, amphipods and polychaetes, and fish) within and around the riprap would be less that the cost of the continuing impact from oil being trapped within the riprap and crevices, filter cloth, and ultimately the sediment. The risk of covering the riprap may cause possible leaching over a period of time from an oil impact, as has been document in prior oil spill events.

Boats that have been exposed to the oil—for example, boats participating in helping to clean up the oil—that do not go through a proper decontamination at the Pensacola Pass can easily cause oil to be carried into The City of Gulf Breeze, as observed with Bayou Chico. This is a concern due to the oil sinking into the sediment once it is exposed to the air and turning to a more hardened state. The best plan of action is to discourage boat traffic as much as possible.

6.5 Impact on Homeowners' Property

The riprap is the largest concern for The City of Gulf Breeze and resident owners. Heavy oil would coat the surface as well as penetrate the crevices within the riprap structures. If left, oil would seep out of the crevices, generating sheens that can cause recontamination of adjacent shorelines and impact waters and sediment.

Snare methods could be used to prevent recontamination, which involve the placement of adsorbent snares inside the crevices so that the oil adheres to the snares and can be removed by the responsible party. Oil protection devices that have been dislodged due to storms or other means should be removed or repaired as soon as possible to prevent oil leaching back onto the riprap. Shielding using various methods and fabric may be beneficial in protecting the riprap from the initial impact.

6.6 Boat Traffic

Boats not receiving proper decontamination may carry oil into the bayous. After the first breaching of the oil in the Pensacola Pass seven miles away, oil was found in Woodland Bayou the next day. After further observation of other areas where boat traffic from the oil spill cleanup crews was common, it was then determined that the oil found in the bayou six miles away was carried in by a boat that was not properly decontaminated.

6.7 Oil Moving Under Booms

Oil products moving past or under booms in the bayous can impact environmentally sensitive areas (Bobra 1990, Delvigne and Sweeny 1988). The oil that is initially blocked by the boom may travel under the boom during lower temperatures and resurface during the heat of the day. As the temperatures increase during the year, so will upwelling, which will uptake the colder currents and cool the water temperature and the cause the product to sink deeper under the surface, possibly mixing with sediment and sinking to be buried in the substrate.

7.0 Cleanup Methods

Currently, the Responsible Party (British Petroleum) is responsible for cleanup.

Riprap in the City of Gulf Breeze area needs to be protected due to the negative impact of penetration of oil on top and in the crevices of the riprap. If the oil gets on the riprap and is trapped behind the rock and crevices, it will continue to leach over time and re-contaminate the water and the ecosystem.

It was suggested in the BP response manual reference and by BP staff in a meeting that contaminated riprap which cannot be cleaned by low-pressure ambient water (water hose) but should instead be removed and replaced. Environmentally, hot water flushing with a surrounding boom is not recommended due to the increase in temperature and risk of washing the oil back into the waters and into the sediments. In addition, hot pressure washing can cause more harm to the ecology and decrease the oxygen levels (NOAA 1994). This type of cleanup is likely to cause more damage to the property of the residents due to lack of structural support for the existing seawall.

Residue of oil can be cleaned up by applying microbes (biodegradation and bioremediation) that attach to the hydrocarbons and break down the oil residue (Breuel 1981). These microbes only attach to hydrocarbons and continue to multiply and consume the oil residue as long as oxygen and hydrocarbons are present. It is the responsibility of the local government such as the State and counties to educate themselves of the twenty year old petroleum cleanup method. This method is effective in a well aerated location such as rip rap, shoreline vegetation and coarse sand to a depth of 24inches depending on the soil mixtures. Beach would not need aeration by overturning sand but marshes with their hypoxic nature would need aeration to stimulate biodegradation. Personal observation of the best time to cleanup shows winter low tides is preferable. The low tides will expose more surface area for cleanup to reduce erosion upland and the wash out of the sand will be increased to expose any buried oil in the sand. Also, the winter cold air will push any remaining volatile compounds to a lower level and reduce the movement of the molecules within the oil product to allow less release of volatiles of the oil matter. The oil will be in a hardened state rather than viscous and will be much easier to cleanup.

If oil needing to be cleaned up is sighted, residents should be prepared to give the location and the nearest accessible road. It is important to call three agency numbers to make sure the sighting is documented and action is taken. When calling, residents should be prepared to give the location of the oil and the nearest accessible road. The preferred number goes straight to Unified Command (1-877-389-8932 or #DEP). Although calling these numbers is not standard procedure, it is beneficial for the residents to alert their County and Island Authority of the oil sighting for documentation purposes.

Santa Rosa County EOC: (850) 983-5360 http://data2.santarosa.fl.gov/oilspill/

As of 6/26/10, residents should visit the Santa Rosa or area county websites and www.dep.state.fl.us/deepwaterhorizon/resources.htm for further information. Additional and updated numbers are available upon request.

8.0 Basic Oceanography and Predictability Methods for Oil Breaching and Impact

Predictability methods are based on standard charts of the tides, winds, moon phases, and hydrographic analysis and formulas. Storms from the inner mainland area can skew the results of the historic and prediction charts (Kelley 1993). It is best to predict a spill trajectory with 48 hours in advance and modify the standard prediction for an increase in barometer pressure and wind direction due to unexpected fronts moving into the area.

8.1 Factors

Spilled oil has two major processes of transport on water, called *spreading* and *advection*. The spreading process is completed within the first hour of release for a small spill of less than 98 barrels (Schwab 1992, Stiver 1984). Wind, currents, and mixing through large scale turbulence cause advection (Wang et al., 1979). The oil movement can be estimated as the vector sum of the wind drift (using 3% of the wind speed), surface currents, and diffusion spreading from large scale turbulence.

A full moon will cause the tides to be higher and lower than normal. As of 6/26/10, according to the NOAA current charts, the average current speed in the bay is 2.7 knots., which makes the transport of the Pass about 4-5 knots depending on southerly winds.

Besides the ocean, windrows or vertical circular currents, called *Langmuir currents*, have a strong effect in the mouth of Pensacola Bay and assist in the mixing and breaking up (dispersion) of oil and transport, causing

subsurface down welling (Zedel et al., 1991). This process will cause oil masses to break up into streamers and lines and to mix with the currents.

a. **Winds**

Winds affect oil by direct transport, weathering the oil and the surface effects on the water; the lower the wind velocity, the less effect on the oil due to evaporation, dispersion, patchiness, and convergence. The higher the wind velocity in the Gulf of Mexico, the greater the increase in effects, which then function to break up the oil. The windrows can increase from 2-7% of the wind speed, which means it can move an additional 6% of the current wind speed. As the wind increases, evaporation increases. As the wind increases, convergences in Langmuir cells increase and not only produce down welling, but assist underwater currents in mixing with the Langmuir cells, which can cause upwelling that brings the sediments and nutrients up to the surface (Brown 1991). Any oil in the sediments and within the water column can surface with upwelling and have an effect on the primary production of the oceans and bays.

When judging winds, wind direction is the area from which the wind is blowing, and surface currents are reported as the direction toward which the water flows (Burke 1983). In the City of Gulf Breeze, the north wind and a southerly current are moving in the same direction. A southwest wind with an easterly current is the formation to be concerned about as far as oil transport.

Southwest winds in the bay will divert oil to Gulf Breeze with the central currents of the bay, and then mix into the underwater mixing currents to the long shore currents along the various shorelines of Gulf Breeze. The west winds will divert oil to Gulf Breeze and Little Sabine. Due to the narrow opening of the mouth and various fetches resulting from the central location of the bay, the incoming flood is the most threatening for Gulf Breeze in terms of transport from other areas by the north winds. However, it is also important to recognize that due to the funneling effect, the outgoing ebb of the Santa Rosa Sound can have the impact of oil transport from areas east of Gulf Breeze.

During the summer of 2010, the incoming maximum flood has occurred at night and the early morning. Depending on the lunar cycles, maximum flood causes a surge of current to flood the mouth of the Pensacola Pass and be pulled along the long shore transport of Fort Pickens. The area around the city of Gulf Breeze receives any spilled oil about 12-24 hours later. The time of impact, defined as the moment oil breaches the mouth of the pass and travels along shore and straight into the City of Gulf Breeze, depends on the speed of the current. As the seasons progress, the current cycles change, causing colder upwelling and currents to come into the bay, which causes oil to be elusive until the heat of day when the oil will float higher than the water.

Storms will cause the product to breakup, lose its buoyancy as it weathers, and mix in the water within the water column, allowing the currents to transport the oil product farther into the bay and possibly into the estuaries and sediment.

b. **Currents**

Tidal convergences are important in understanding the transport of the oil, the convergences are a salinity freshwater-saltwater mix, and the depth of tides fluctuate daily. It was observed oil will accumulate in convergence layers due to the mixing forces of the convergent factors. Convergence layers are always consistently in the same location during ebb tides and changes with the seasons (Schwab et al., 1992). During flood tides, convergence tides mix with the subsurface currents and can cause submerged oil to disperse in the sediments. The best cycle to observe oil in the tide line was ebb tide.

c. **Tides**

Understanding the movement of the tides are important in predicting cleanup of oil from land. High tide will bring the oil above the wrack line, the line of dead or dying seaweed, marsh grass and other debris, and mean high-water line, and low tide would allow more cleanup into the mean low-water phase. The only tides of concern during an oil spill are spring and neap tides. Twice a month, when the moon is new or full, the tides are at their highest and lowest, so any oil spill brought in by a spring tide will have the possibility of remaining stranded until the next spring tide two weeks later. This possibility calls for additional booming and prevention before the spring and neap tides. The winter tide cycles tend to be the lowest tide cycles of the year in Pensacola. Therefore, the best time to clean up the shoreline with heavy materials is the winter season. Clean up during this time will cause less erosion to the shoreline because the tides will not transport the water surges to the area of cleanup and cause a wash out or additional scarping.

d. **Tidal excursion**

Tidal excursion is calculated from the time from low slack to low slack tide with the maximum tidal current velocity ($V=T/\pi$). If bathymetry is consistent, this formula is sufficient to predict tidal excursion and usually works in models. However, in most cases, bathymetry is a product of inversion with tidal excursion. Long narrow channels of shallow depth should have a stronger tidal influx than wider and flatter areas. The tidal prism is also another factor, along with flushing. These factors are calculated as the volume of the estuary water exchanged with the open sea as a product of the time estimated between tide cycles. This formula is used when there is a change in salinity and fresh water density.

e. **Lunar cycles**

The tides, reproductive and spawning cycles of many marine species are controlled by the lunar cycles. A full moon will cause the tides to be higher and lower than normal. The impact of tide surges is usually greater. When determining cleanup, the tides should follow the new moon. Ebb tides at a full moon time frame typically last longer which will make bay observation of the wrack line easier to spot oil.

When breeding or a spawning occurs, the moon can be a dependent factor on reproduction cycles. Some marine organisms can be excellent health indicators. Species such as the horseshoe crab mate on the shoreline during a full moon. Most veliger is hatched on full moon cycles and can cause a chemical effect to induce spawning of other marine organisms in the vicinity. If oil is in the vicinity, these marine animals will be impacted as observed in 6/28/2010 and mass mortality of horseshow crabs will occur. Any larvae in the vicinity of the oil will be affected either genetically or physically. This interruption in the development cycles can also lead a disturbance in primary production and the food web.

9.0 Future Risks and Defenses Against Oil

Acts of nature, such as storms, storm surges, and hurricanes, can raise the tide level, surface currents, and wind velocity to wash oil and debris from the north and south direction inside the City of Gulf Breeze. It is important to consider any oil product traveling with these events may impact other areas of concern. In preparation for such events, and in addition to normal hurricane and storm preparation, boats should be covered and outside chemicals that could mix with the oil product need to be brought inside or kept inside a hazardous chemical shed, especially pool chemicals. These chemicals can possibly be toxic to human health when mixed.

9.1 General Public Defenses

Beachgoers should look for oil on the surface and report any observations to dispatch.

UV light monitoring can be conducted by anyone who purchases a UV light to look for oil and report any observations to dispatch and the appropriate agencies.

Scuba Divers need to report any visual signs of oil underwater, in the sediment, or on reef structures in the water.

Pensacola Pass should be boomed on the outside of the current flow to allow deflection of oil into the containment boom (Appendix 4). Although it was proposed in June 2010 by the City in a meeting and again in mid-July, it was not used by BP until late July in brief situations. This plan was suggested in the beginning due to Oceanographic calculations using dead reckoning of the winds, currents and tides to predict the oil spill impact from information given in daily meetings and on SERT GATOR. Using basic topography, flow predictions from observations and previous NOAA current speed data/ measurements. Pensacola Beach has two major currents flowing west which can push the oil away from the beach; this factor had to be placed in the oceanographic calculation in determining the prediction of oil impact. This current causes two strong eddies joust outside and two inside the mouth of Pensacola Pass. These eddies and currents are so close to each other they can easily connect to the east long shore current passing around the Fort Pickens land extension. When the winds come out of the southeast, the two outside currents and the west eddies, merge and causes the currents to be forced in to Big Lagoon area, Barrancas NAS and Fort McRae. Most of the protective pass plans showed the current route as a straight north east flow which is not the where the flow of the current is.

9.2 General Environmental Affects

The next three to five fishing seasons may be impacted by oil in the water in the parts per billion. Upwelling occurs when the colder nutrient rich sediment and water from the bottom of the seafloor is brought to the nutrient depleted water surface. The coastlines of the Gulf of Mexico experience a strong upwelling, which results in high levels of primary productivity and is the reason why the Gulf area has high fishery production. The upwelling will bring anything up from the bottom of the seafloor, which includes oil product and chemicals, and disperse the materials through the water column for the food chain to ingest, inhale, or absorb though membranes or skin. Once this occurs, the fishery industry could possibly be affected. Due to the large surface area of the ocean, it would be speculated to not have an effect. Areas such as Bays and Bayous may be affected due to the semi enclosed system of these areas. The effect on the marine environment from this amount of oil in the water column is unknown and speculated through brief lab experiments by the EPA. Long term monitoring and testing is the only possible determination.

9.3 Underwater surveys

Submerged oil is a concern especially during the cool temperature upwelling occurrences. Submerged oil will sink and bury into the sediments. It is unknown if the oil will become hypoxic and stay in the sediment or the oil will breakdown naturally threw microbial digestion.

To monitor the bay surrounding Gulf Breeze, a boat with weighted trolling snares that will penetrate the surface of the sediment along with ponar box grabs retrieving additional sediment samples. These units will pulled up from the water after five minutes placed in a dark bag and viewed either in a dark box or other dark area with a UV light. If the light shows traces of oil, which can be seen, better when dried, then the location will be reported and documented as the presence of oil.

Note: Absorbent materials will not pick up weathered oil product, especially underwater in a surface and mid-surface current. By observation and testing, only plastic materials will catch the oiled product. The weathered oil flows over the absorbent. The oil is found to adhere to the plastic.

Using volunteer divers to keep the cost down for private pilot projects, a volunteer community service project is proposed for The City of Gulf Breeze to recon five sites using underwater UV dive lights. In addition to SCUBA, snorkeling will be another method of surveillance in shallow area will allow The City Police Boat and City staff will transport the divers to the site. Photo or video is the proposed method of documentation. Areas of fixed underwater structures located outside the Pensacola Pass, inside Pensacola Pass, on pier structures, in seagrass, sand and oyster structures were chosen to determine the presence of any trapped submerged oil. The results were minor findings and not sufficient to determine the presence of a representative sample of submerged oil in Pensacola Bay.

If oil is found on these underwater structures, there is increased likelihood of oil being found on the underwater oyster project of Deadman's Island and our bayous. If oil is not found in these areas this would draw the conclusion that oil is not impacting the natural resources directly. This project will allow the City to develop a monitoring program if needed. The oil was not found on the structures and is hypothesized the currents would prevent the oil from settling on structures.

Oil was found within the sediment, four feet from the substrate surface in Fort McRae and Barrancas Beach offshore of the Naval Air Station (NAS). The oil was in a preserved state within the hydric soil present in the area. When removed from the sediment with gloves and by hand, the oil contained a crude oil smell in addition to the hydric soil smell of sulfur. The sample was sent to a lab to test for VOC, PAH and Florida PRO standard testing.

These ground truthing projects are essential to protecting and monitoring the health of the environmental resources such as the Triple Diamond and NOAA/government partnership funded Deadman's Island restoration project.

Dive Sites:

Site #1 - Massachusetts wreck outside of Pensacola Pass- none

Site #2 - Big Lagoon/Johnsons (on land and in water)-none

Site #3 - Fort Pickens Pier-none

Site #4 - Shoreline Park (on land and in water)- none

Site #5 - Grassy Point (on land)-small presence of tar balls

Site #6 - Deadman's Island- none

Snorkel Sites:

Site #1- Deadman's Island- sheen present

Site #2- Grassy Point- submerged oil present

Site #3- Fort Pickens- submerged oil present and sunken oil present

Site #4- Johnsons Beach- submerged oil present and sunken oil present

Site#5- Fort McRae- sunken oil present

Site #6-Big Lagoon- submerged oil present

Site#7-NAS- submerged oil present and sunken oil present

10.0 Regulatory and Permitting Emergency Response Rules and Orders

In a state of emergency response, DEP rules indicate that an Emergency Action Class B, defined as a private citizen protecting the property, health, safety, and welfare of him or herself, is allowed. Although such action is allowed, the State and County discourage homeowners from going out on their own to protect property. Later in an amendment, this section was removed. It is also mentioned that if homeowners choose to boom their own property, they are responsible for the oil cleanup. Individuals should remember that, whether you represent the State, County, or City, or are private homeowners, the Responsible Party is British Petroleum (BP), and as of 6/26/10, there is no separation in the claims process.

The Emergency Final Order (EFO), dated May 12, 2010, allows private citizens to protect their property (FINDING OF FACTS 3); however, the amended version removes this paragraph and limits the EFO to BP and government entities. There is no *exclusion*: the paragraph was simply removed. The homeowner can still take action under legislative rules, but as of May 5, 2010, they are required to notify the local DEP and ACOE of any protective measures taken through a joint application process requiring no engineered drawings. As with all regulatory rules, there should be no impact to sea grass, wetlands, or any other environmentally sensitive areas. These methods are designated as precautionary and not intended to be permanent (Appendix 11).

Any water sampling or sediment sampling needs to be tested by a BP certified lab or a State or Federal Agency. Being BP-certified does not mean that it is a BP laboratory. A BP-certified lab needs to follow the appropriate due diligence checklist, NRDA and BP lab protocols, quality assurance, and chain of custody (Appendix 10). A BP certified lab provides reduced prices as standards for oil spill related tests. Standard NRDA protocol is followed and listed in the Appendices (Appendix 7,8,& 9).

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06/01/2010 – Oil closes in on Florida: Spill nears Pensacola Beach – The Walton Sun

06/02/2010 – Fla. prepares for worst with oil spill – Fox 10 News

06/03/2010 – Links on "Norfolk Southern Corp," Connie Betzler – Facebook

06/17/2010 – Oil spill: Sea Creatures flee, gather near shore – FluTrackers

06/21/2010 – Life After the Oil Crash Forum – www.doomers.us

06/21/2010 – Jelly not tar, beach chamber goes online, – Pensacola News Journal

06/25/2010 – Messages from Pensacola Beach – http://ricksblog.biz

07/08/2010 – Methane bubble-induced tsunami highly unlikely – Gulf Breeze News

07/18/2010 – Oil spill: Saving Northwest Florida's Sand – Pensacola News Journal

07/19/2010 – Oil spill: Saving Northwest Florida's Sand – www.SOSGulfCoastRelief.com

07/21/2010 – Cause of death of dolphin at Fort Pickens still pending – Pensacola News Journal

08/29/2010 – Oil spill: Gulf Breeze divers going under to seek submerged oil – Pensacola News Journal

08/29/2010 – Louisiana Hit Hard by Moratorium on Deepwater Drilling – www.newsfeedresearcher.com

08/29/2010 – Oil spill: In Gulf Breeze, divers going under to seek submerged oil – Pensacola News Journal

09/02/2010 – Divers seek hidden oil in waters – Gulf Breeze News

09/14/2010 – Tar balls and weathered oil stain Santa Rosa Sound – Pensacola News Journal

09/15/2010 – Search for local subsurface oil ends – Pensacola News Journal

09/15/2010 – Oil spill: Santa Rosa Sound's shores littered with tar balls – Pensacola News Journal

09/16/2010 – Oil search comes up empty, But why are we still seeing it? – Pensacola News Journal

09/16/2010 – Oil still washing up on Panhandle beaches – www.wtsp.com

Appendices

Appendix 1

Oil spill impact areas of concern

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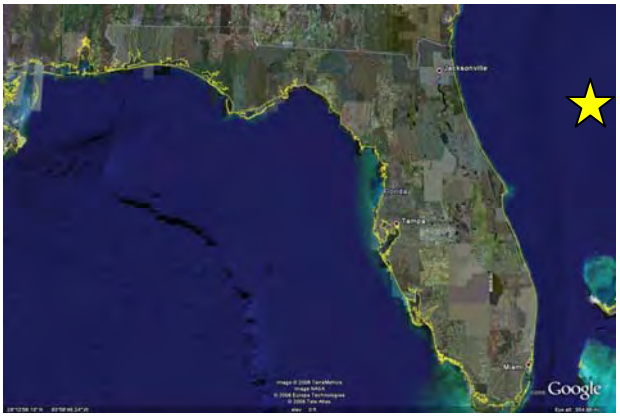
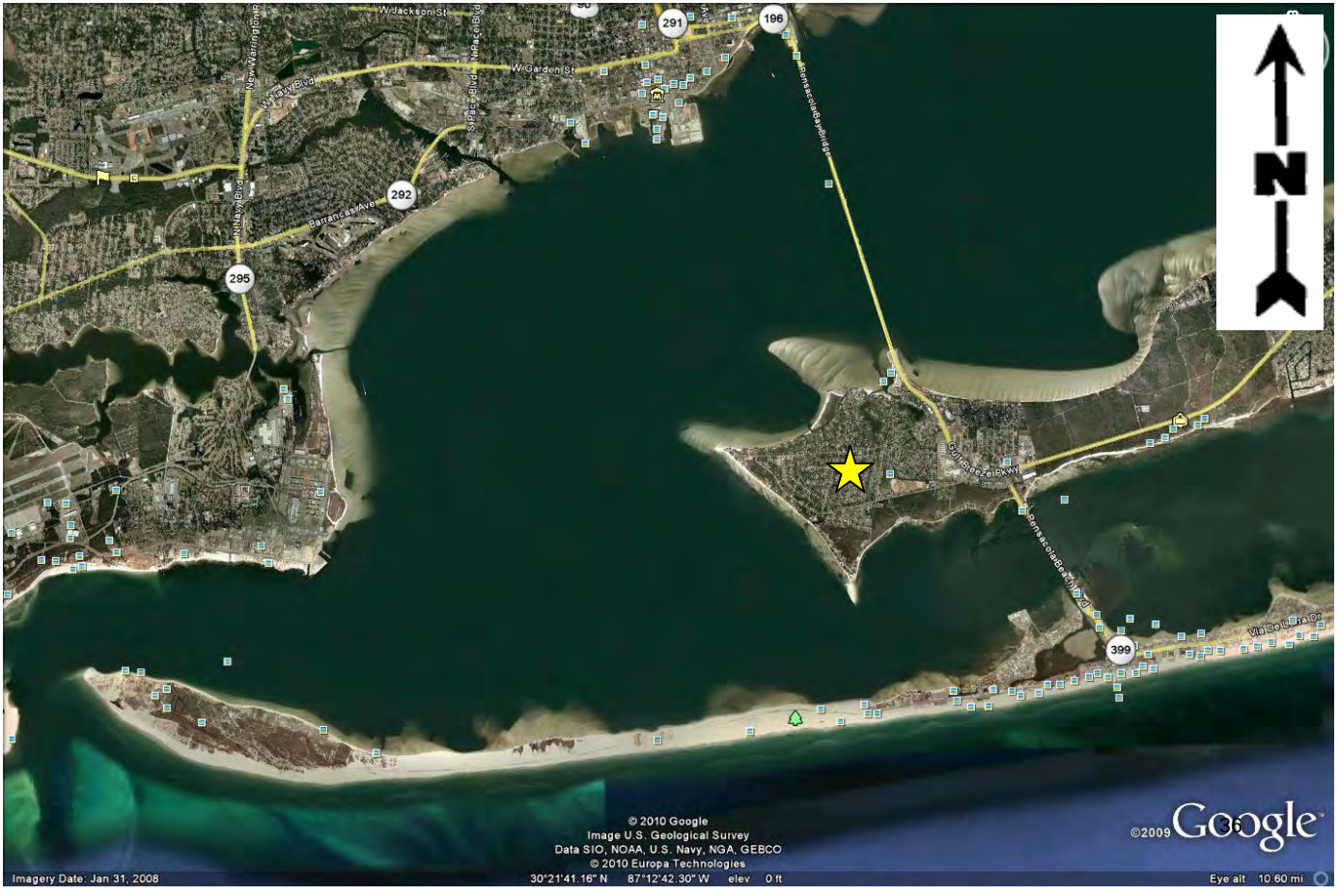
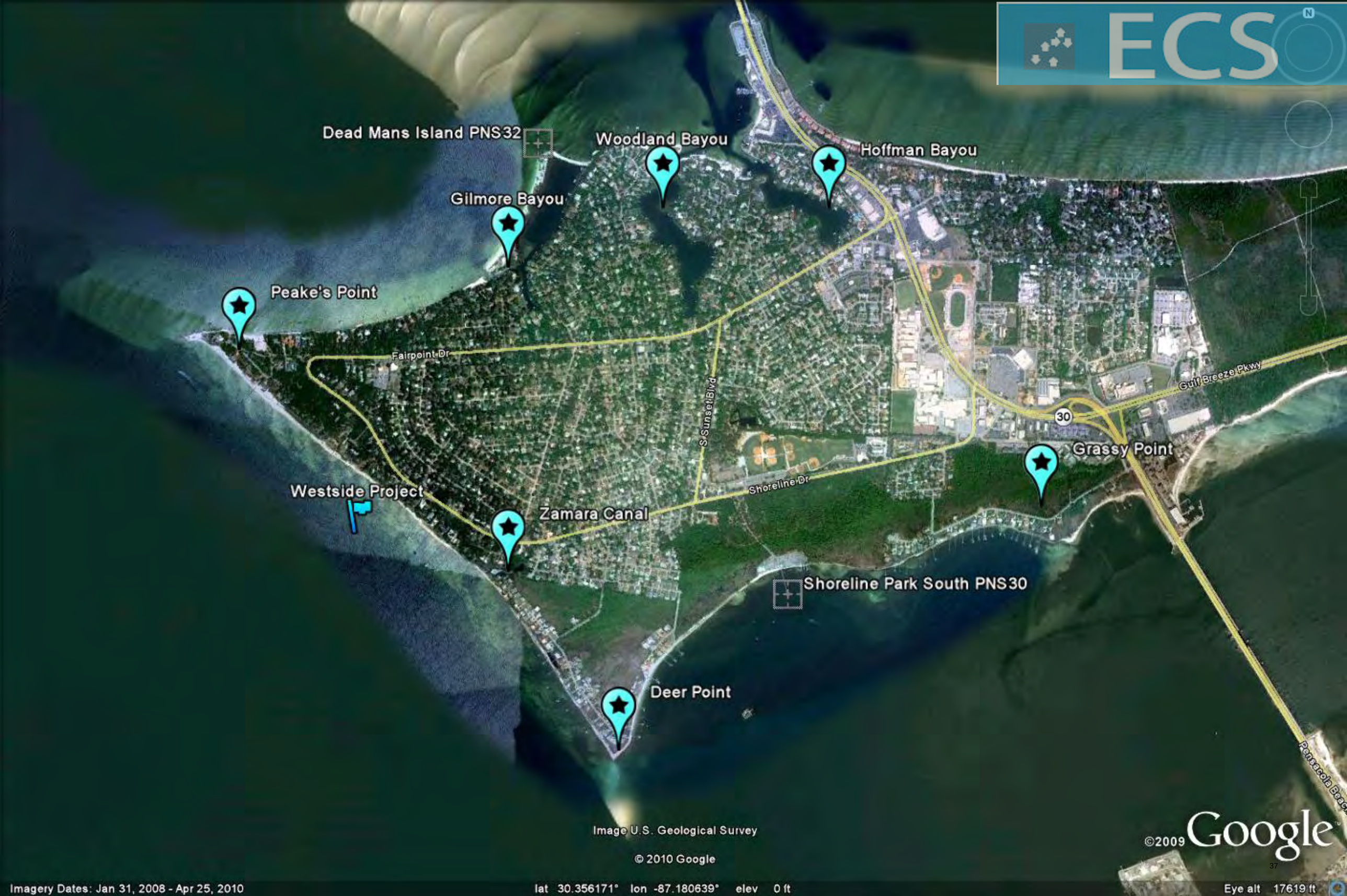
Site Location






Dead Mans Island PNS32
Woodland Bayou
Hoffman Bayou
Gilmore Bayou
Peake's Point
Fairpoint Dr
S Sunset Blvd
Gulf Breeze Pkwy
30
Grassy Point
Shoreline Dr
Westside Project
Zamara Canal
Shoreline Park South PNS30
Deer Point
Pensacola Beach
Image U.S. Geological Survey
© 2010 Google
©2009 Google
Imagery Dates: Jan 31, 2008 - Apr 25, 2010
lat 30.356171° lon -87.180639° elev 0 ft
Eye alt 17619 ft

Appendices

Appendix 2

Oil sightings recorded by Coastwatcher and Gulf Breeze Dispatch

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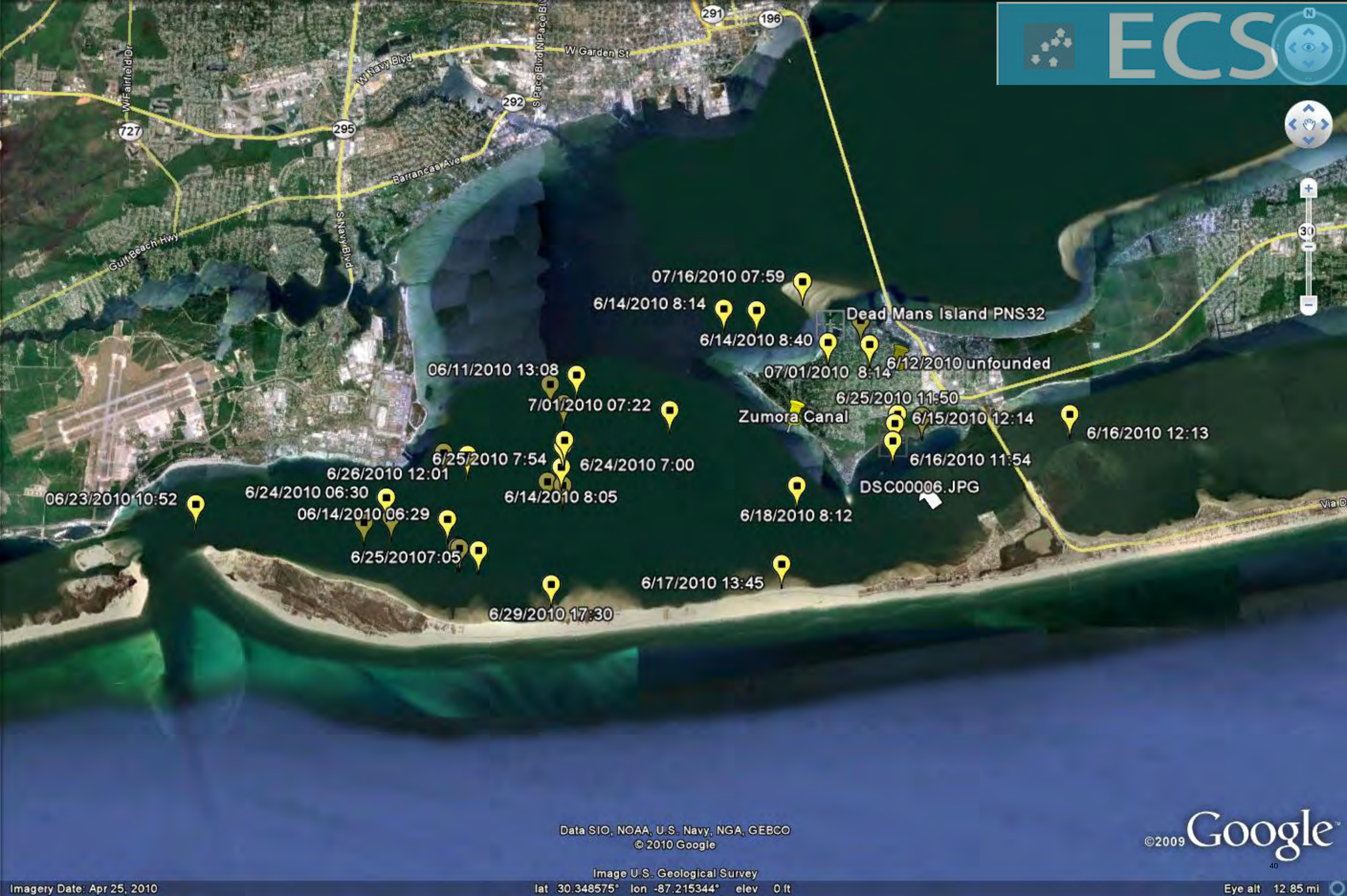
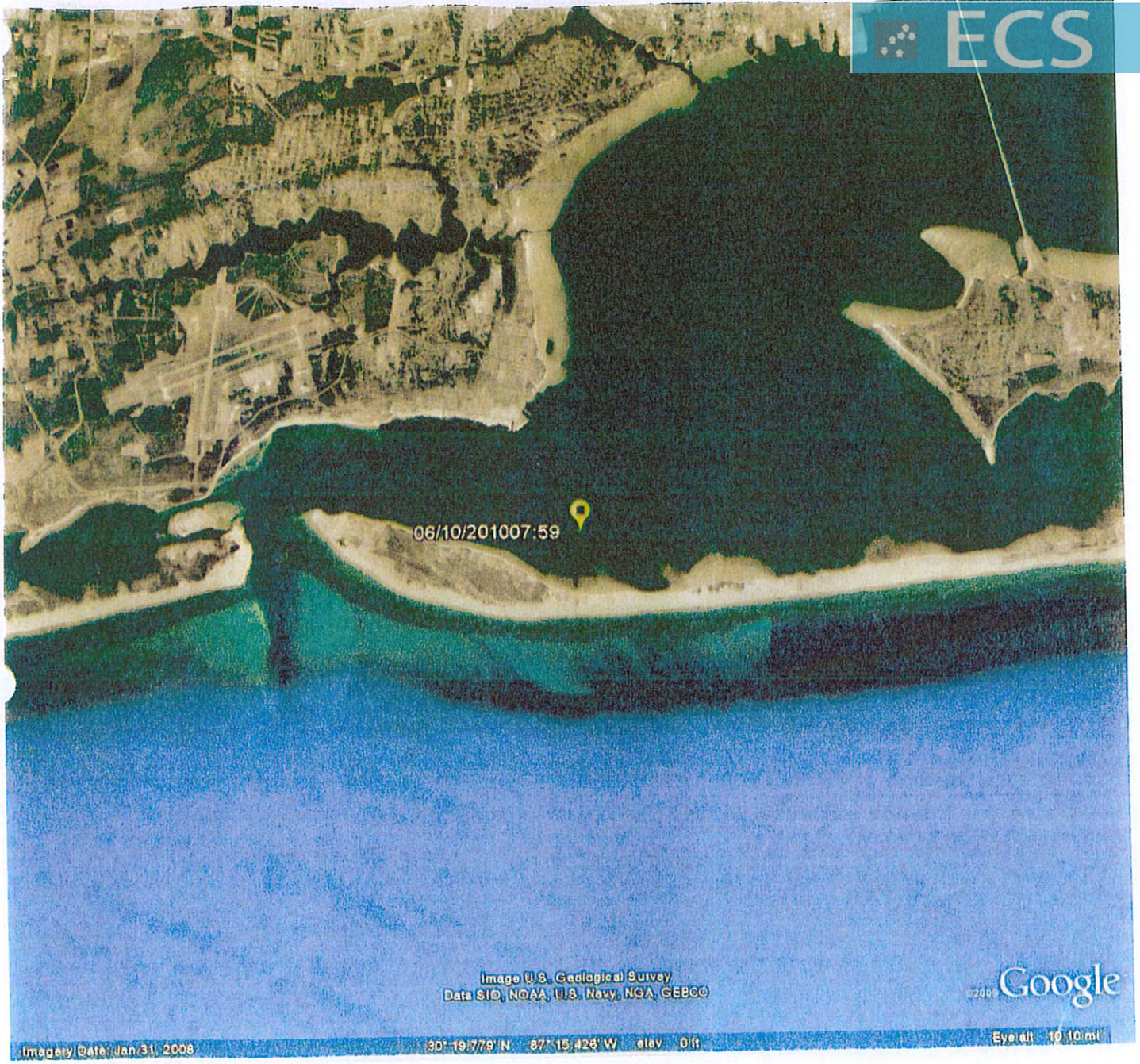

W Fairfield Dr
W Navy Blvd
S Pace Blvd N Pace Blvd
W Garden St
291
196
292
295
727
Barrancas Ave
Gulf Beach Hwy
S Navy Blvd
07/16/2010 07:59
6/14/2010 8:14
6/14/2010 8:40
Dead Mans Island PNS32
07/01/2010 8:14
6/12/2010 unfounded
06/11/2010 13:08
7/01/2010 07:22
6/25/2010 11:50
Zumora Canal
6/15/2010 12:14
6/16/2010 12:13
6/25/2010 7:54
6/24/2010 7:00
6/16/2010 11:54
6/26/2010 12:01
DSC00006.JPG
6/24/2010 06:30
06/23/2010 10:52
6/14/2010 8:05
06/14/2010 06:29
6/18/2010 8:12
6/25/20107:05
6/17/2010 13:45
6/29/2010 17:30
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2010 Google
Image U.S. Geological Survey
©2009 Google
Imagery Date: Apr 25, 2010
lat 30.348575° lon -87.215344° elev 0 ft
Eye alt 12.85 mi


06/10/201007:59
Image U.S. Geological Survey
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
©2008 Google
Imagery Date: Jan 31, 2008
30° 19' 779" N 87° 15' 424" W elev 0 ft
Eye alt 19.10 mi

JUNE 10

Appendices

Appendix 3

Gulf Breeze Oil Spill Response

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Oil Spill and Response Pictures
Gulf Breeze, FL

6/9/2010 – First day Oil

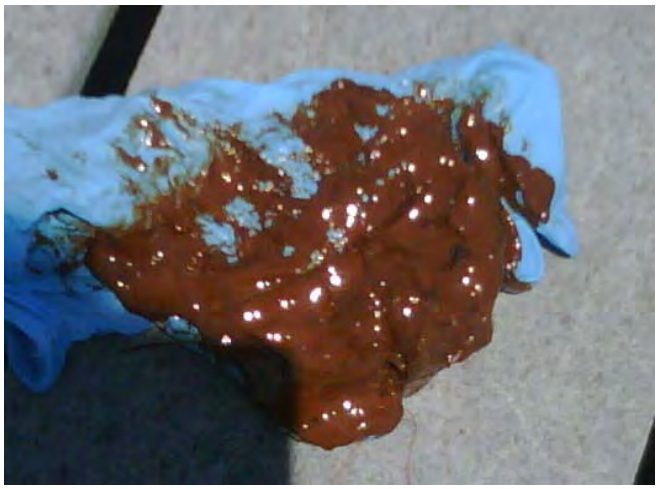
6/9/2010 – First day Oil

6/10/2010 – Grassy Point

6/10/2010 – Grassy Point

Oil Spill and Response Pictures
Gulf Breeze, FL

6/10/2010 – Grassy Point Oil



6/10/2010

6/12/2010 - Woodlands Bayou Oil Dock

6/12/2010 – Woodland Bayou Oil

Oil Spill and Response Pictures
Gulf Breeze, FL

6/13/2010

6/13/2010

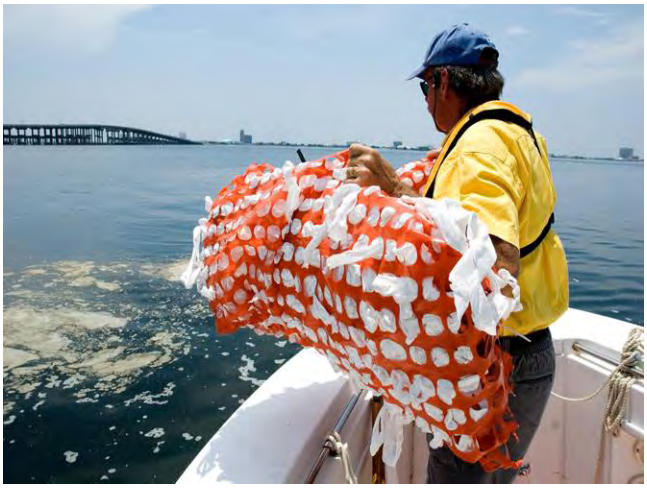
6/13/2010

6/14/2010 – Peakes Point Oil

Oil Spill and Response Pictures
Gulf Breeze, FL

6/14/2010 – Peakes Point Oil

6/14/2010

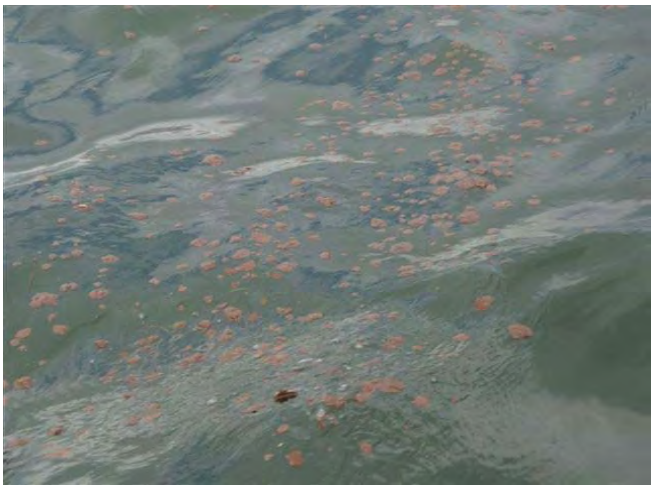


6/16/2010- Deployment of community created boom

6/16/2010

6/16/2010

6/29/2010



6/29/2010

6/29/2010 – Oil at the Pass (001)

7/1/2010 – Westside Oil (002)

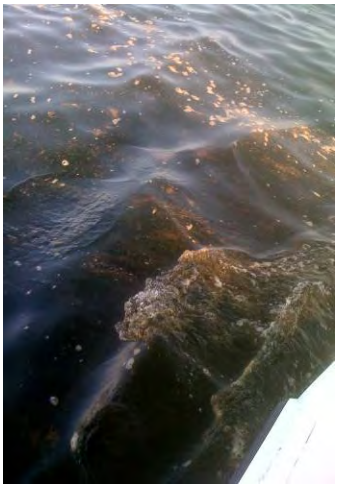
7/1/2010 – Westside Oil (005)

7/1/2010 – Westside Oil (006)

7/1/2010 – Westside Oil (007)

7/1/2010 – Westside Oil (010)

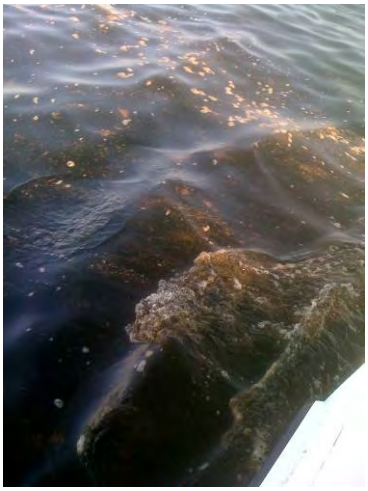
7/1/2010 – Westside Oil (012)



7-2-2010

7/10/2010 – Westside Oil (013)

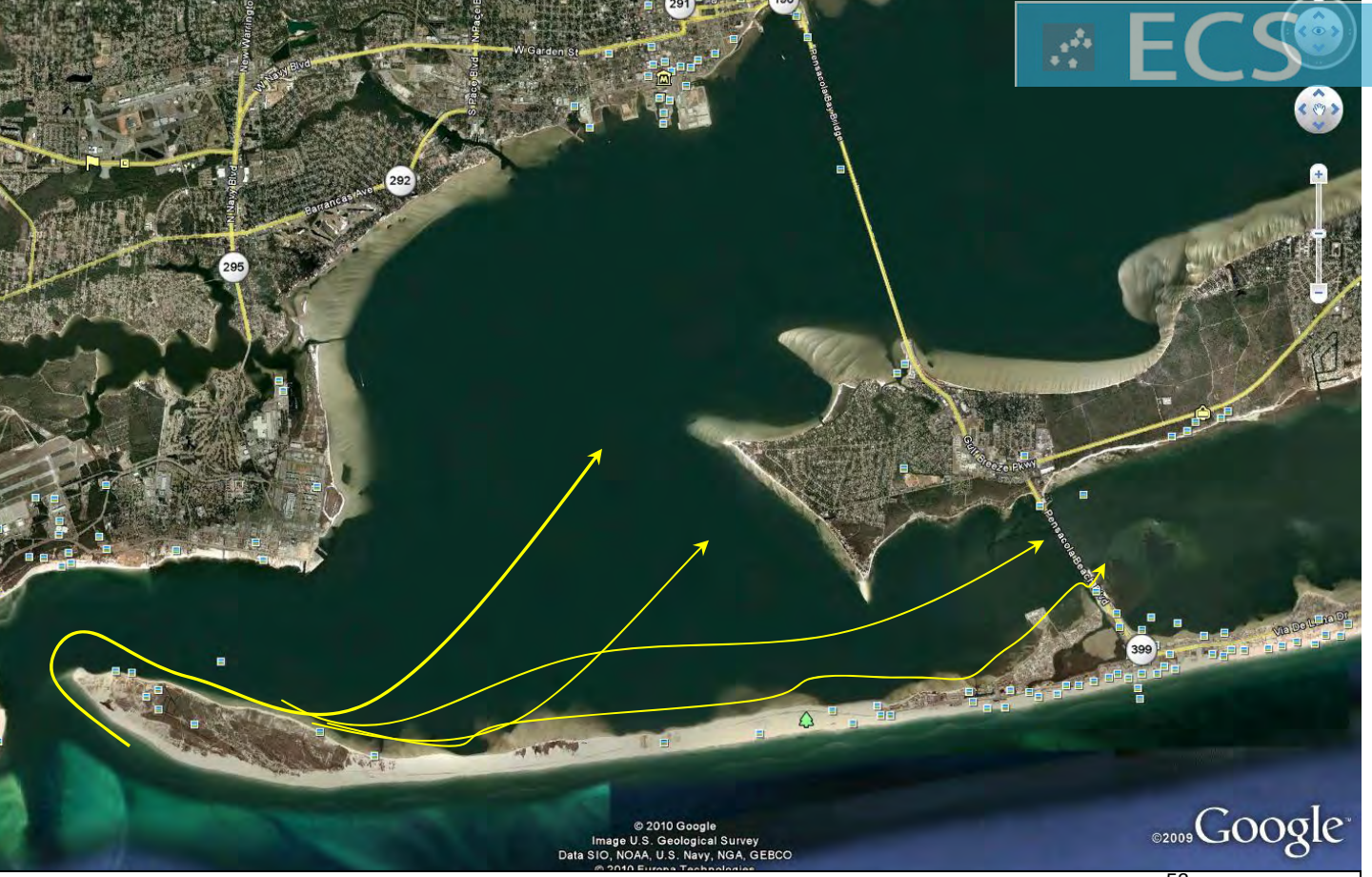
7/22/2010



7/22/2010

8/5/2010

8/22/2010



Transport direction of longshore surface currents and wrack line observed summer 2010

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Appendices

Appendix 4

Gulf Breeze Plan for oil skimming in Pensacola Pass

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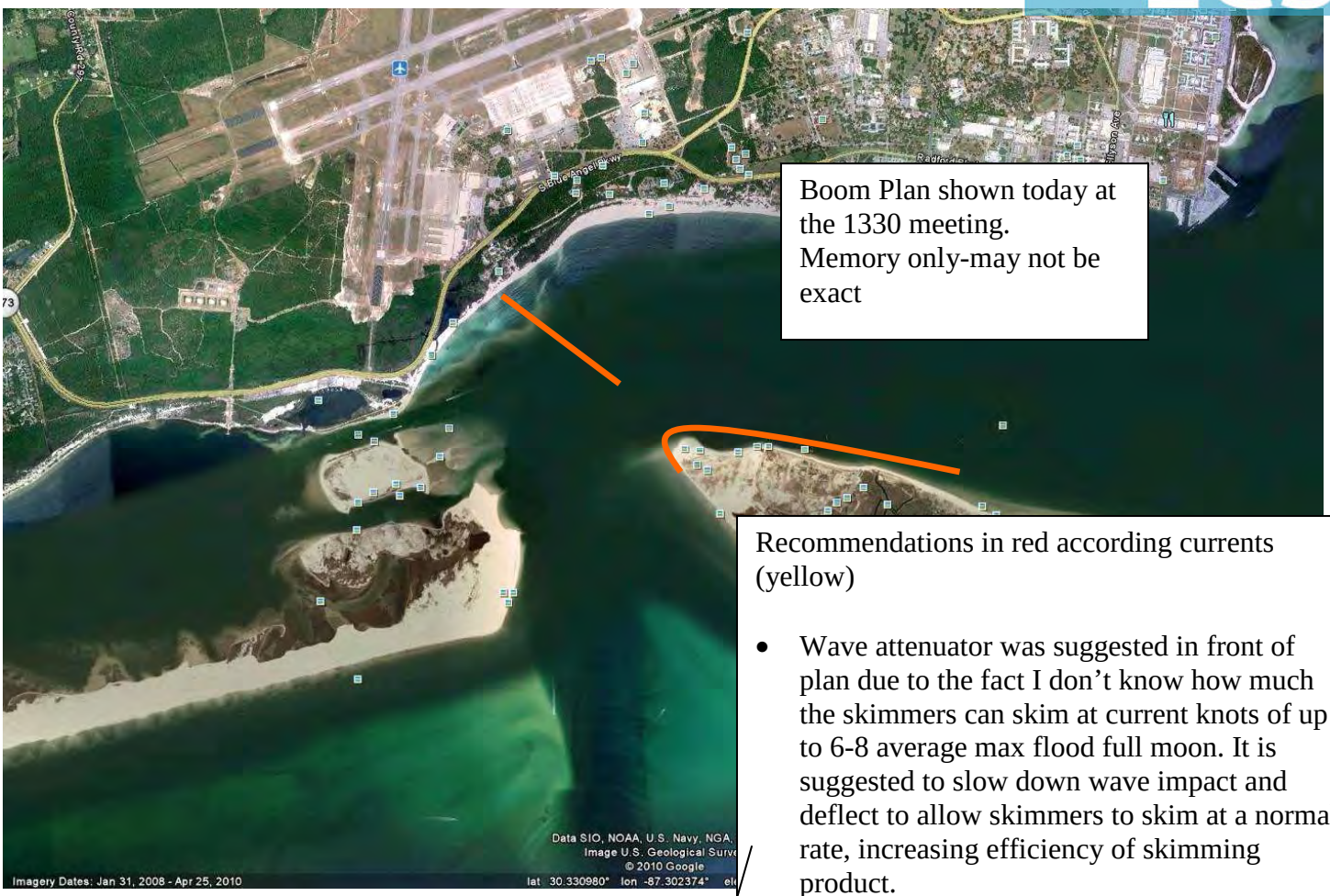
Boom Plan shown today at the 1330 meeting.
Memory only-may not be exact
Recommendations in red according currents (yellow)
• Wave attenuator was suggested in front of plan due to the fact I don't know how much the skimmers can skim at current knots of up to 6-8 average max flood full moon. It is suggested to slow down wave impact and deflect to allow skimmers to skim at a normal rate, increasing efficiency of skimming product.
• Traditional "J" shape boom to allow collection for the skimmers.
• Spaced to allow overwash catchment
Barge set in the midpoint of the Harbor Buster boom at the mid stress relief point to prevent anchor release or unnecessary pulling on either side.
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image U.S. Geological Survey
© 2010 Google
Imagery Dates: Jan 31, 2008 - Apr 25, 2010
lat 30.330980° lon -87.302374° elev 0 ft
©2009 Google

1330 Boom plan meeting briefing and recommendations 7/15/10

Suggestions-
#1 Netting across the mouth and bringing in the net with winches- the idea was except netting Pros: a good concept there would be good flow and would catch a lot of product
Cons: can entrap animals and there may be oil escaping from mesh and get in to the circular currents.

#2 The original plan above allows catchment at a good speed for current and a good depth.
Pros: The idea is portable in case something needs to be permanent and will make a great pilot. I highly suggest tracers.
Cons: There is no backup in case the boom breaks away.

#3 The Perdido Pass strategy- I have watched this project for some time (2 times a weeks and on weekends on a boat) during rough wave and current actions. I have watched it fail and I have mostly watched it withstand very heavy wave action and currents. The engineers are constantly changing things and in my opinion making it better. This project is in sections which I highly recommend for water- never a solid structure to much of an impact. If things get bad without oil present they can remove sections and replace sections. They have an engineered booming and deflection strategy after the fixed boom. I am overall impressed and think it will work on the inside of the pass using 6ft diameter pilings.
There was a consultant Tony Gomillion who gave a report dated 6/29/10 and distributed 7/5/10 entire report is on EM 745. It is unknown how long observations were made to make recommendations. It would be suggested to obtain the actual engineer log and report from the company (Thomas Engineering? Unknown at the moment)

Cons: It was a concensus noone has seen it but they are convinced it will not work because of depth and current. The area I am proposing is 30 ft depth and the Perdido Pass has similar currents according to boaters.
Cons: Cost is 4.6 million-- however it is protecting hundreds of millions dollar homes, wetlands and marshes Maintenance is about the same as Florida boom (for some reason)

#4 All project requests and consensus: More skimmers
Comment: The same number of skimmers may not be guaranteed due to demand elsewhere

All Project cons: Oil will get under the plans.
Recommendation and comment: Yes this is a possibility because oil is mostly subsurface at night and noone will see it especially as flood tide increases- Max is usually at 5-7 depending on the moon phase. I use oceanographic calculations from Marine technology training to determine the time of breaching.
However, Ebb tide collects wrack in the bay in various locations- including oil collection. Ebb is on average 2-3pm max so most of the oil is heated on surface at the surface so when Coastwatchers spot this and report, the area can be surrounded and skimmed.
Based on my calculations, the fastest incoming current on average in the morning and ebbs out around 10am so that should help the skimmers adjusting with current speed. Tides are not included in this determination-This has nothing to do with tide except knowing tide can help in adjustment of lines.

This is a summary of the 1330 Meeting at the BP Staging area

Heather Reed

Ecological Consulting Services Inc

Appendices

Appendix 5

Booming Plans for the City of Gulf Breeze

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ADDITIONAL BOOMING FOR THE CITY OF GULF BREEZE

The City of Gulf Breeze has taken additional protective measures to help protect the inland bayous from the threat of oil intrusion caused by the Deepwater Horizon incident. The City has installed turbidity curtains behind the Tier III containment booms already deployed by the State at the entrance to Gilmore, Woodland and Hoffman bayous. The turbidity curtains enhance the protection by providing an additional layer of boom.

The turbidity curtains are affixed to existing seawall pilings at the entrance of each bayou. The curtains are wet staged and are only deployed when State reconnaissance reports indicate that oil has made it through Pensacola Pass and is present in Pensacola Bay and/or Santa Rosa Sound.

GILMORE BAYOU

POINT A 30°21'47.80"N 87°11'21.30"W
POINT B 30°21'48.00"N 87°11'21.80"W

100 FEET OF TURBIDITY CURTAIN DEPLOYED BEHIND THE STATE BOOM.

HOFFMAN BAYOU

POINT A 30°22'4.00"N 87°10'39.10"W
POINT B 30°22'5.90"N 87°10'37.30"W

250 FEET OF TURBIDITY CURTAIN DEPLOYED BEHIND THE STATE BOOM.

WOODLAND BAYOU

POINT A 30°22'4.70"N 87°10'50.30"W
POINT B 30°22'5.40"N 87°10'50.90"W

100 FEET OF TURBIDITY CURTAIN DEPLOYED BEHIND THE STATE BOOM.

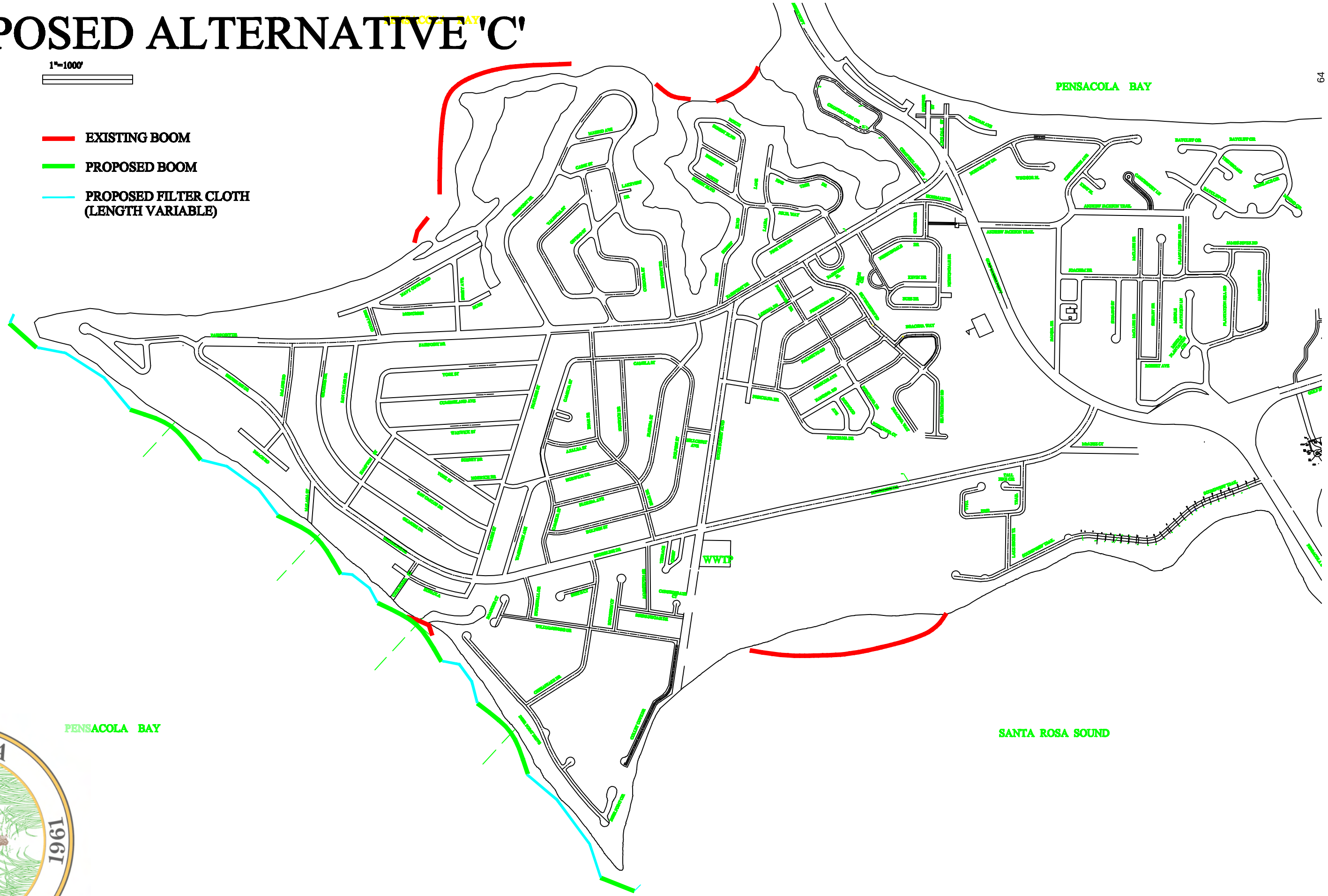
PROPOSED ALTERNATIVE 'C'

1"=1000'

EXISTING BOOM

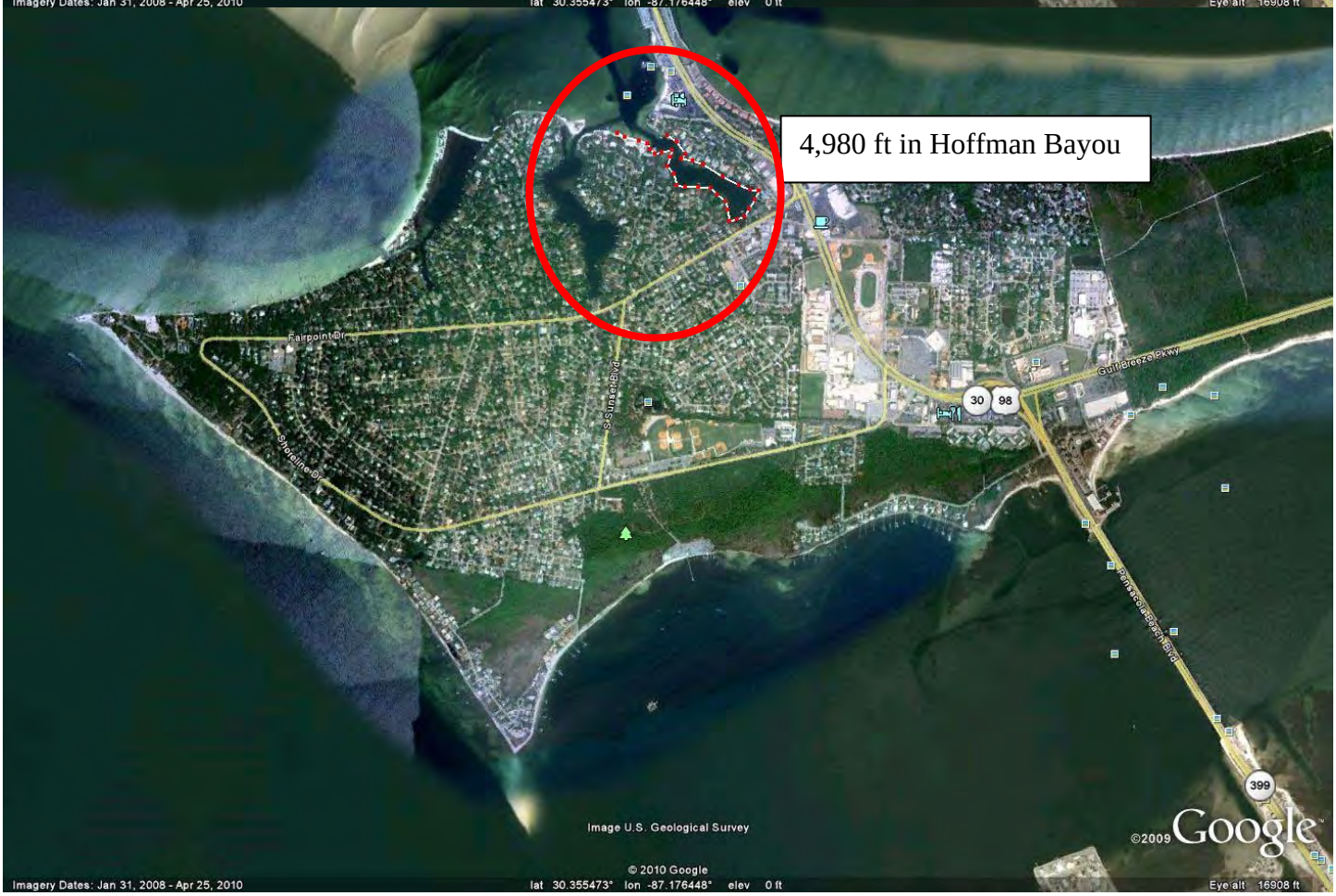
PROPOSED BOOM

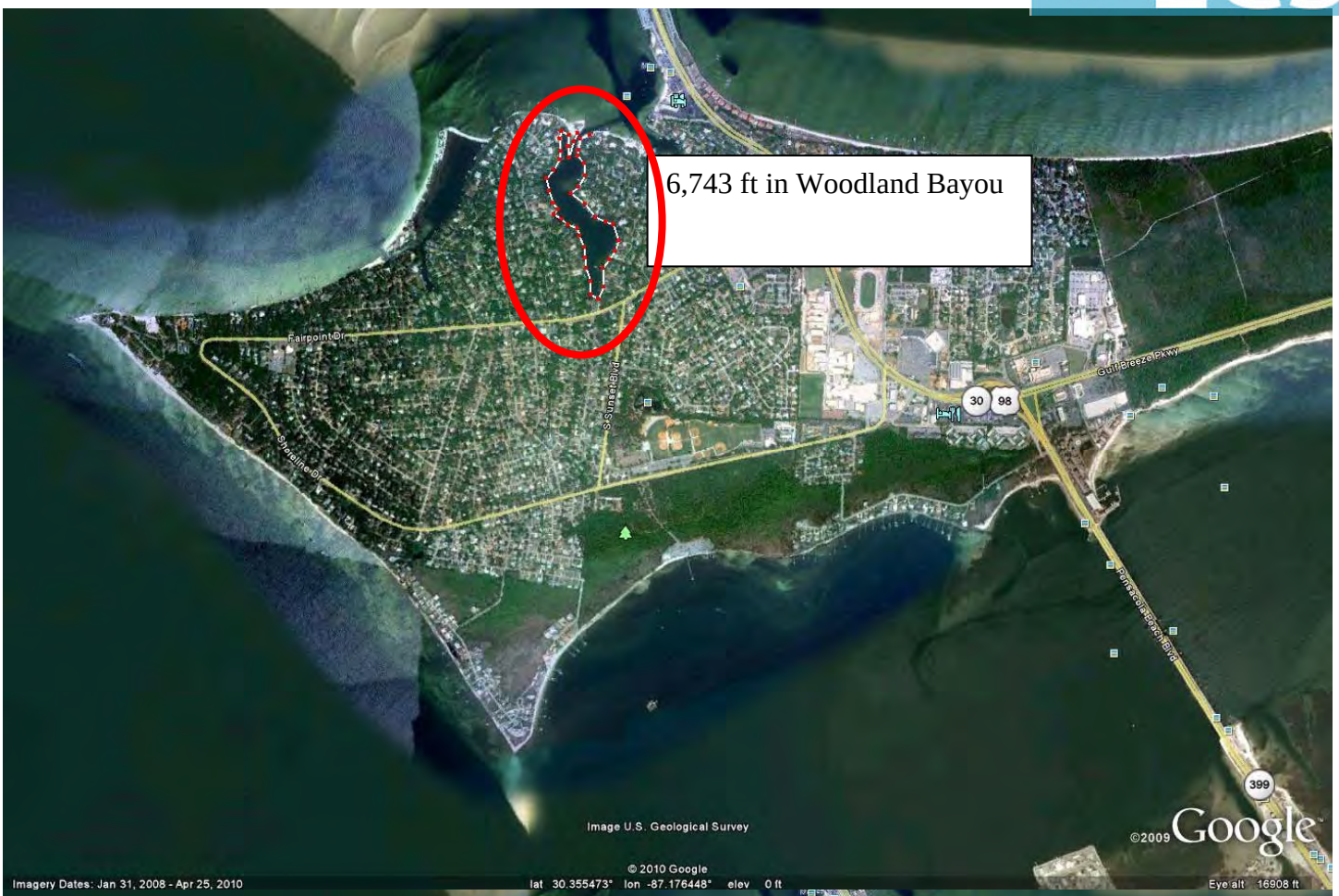
PROPOSED FILTER CLOTH
(LENGTH VARIABLE)

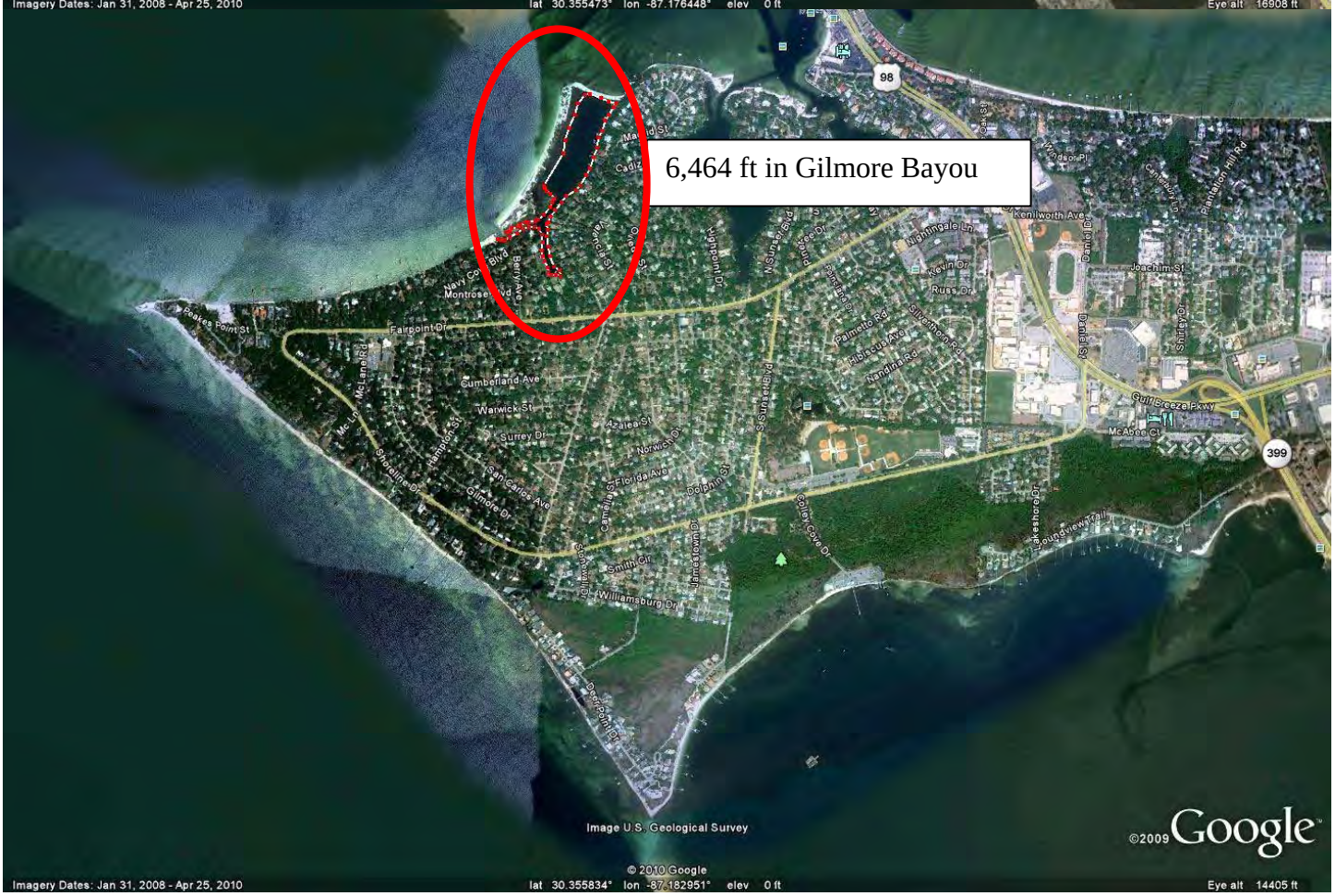


CITY OF GULF BREEZE FLORIDA 1961

Absorbent boom request for environmental sensitive areas subjected to boat traffic an oil product impact - onshore anchoring only is suggested




6,743 ft in Woodland Bayou
Fairpoint Dr
Shoreline Dr
S Sunset Blvd
Gulf Breeze Pkwy
30
98
Pensacola Beach Blvd
399
Image U.S. Geological Survey
©2009 Google
© 2010 Google
Imagery Dates: Jan 31, 2008 - Apr 25, 2010
lat 30.355473° lon -87.176448° elev 0 ft
Eye alt 16908 ft


6,464 ft in Gilmore Bayou
98
Fairpoint Dr
Peakes Point St
Cumberland Ave
Warwick St
Surrey Dr
Azalea St
Norwich Dr
Florida Ave
Dolphin St
Gilmore Dr
Shoreline Dr
S Sunset Blvd
Colony Cove Dr
Jamestown Dr
Williamsburg Dr
Deer Point Dr
Gulf Breeze Pkwy
McAbee Ct
399
Image U.S. Geological Survey
©2009 Google
© 2010 Google
Imagery Dates: Jan 31, 2008 - Apr 25, 2010
lat 30.355834° lon -87.182951° elev 0 ft
Eye alt 14405 ft

Deadman's Island currently has a 9 month old dripped and torn turbidity curtain near the shoreline to protect plant from wave action. The oyster reef of concern is a NOAA and ACOE funded restoration project.


CITY OF GULF BREEZE FLORIDA
1961
Pictometry
Map
1 / 3
ECS
N
W
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S
68
© 2006-2010

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Appendices

Appendix 6

Upland Booming Plans for Environmental Sensitive Areas

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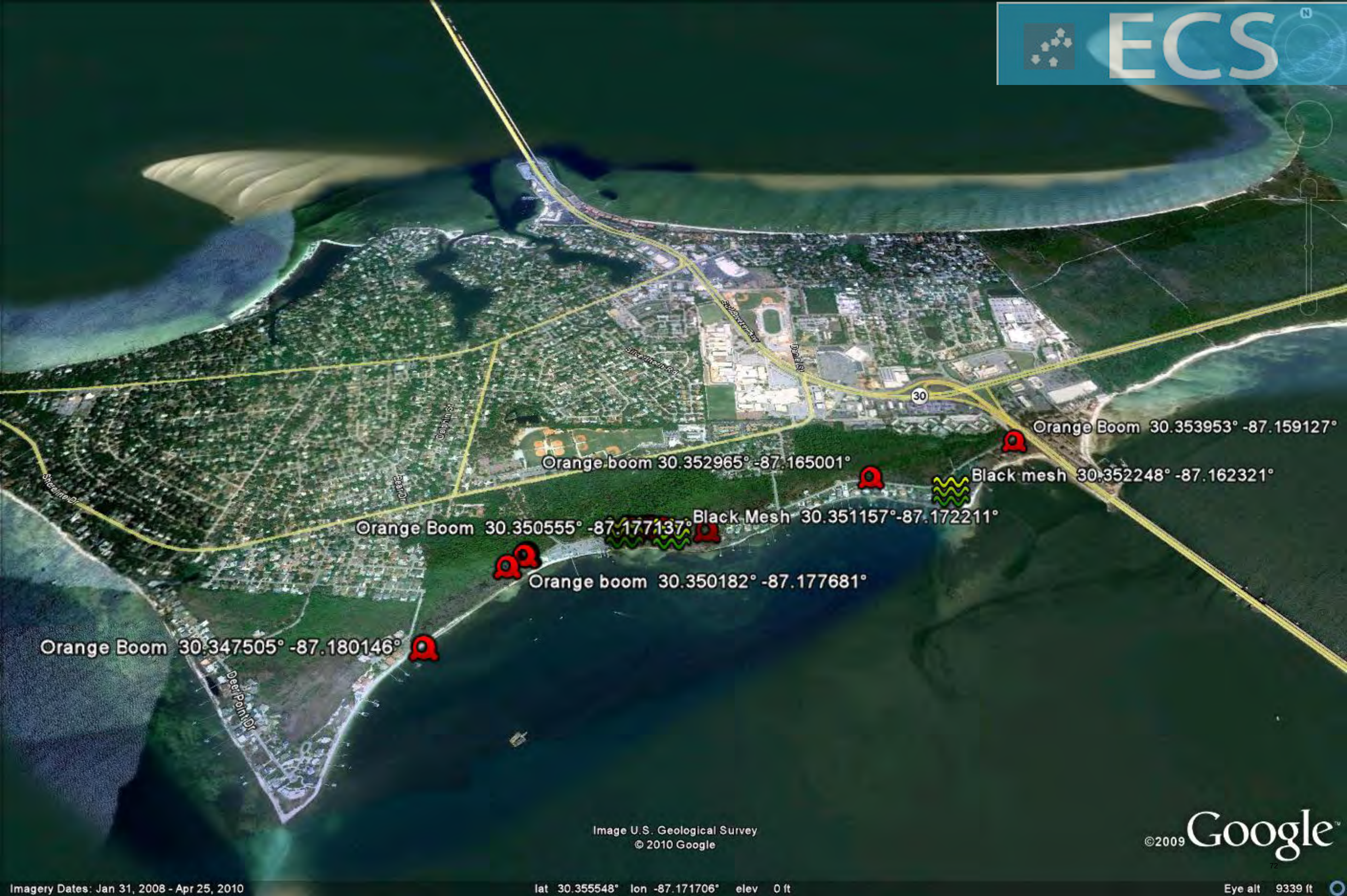
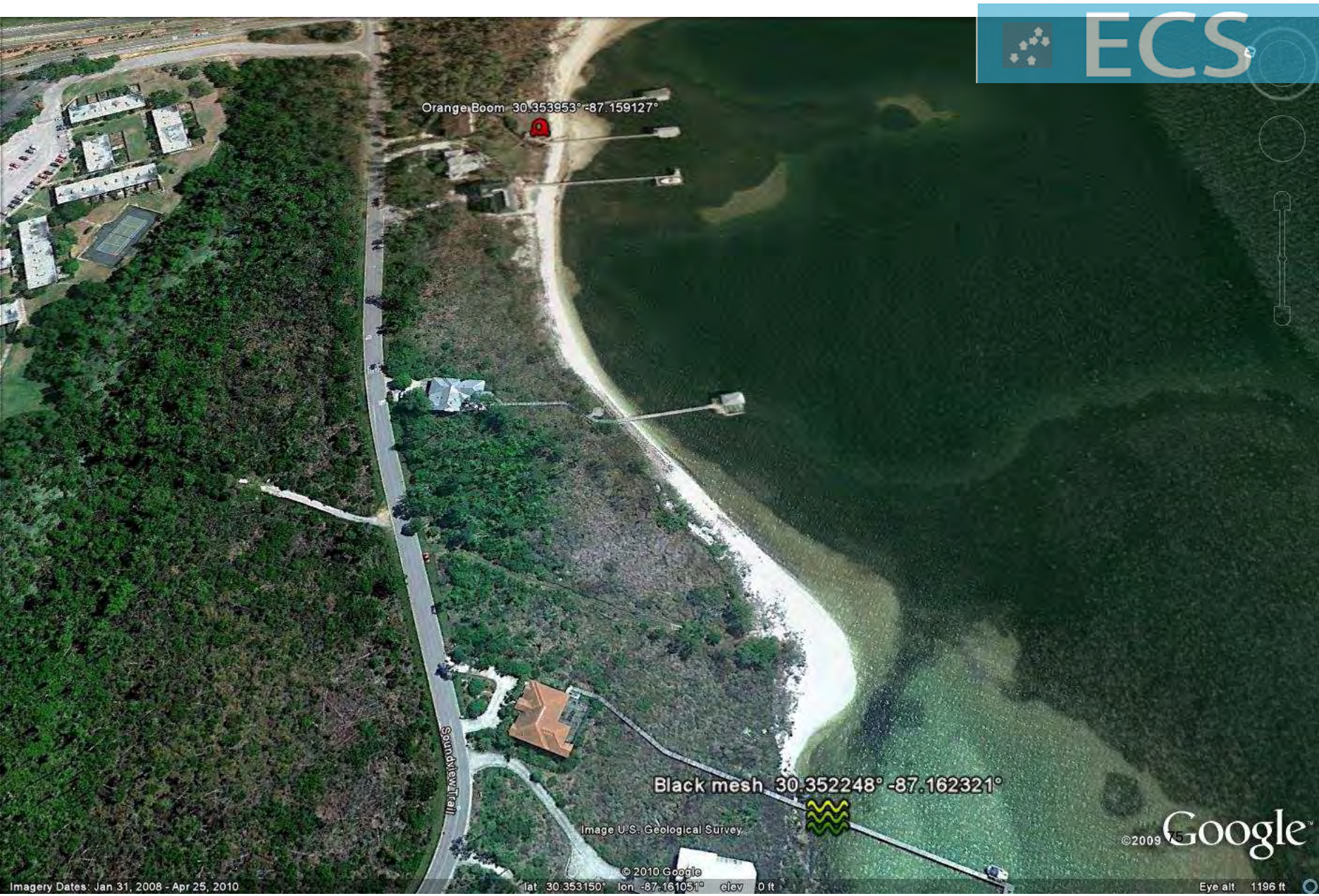
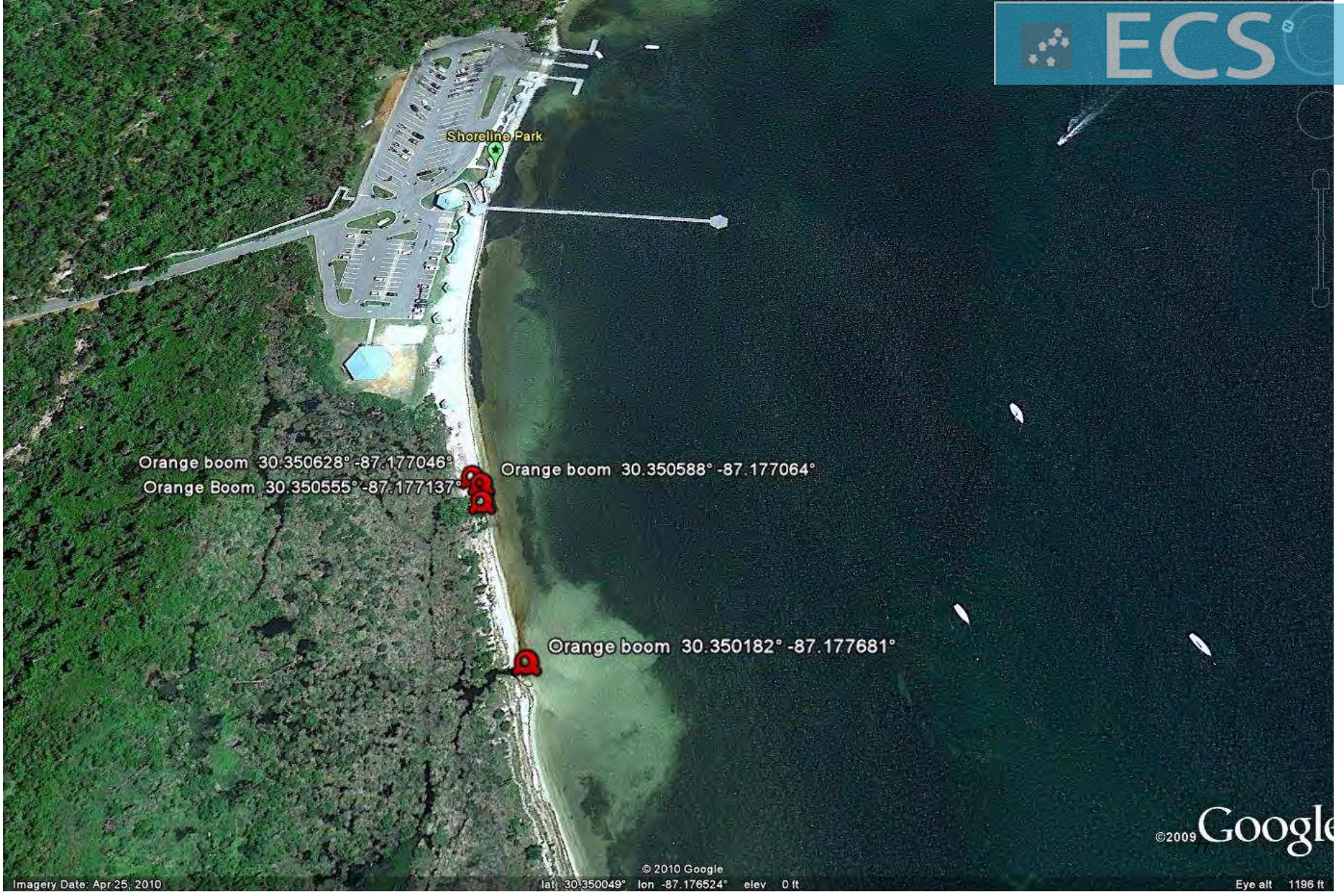

ECS
Orange Boom 30.353953° -87.159127°
Orange boom 30.352965° -87.165001°
Black mesh 30.352248° -87.162321°
Black Mesh 30.351157°-87.172211°
Orange Boom 30.350555° -87.177137°
Orange boom 30.350182° -87.177681°
Orange Boom 30.347505° -87.180146°
30
Dolphin St
Deer Point Dr
Image U.S. Geological Survey
© 2010 Google
©2009 Google
Imagery Dates: Jan 31, 2008 - Apr 25, 2010
lat 30.355548° lon -87.171706° elev 0 ft
Eye alt 9339 ft


Orange Boom 30.351434° -87.173675°
Black Mesh 30.351310° -87.173779°
Orange boom 30.351388° -87.173210°
Orange Boom 30.351411° -87.172961°
Orange boom 30.351366° -87.172816°
Orange boom 30.351329° -87.172494°
Black Mesh 30.351157° -87.172211°
Orange boom 30.351140°
Black Mesh 500'
Black Mesh 500'
Black Mesh should be strung length wise to increase the surface area and the rope should be line lengthwise in the middle of the mesh. The mesh bags can be cable tied together if subjected to additional water force but isn't necessary in most cases. There should be about three foot rope on each side to secure to upland auger anchors.
©2009 Google
© 2010 Google
Imagery Date: Apr 25, 2010
lat 30.351311° lon -87.173021° elev 0 ft
Eye alt 1106 ft

Orange boom is placed inside the streams leading to the wetlands with rope and small auger anchors.
The plan is design to filter the inlets to allow water flow in and out. Staying on the inside of the inlet will prevent premature wear of the boom.
A rope can be looped through the absorbent, however, the pull on the mesh may weaken the structural integrity of the boom. It is recommended to timber-hitch around the outside of the boom and have two ends tied to upland augers.

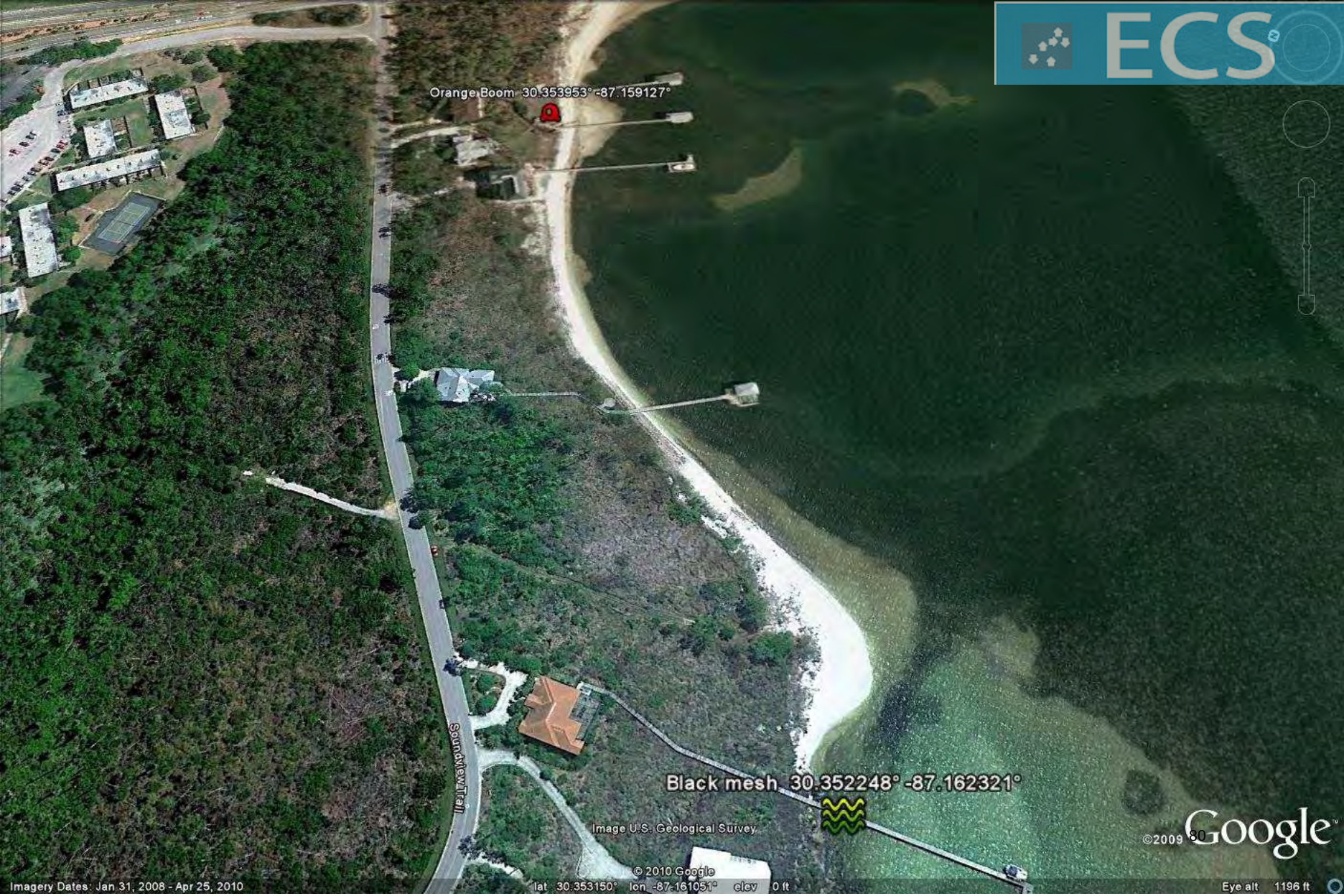

Orange Boom 30.353953° -87.159127°
Black mesh 30.352248° -87.162321°
Seaview Trail
Image U.S. Geological Survey
© 2010 Google
©2009 Google
Imagery Dates: Jan 31, 2008 - Apr 25, 2010
lat 30.353150° lon -87.161051° elev 0 ft
Eye alt 1196 ft


Black mesh 30.352248° -87.162321°
Orange boom 30.352965° -87.165001°
Image U.S. Geological Survey
©2009 Google
© 2010 Google
Imagery Dates: Jan 31, 2008 - Apr 25, 2010
lat 30.352545° lon -87.163941° elev 0 ft
Eye alt 1196 ft

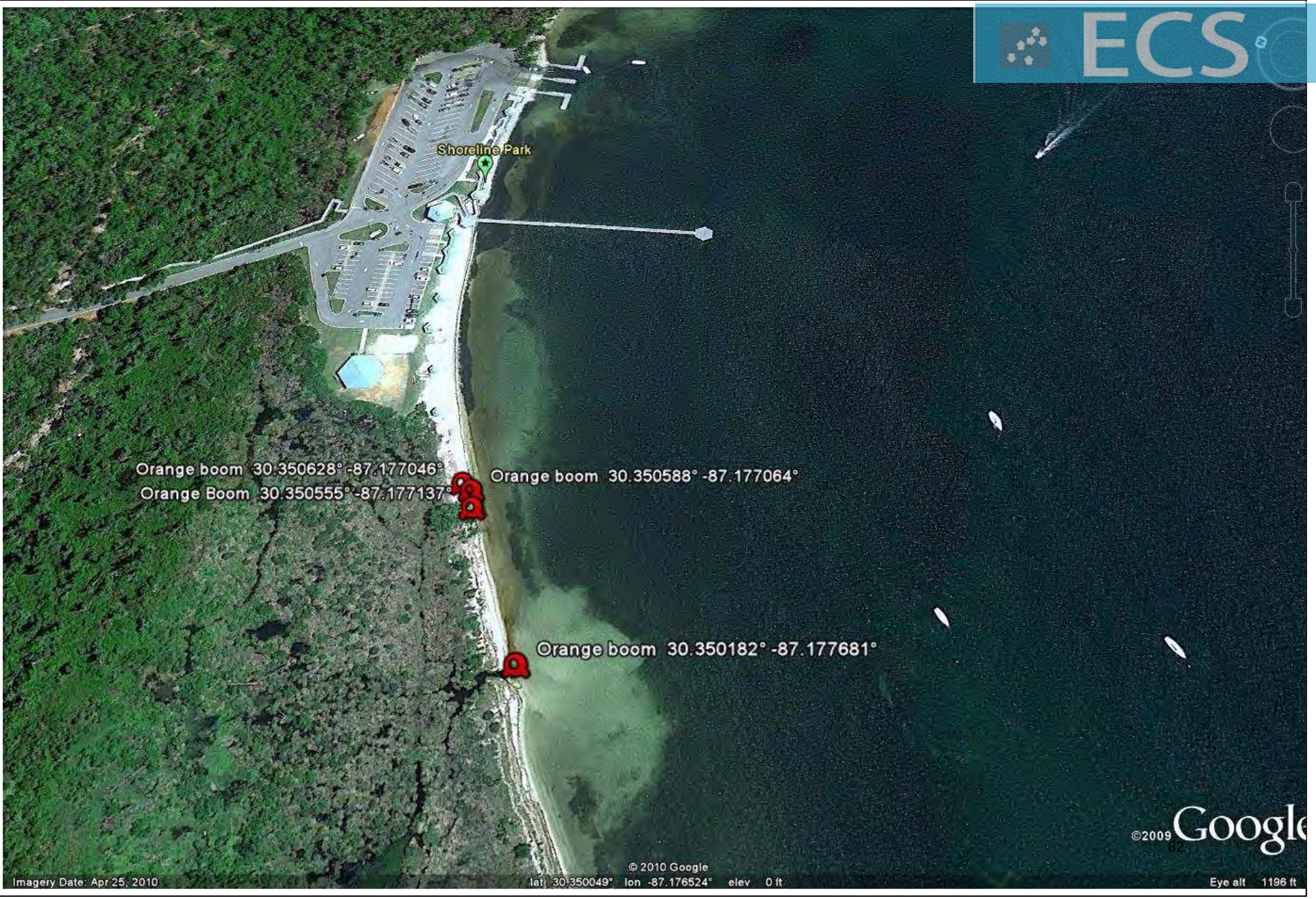

Shoreline Park
Orange boom 30.350628° -87.177046°
Orange Boom 30.350555° -87.177137°
Orange boom 30.350588° -87.177064°
Orange boom 30.350182° -87.177681°
©2009 Google
© 2010 Google
Imagery Date: Apr 25, 2010
lat 30.350049° lon -87.176524° elev 0 ft
Eye alt 1196 ft


Orange Boom 30.351434° -87.173675°
Black Mesh 30.351310° -87.173779°
Orange boom 30.351388° -87.173210°
Orange Boom 30.351411° -87.172961°
Orange boom 30.351366° -87.172816°
Orange boom 30.351329° -87.172494°
Black Mesh 30.351157° -87.172211°
Orange boom 30.351140°
Black Mesh 500’
Black Mesh 500’
Black Mesh should be strung length wise to increase the surface area and the rope should be line lengthwise in the middle of the mesh. The mesh bags can be cable tied together if subjected to additional water force but isn’t necessary in most cases. There should be about three foot rope on each side to secure to upland auger anchors.
©2009 Google
© 2010 Google

Orange boom is placed inside the streams leading to the wetlands with rope and small auger anchors.
The plan is design to filter the inlets to allow water flow in and out. Staying on the inside of the inlet will prevent premature wear of the boom.
A rope can be looped through the absorbent, however, the pull on the mesh may weaken the structural integrity of the boom. It is recommended to timber-hitch around the outside of the boom and have two ends tied to upland augers.


Orange Boom 30.353953° -87.159127°
Soundview Trail
Black mesh 30.352248° -87.162321°
Image U.S. Geological Survey
©2009 Google
© 2010 Google
Imagery Dates: Jan 31, 2008 - Apr 25, 2010
lat 30.353150° lon -87.161051° elev 0 ft
Eye alt 1196 ft


Black mesh 30.352248° -87.162321°
Orange boom 30.352965° -87.165001°
Image U.S. Geological Survey
©2009 Google
© 2010 Google
Imagery Dates: Jan 31, 2008 - Apr 25, 2010
lat 30.352545° lon -87.163941° elev 0 ft
Eye alt 1196 ft


Shoreline Park
Orange boom 30.350628° -87.177046°
Orange Boom 30.350555° -87.177137°
Orange boom 30.350588° -87.177064°
Orange boom 30.350182° -87.177681°
©2009 Google
© 2010 Google
Imagery Date: Apr 25, 2010
lat 30.350049° lon -87.176524° elev 0 ft
Eye alt 1196 ft

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Appendices

Appendix 7

Pre-impact Sediment and Water Sampling Sites

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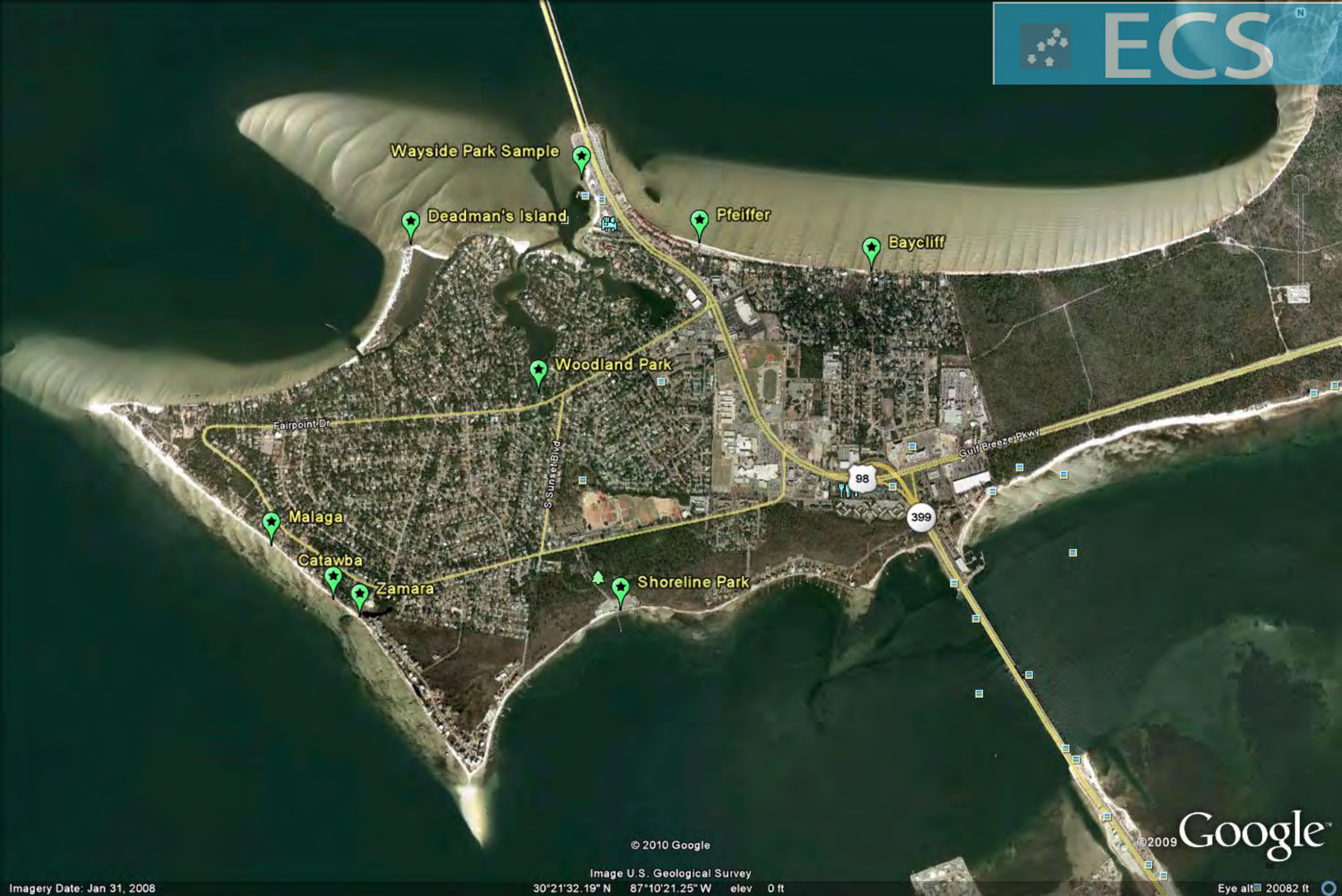
Wayside Park Sample
Deadman's Island
Pfeiffer
Baycliff
Woodland Park
Fairpoint Dr
S Sunset Blvd
Gulf Breeze Pkwy
98
399
Malaga
Catawba
Zamara
Shoreline Park
© 2010 Google
Image U.S. Geological Survey
©2009 Google
Imagery Date: Jan 31, 2008
30°21'32.19" N 87°10'21.25" W elev 0 ft
Eye alt 20082 ft

Pace Analytical Services, Inc.
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

CERTIFICATIONS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Ormond Beach Certification IDs

Alabama Certification #: 41320
8 East Tower Circle Ormond Beach, FL 32174
Colorado Certification: FL NELAC Reciprocity
Connecticut Certification #: PH 0216
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: LA090012
Maine Certification #: FL1264
Massachusetts Certification #: M-FL1264
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Montana Certification #: Cert 0074
Nevada Certification: FL NELAC Reciprocity
New Hampshire Certification #: 2958
New Jersey Certification #: FL765
New York Certification #: 11608
North Carolina Certification #: 12710
Pennsylvania Certification #: 68-547
Puerto Rico Certification #: FL01264
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
Virginia Certification #: 00432
Wyoming Certification: FL NELAC Reciprocity
Arizona Certification #: AZ0735

- To determine the concentration and source of oil compounds in the sediments collected.
- To measure sediment characteristics for interpreting chemical and biological results.
- To maintain the integrity the sample(s) during sampling, transport, and storage.

Sample Volume by Analytical Method *(see back page for description and suggested detection limits)*

THC by GC/FID	500 mL; or 1 pint; or 16 oz
PAH by GC/MS-SIM	500 mL; or 1 pint; or 16 oz
TOC	10 g; or less than 10 mL
Grain size	100 g; or 4 oz

Sampling Equipment/Containers

- To collect subsurface samples in coarse sediments (sand and gravel), it is easiest to use a shovel to dig a small trench and collect the desired sediment intervals from the exposed wall in the trench.
- To collect subsurface samples in fine sediments (mud), use a shovel to expose the sediments at the desired depth. Collect the sample from the natural break side, rather than the shovel side.
- Coring tubes can be used in muddy sediments when the sampling intervals have not been determined. Plastic tubes (polycarbonate or polyethylene is okay) should be 5 cm (2 in) in diameter, with a wall thickness of about 3 mm.
- Sediment samples for THC and PAH should be placed in glass containers, certified-clean to be organic-free (solvent rinsed), with teflon- or aluminum-lined lids. For TOC, they can be placed in soap-cleaned glass or plastic containers. For grain size, Ziploc or Whirl-Pak bags can be used.

Sample Collection Methods

- Decon sampling equipment and supplies initially and between samples, if re-using them. First wash with laboratory-grade detergent and clean water, with a triple clean water rinse. Use a clean water source for rinsing (distilled water from a local store is OK). Then rinse with methanol or acetone, followed by methylene chloride or hexane (Capillary GC Pesticide Residue Grade or equivalent). Do not work with solvents downwind of exhaust or other airborne hydrocarbon source. Collect waste/rinsate solvents for proper disposal.
- To reduce the need for field decon, use pre-cleaned, disposable utensils (e.g., stainless steel blade or wooden spatula), single-use core tubes, etc. The only equipment to be used between sites is a shovel.
- Discrete samples from a single sample point may be collected to represent a specific condition, such as a tarball for fingerprinting and source identification.
- Composite samples (of at least three subsamples) are recommended for characterization of a sampling site, such as contaminant content in marsh sediments.
- Photograph the sampling site prior to sample collection to document the site conditions.
- For surface sediments, use a wooden spatula or stainless steel blade to accurately collect the top 2 cm, avoiding contact with disturbed sediments.
- For subsurface sediments, expose a fresh surface at the desired interval, then remove the sediments which were in contact with the shovel prior to sampling.
- On each trip, try to sample control and least oiled areas first, then the most contaminated areas.
- Record the sample no. on both the label and lid. Record the following on the field log sheet:
  -sample no.; date/time; station location; tidal elevation
  -description of oiling conditions, using standard shoreline assessment terminology
  -sediment characteristics: texture, color, biota, vegetation, debris, odor, etc.

- Make a quick sketch in a field log book or sketch form showing the sampling locations in enough detail that the location could be re-occupied by someone else.

Preservation/Holding Times

Total hydrocarbons (THC). Often referred to as total petroleum hydrocarbons, but most methods do not differentiate among petroleum, pyrogenic, and biogenic hydrocarbons. THC by GC-FID (total area of FID gas chromatogram of combined f_1 and f_2 fractions after column chromatography) is often the preferred method because of the low detection limit (2 ppm versus 100-1000 ppm for other THC methods) and the direct measurement of hydrocarbons. This method does not detect low boiling compounds (below n-C_8). For NRDA, THC analyses generally will not provide the data needed to support calculation of toxic effects from PAH exposure, and will have to be corrected to equivalent PAHs. The THC results, however, can be used to track oil weathering and map extent of exposure of intertidal resources. Detection limits are usually higher than those needed for intertidal injury assessment.

- **Polynuclear aromatic hydrocarbons** (PAH). Since most of the toxicity in oil is due to the PAHs, it is often the preferred analysis for NRDA. The analytes must include the alkyl-substituted PAH homologs, in addition to the standard PAH "priority pollutants". This method is referred to as Modified EPA Method 8270, because the list of PAHs is expanded to include the alkylated homologs, using GC/MS in the selected ion monitoring mode. Detection levels should be 1 ppb for individual PAHs to support injury assessment using toxicity thresholds.

Other Considerations

- Be aware of the potential for contamination of the site from oil on boots and shovels.
- Keep a detailed photo log so that each photograph can be labeled.
- Collect background samples from clean sites representative of pre-oiling conditions, as well as areas not yet oiled but in the potential path of the oil.
- It is very important to have a defined sampling strategy prior to conducting field work. Intertidal sediments are difficult to sample because of their inherent heterogeneity over space, depth, and time. Truly quantitative samples have to be collected in a very precise manner and be related to a surface area or meaningful volume metric. Grab samples are not very useful to injury quantification. Documenting exposure of intertidal areas is best accomplished with photography, video, and good field notes and sketches using standard shoreline assessment methods. Samples may be needed for fingerprinting or monitoring weathering, to correlate a degree of oiling term with oil loading, to confirm the presence of oil, or for bioassay purposes.

Key References

NOAA, 1993. Sampling and analytical methods of the National Status and Trends Program, National Benthic Surveillance and Mussel Water Projects, 1984-1992. Volumes I-IV, Comprehensive descriptions of trace organic analytical methods. Lauenstein, G.G. and A.Y. Cantillo (eds.). NOAA Tech. Memo NOS ORCA 71, Silver Spring, MD.

Reinharz, E. and J. Michel, 1996. Preassessment phase guidance document. NOAA Damage Assessment and Restoration Program, Silver Spring, MD. 35 pp. + 10 appendices.

Sauer, T.C. and P.D. Boehm, 1995. Hydrocarbon chemistry for analytical methods for oil spill assessments. Marine Spill Response Corp. Tech. Report Series 95-032, Washington, D.C. 114 pp.

USEPA, 1979. Methods for chemical analysis of water and wastes. EPA-600/4-79/020. USEPA Environmental Monitoring Systems Lab., Office of Research and Development, Cincinnati, OH.

- To determine the concentration of oil compounds in the water column. The method detection level (MDL) and sample size are critical in determining detection limits.
- To determine the source via fingerprinting, the degree of weathering, and background levels
- To document exposure of water-column organisms and validate toxicity models.
- To maintain the integrity the sample(s) during sampling, transport, and storage.

Sample Volume (use this chart to select sample size to reach the desired detection limit)

Analytical Method (see back page)	*Sample Volume*	*MDL*	*Level of Toxicity Concern**
BTEX (full scan mode)	40 mL	10 µg/L (ppb)	10 µg/L @ 25°C
BTEX (SIM)		0.1-1 µg/L	10 mg/L @ 2°C
THC by GC/FID	1 liter	2,000 µg/L	N/A
	1 gallon	500 µg/L	
PAH by GC/MS-SIM	1 liter	0.4 µg/L	0.01 µg/L @ 25°C
	1 gallon	0.1 µg/L	2 µg/L @ 2°C

* defined as 1% of the LC_{50} for 96 hours for sensitive water-column species

Sampling Equipment/Containers

- Collect samples directly into the sample container, to minimize risks of cross-contamination, either by hand or using a sampler which holds the container, if possible.
- Collect water samples for THC and PAH in glass containers, certified-clean to be organic-free (solvent rinsed). Amber glass is preferred. Leave headspace of about 1 inch.
- Collect BTEX samples in 40-mL VOA vials, filled with no headspace or air bubbles.
- If slicks are present, decon samplers before each use. First wash with laboratory-grade detergent and clean water, with a triple clean water rinse (distilled water from a local store is OK). Then rinse with methanol or acetone, followed by methylene chloride or hexane (Capillary GC Pesticide Residue Grade or equivalent). Allow solvents to evaporate before use. Do not work with solvents downwind of exhaust or other airborne hydrocarbon source. Collect solvent rinsate for proper disposal or shipment to the lab as a rinsate blank.

Sample Collection Methods

- Collect subsurface samples below the water surface; so not include any surface slicks.
- Take "near surface" samples from 0-1 m below the surface; take "near bottom" samples 1 m from the bottom.
- Sampling equipment MUST be deployed and retrieved in the closed position. Applies to sample jars lowered by hand. Open or un-cap the sampler only at the sampling depth.
- On each trip, try to sample control/least oiled areas first, then more contaminated areas.
- Clear surface slicks prior to deploying the equipment, but carefully so that the surface oil is not dispersed into the water column. Sweeping the area with sorbents is effective.

Preservation/Holding Times

- Volatiles (VOA vial): None. Can be held for 14 days at 4°C in the dark without loss of sample integrity.

- TPH and PAH: can add 1 mL of 6 N HCl/liter of sample, but not required by EPA.
- Immediately place all water samples in cooler and keep at 4°C (do not freeze).
- Use packing material around containers to prevent breakage.
- Water samples can be held at 4°C in the dark for up to 7 d without loss of sample integrity. Water extracts can be held at 4°C in the dark for 40 days without loss of sample integrity.

Analytical Methods

- Contamination by surface slicks is of great concern. Document presence of slicks, weather, wave conditions, etc. which might suggest mixing of surface oil during sampling.
- Be aware of sources of contamination on the sampling vessel (exhaust fumes, engine cooling systems, oily surfaces). Work up-wind of any exhausts. Segregate dirty/clean areas. Lay out clean substrates to work on and replace frequently.
- Collect background samples from clean sites representative of pre-oiling conditions, as well as areas not yet oiled but in the potential path of the oil.
- Acquire preservation chemicals locally; acids have special hazmat shipping requirements.
- Use a physical or mental model of the extent of water-column contamination to determine the number and location of samples. Minimum guidelines are at least three samples per area of relatively uniform exposure or sub-waterbody. Also, sample along exposure gradients at regular intervals proportionate to the exposure area.

Key References

NOAA, 1993. Sampling and analytical methods of the National Status and Trends Program, National Benthic Surveillance and Mussel Water Projects, 1984-1992. Volume IV, Comprehensive descriptions of trace organic analytical methods. Lauenstein, G.G. and A.Y. Cantillo (eds.). NOAA Tech. Memo NOA ORCA 71, Silver Spring, MD. 181 pp.

Sauer, T.C. and P.D. Boehm, 1995. Hydrocarbon chemistry for analytical methods for oil spill assessments. Marine Spill Response Corporation Technical Report Series 95-032, Washington, D.C. 114 pp.

USEPA, 1979. Methods for chemical analysis of water and wastes. EPA-600/4-79/020. USEPA Environmental Monitoring Systems Laboratory, Office of Research and Development, Cincinnati, Ohio.

USEPA, 1986. Test methods for evaluating solid waste. SW 846 Third Edition (and updates).

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(386)672-5668

SAMPLE SUMMARY

Project: City of Gulf Breeze
Pace Project No.: 3511394

Lab ID	Sample ID	Matrix	Date Collected	Date Received
3511394001	**Baycliff**	Solid	05/07/10 04:45	05/11/10 11:30
3511394002	**TB**	Solid	05/07/10 04:00	05/11/10 11:30
3511394003	**Woodland Bayou**	Solid	05/07/10 03:30	05/11/10 11:30
3511394004	**Navy Cove**	Solid	05/07/10 03:15	05/11/10 11:30
3511394005	**Catawba**	Solid	05/07/10 03:00	05/11/10 11:30
3511394006	**Malago**	Solid	05/07/10 03:10	05/11/10 11:30
3511394007	**Shoreline Park**	Solid	05/07/10 02:45	05/11/10 11:30
3511394008	**Wayside Park**	Solid	05/07/10 01:45	05/11/10 11:30

Pace Analytical Services, Inc.
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

SAMPLE ANALYTE COUNT

Project: City of Gulf Breeze
Pace Project No.: 3511394

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
3511394001	**Baycliff**	EPA 6010	TAP	22	PASI-O
		EPA 7471	SK1	1	PASI-O
		EPA 8270	EAO	21	PASI-O
		EPA 8260	ABD	39	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
3511394002	**TB**	EPA 6010	TAP	22	PASI-O
		EPA 7471	SK1	1	PASI-O
		EPA 8270	EAO	21	PASI-O
		EPA 8260	ABD	39	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
3511394003	**Woodland Bayou**	EPA 6010	TAP	22	PASI-O
		EPA 7471	SK1	1	PASI-O
		EPA 8270	EAO	21	PASI-O
		EPA 8260	ABD	39	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
3511394004	**Navy Cove**	EPA 6010	TAP	22	PASI-O
		EPA 7471	SK1	1	PASI-O
		EPA 8270	EAO	21	PASI-O
		EPA 8260	ABD	39	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
3511394005	**Catawba**	EPA 6010	TAP	22	PASI-O
		EPA 7471	SK1	1	PASI-O
		EPA 8270	EAO	21	PASI-O
		EPA 8260	ABD	39	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
3511394006	**Malago**	EPA 6010	TAP	22	PASI-O
		EPA 7471	SK1	1	PASI-O
		EPA 8270	EAO	21	PASI-O
		EPA 8260	ABD	39	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
3511394007	**Shoreline Park**	EPA 6010	TAP	22	PASI-O
		EPA 7471	SK1	1	PASI-O
		EPA 8270	EAO	21	PASI-O
		EPA 8260	ABD	39	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
3511394008	**Wayside Park**	EPA 6010	TAP	22	PASI-O
		EPA 7471	SK1	1	PASI-O

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Baycliff **Lab ID: 3511394001** Collected: 05/07/10 04:45 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Nitrobenzene-d5 (S)	58	%	10-110		1	05/13/10 10:28	05/13/10 15:29	4165-60-0	
2-Fluorobiphenyl (S)	65	%	18-110		1	05/13/10 10:28	05/13/10 15:29	321-60-8	
Terphenyl-d14 (S)	72	%	10-123		1	05/13/10 10:28	05/13/10 15:29	1718-51-0	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260								
Acetone	**12.2U**	ug/kg	24.4	12.2	1		05/13/10 15:00	67-64-1	
Benzene	**3.1U**	ug/kg	6.1	3.1	1		05/13/10 15:00	71-43-2	
Bromodichloromethane	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	75-27-4	
Bromoform	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	75-25-2	
Bromomethane	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	74-83-9	
2-Butanone (MEK)	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	78-93-3	
Carbon disulfide	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	75-15-0	
Carbon tetrachloride	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	56-23-5	
Chlorobenzene	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	108-90-7	
Chloroethane	**4.4U**	ug/kg	6.1	4.4	1		05/13/10 15:00	75-00-3	
Chloroform	**3.6U**	ug/kg	6.1	3.6	1		05/13/10 15:00	67-66-3	
Chloromethane	**3.4U**	ug/kg	6.1	3.4	1		05/13/10 15:00	74-87-3	
Dibromochloromethane	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	124-48-1	
1,1-Dichloroethane	**3.3U**	ug/kg	6.1	3.3	1		05/13/10 15:00	75-34-3	
1,2-Dichloroethane	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	107-06-2	
1,1-Dichloroethene	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	75-35-4	
cis-1,2-Dichloroethene	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	156-59-2	
trans-1,2-Dichloroethene	**3.7U**	ug/kg	6.1	3.7	1		05/13/10 15:00	156-60-5	
1,2-Dichloropropane	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	78-87-5	
cis-1,3-Dichloropropene	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	10061-01-5	
trans-1,3-Dichloropropene	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	10061-02-6	
Ethylbenzene	**3.4U**	ug/kg	6.1	3.4	1		05/13/10 15:00	100-41-4	
2-Hexanone	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	591-78-6	
Methylene Chloride	**5.9 I**	ug/kg	6.1	3.0	1		05/13/10 15:00	75-09-2	V,Z3
4-Methyl-2-pentanone (MIBK)	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	108-10-1	
Methyl-tert-butyl ether	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	1634-04-4	
Styrene	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	100-42-5	
1,1,2,2-Tetrachloroethane	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	79-34-5	
Tetrachloroethene	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	127-18-4	
Toluene	**3.3U**	ug/kg	6.1	3.3	1		05/13/10 15:00	108-88-3	
1,1,1-Trichloroethane	**3.3U**	ug/kg	6.1	3.3	1		05/13/10 15:00	71-55-6	
1,1,2-Trichloroethane	**3.0U**	ug/kg	6.1	3.0	1		05/13/10 15:00	79-00-5	
Trichloroethene	**3.4U**	ug/kg	6.1	3.4	1		05/13/10 15:00	79-01-6	
Vinyl chloride	**3.3U**	ug/kg	6.1	3.3	1		05/13/10 15:00	75-01-4	
Xylene (Total)	**6.3U**	ug/kg	18.3	6.3	1		05/13/10 15:00	1330-20-7	
Dibromofluoromethane (S)	99	%	82-115		1		05/13/10 15:00	1868-53-7	
Toluene-d8 (S)	98	%	84-117		1		05/13/10 15:00	2037-26-5	
4-Bromofluorobenzene (S)	95	%	55-148		1		05/13/10 15:00	460-00-4	1p
1,2-Dichloroethane-d4 (S)	94	%	80-131		1		05/13/10 15:00	17060-07-0	

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Baycliff **Lab ID: 3511394001** Collected: 05/07/10 04:45 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.5**	%	0.10	0.10	1		05/13/10 15:50		

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: TB **Lab ID: 3511394002** Collected: 05/07/10 04:00 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Aluminum	**26.2**	mg/kg	5.1	2.5	1	05/13/10 13:40	05/13/10 21:10	7429-90-5	
Antimony	**0.38U**	mg/kg	0.76	0.38	1	05/13/10 13:40	05/13/10 21:10	7440-36-0	
Arsenic	**0.25U**	mg/kg	0.51	0.25	1	05/13/10 13:40	05/13/10 21:10	7440-38-2	
Barium	**0.25U**	mg/kg	0.51	0.25	1	05/13/10 13:40	05/13/10 21:10	7440-39-3	
Beryllium	**0.025U**	mg/kg	0.051	0.025	1	05/13/10 13:40	05/13/10 21:10	7440-41-7	
Cadmium	**0.025U**	mg/kg	0.051	0.025	1	05/13/10 13:40	05/13/10 21:10	7440-43-9	
Calcium	**43.4**	mg/kg	25.4	12.7	1	05/13/10 13:40	05/13/10 21:10	7440-70-2	
Chromium	**0.13U**	mg/kg	0.25	0.13	1	05/13/10 13:40	05/13/10 21:10	7440-47-3	
Cobalt	**0.25U**	mg/kg	0.51	0.25	1	05/13/10 13:40	05/13/10 21:10	7440-48-4	
Copper	**0.13U**	mg/kg	0.25	0.13	1	05/13/10 13:40	05/13/10 21:10	7440-50-8	
Iron	**39.3**	mg/kg	2.0	1.0	1	05/13/10 13:40	05/13/10 21:10	7439-89-6	
Lead	**0.25U**	mg/kg	0.51	0.25	1	05/13/10 13:40	05/13/10 21:10	7439-92-1	
Magnesium	**129**	mg/kg	25.4	12.7	1	05/13/10 13:40	05/13/10 21:10	7439-95-4	
Manganese	**2.9**	mg/kg	0.25	0.13	1	05/13/10 13:40	05/13/10 21:10	7439-96-5	
Nickel	**0.13U**	mg/kg	0.25	0.13	1	05/13/10 13:40	05/13/10 21:10	7440-02-0	
Potassium	**53.8**	mg/kg	50.7	25.4	1	05/13/10 13:40	05/13/10 21:10	7440-09-7	
Selenium	**0.38U**	mg/kg	0.76	0.38	1	05/13/10 13:40	05/13/10 21:10	7782-49-2	
Silver	**0.13U**	mg/kg	0.25	0.13	1	05/13/10 13:40	05/13/10 21:10	7440-22-4	
Sodium	**948**	mg/kg	50.7	25.4	1	05/13/10 13:40	05/13/10 21:10	7440-23-5	
Thallium	**0.38U**	mg/kg	0.76	0.38	1	05/13/10 13:40	05/13/10 21:10	7440-28-0	
Vanadium	**0.25U**	mg/kg	0.51	0.25	1	05/13/10 13:40	05/13/10 21:10	7440-62-2	
Zinc	**0.51U**	mg/kg	1.0	0.51	1	05/13/10 13:40	05/13/10 21:10	7440-66-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.0024U**	mg/kg	0.0095	0.0024	1	05/13/10 13:50	05/17/10 12:21	7439-97-6	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.1U**	ug/kg	40.4	4.1	1	05/13/10 10:28	05/13/10 15:59	83-32-9	
Acenaphthylene	**4.8U**	ug/kg	40.4	4.8	1	05/13/10 10:28	05/13/10 15:59	208-96-8	
Anthracene	**2.5U**	ug/kg	40.4	2.5	1	05/13/10 10:28	05/13/10 15:59	120-12-7	
Benzo(a)anthracene	**3.6U**	ug/kg	40.4	3.6	1	05/13/10 10:28	05/13/10 15:59	56-55-3	
Benzo(a)pyrene	**4.4U**	ug/kg	40.4	4.4	1	05/13/10 10:28	05/13/10 15:59	50-32-8	
Benzo(b)fluoranthene	**2.8U**	ug/kg	40.4	2.8	1	05/13/10 10:28	05/13/10 15:59	205-99-2	
Benzo(g,h,i)perylene	**3.7U**	ug/kg	40.4	3.7	1	05/13/10 10:28	05/13/10 15:59	191-24-2	
Benzo(k)fluoranthene	**6.0U**	ug/kg	40.4	6.0	1	05/13/10 10:28	05/13/10 15:59	207-08-9	
Chrysene	**3.6U**	ug/kg	40.4	3.6	1	05/13/10 10:28	05/13/10 15:59	218-01-9	
Dibenz(a,h)anthracene	**4.3U**	ug/kg	40.4	4.3	1	05/13/10 10:28	05/13/10 15:59	53-70-3	
Fluoranthene	**4.5U**	ug/kg	40.4	4.5	1	05/13/10 10:28	05/13/10 15:59	206-44-0	
Fluorene	**3.0U**	ug/kg	40.4	3.0	1	05/13/10 10:28	05/13/10 15:59	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.3U**	ug/kg	40.4	4.3	1	05/13/10 10:28	05/13/10 15:59	193-39-5	
1-Methylnaphthalene	**5.1U**	ug/kg	40.4	5.1	1	05/13/10 10:28	05/13/10 15:59	90-12-0	
2-Methylnaphthalene	**5.6U**	ug/kg	40.4	5.6	1	05/13/10 10:28	05/13/10 15:59	91-57-6	
Naphthalene	**4.3U**	ug/kg	40.4	4.3	1	05/13/10 10:28	05/13/10 15:59	91-20-3	
Phenanthrene	**3.8U**	ug/kg	40.4	3.8	1	05/13/10 10:28	05/13/10 15:59	85-01-8	
Pyrene	**4.9U**	ug/kg	40.4	4.9	1	05/13/10 10:28	05/13/10 15:59	129-00-0	

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: TB **Lab ID: 3511394002** Collected: 05/07/10 04:00 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Nitrobenzene-d5 (S)	56	%	10-110		1	05/13/10 10:28	05/13/10 15:59	4165-60-0	
2-Fluorobiphenyl (S)	59	%	18-110		1	05/13/10 10:28	05/13/10 15:59	321-60-8	
Terphenyl-d14 (S)	70	%	10-123		1	05/13/10 10:28	05/13/10 15:59	1718-51-0	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260								
Acetone	**11.8U**	ug/kg	23.6	11.8	1		05/13/10 15:27	67-64-1	
Benzene	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	71-43-2	
Bromodichloromethane	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	75-27-4	
Bromoform	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	75-25-2	
Bromomethane	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	74-83-9	
2-Butanone (MEK)	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	78-93-3	
Carbon disulfide	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	75-15-0	
Carbon tetrachloride	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	56-23-5	
Chlorobenzene	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	108-90-7	
Chloroethane	**4.2U**	ug/kg	5.9	4.2	1		05/13/10 15:27	75-00-3	
Chloroform	**3.5U**	ug/kg	5.9	3.5	1		05/13/10 15:27	67-66-3	
Chloromethane	**3.3U**	ug/kg	5.9	3.3	1		05/13/10 15:27	74-87-3	
Dibromochloromethane	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	124-48-1	
1,1-Dichloroethane	**3.2U**	ug/kg	5.9	3.2	1		05/13/10 15:27	75-34-3	
1,2-Dichloroethane	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	107-06-2	
1,1-Dichloroethene	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	75-35-4	
cis-1,2-Dichloroethene	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	156-59-2	
trans-1,2-Dichloroethene	**3.6U**	ug/kg	5.9	3.6	1		05/13/10 15:27	156-60-5	
1,2-Dichloropropane	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	78-87-5	
cis-1,3-Dichloropropene	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	10061-01-5	
trans-1,3-Dichloropropene	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	10061-02-6	
Ethylbenzene	**3.3U**	ug/kg	5.9	3.3	1		05/13/10 15:27	100-41-4	
2-Hexanone	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	591-78-6	
Methylene Chloride	**4.9 I**	ug/kg	5.9	3.0	1		05/13/10 15:27	75-09-2	V,Z3
4-Methyl-2-pentanone (MIBK)	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	108-10-1	
Methyl-tert-butyl ether	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	1634-04-4	
Styrene	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	100-42-5	
1,1,2,2-Tetrachloroethane	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	79-34-5	
Tetrachloroethene	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	127-18-4	
Toluene	**3.2U**	ug/kg	5.9	3.2	1		05/13/10 15:27	108-88-3	
1,1,1-Trichloroethane	**3.2U**	ug/kg	5.9	3.2	1		05/13/10 15:27	71-55-6	
1,1,2-Trichloroethane	**3.0U**	ug/kg	5.9	3.0	1		05/13/10 15:27	79-00-5	
Trichloroethene	**3.3U**	ug/kg	5.9	3.3	1		05/13/10 15:27	79-01-6	
Vinyl chloride	**3.2U**	ug/kg	5.9	3.2	1		05/13/10 15:27	75-01-4	
Xylene (Total)	**6.1U**	ug/kg	17.7	6.1	1		05/13/10 15:27	1330-20-7	
Dibromofluoromethane (S)	100	%	82-115		1		05/13/10 15:27	1868-53-7	
Toluene-d8 (S)	98	%	84-117		1		05/13/10 15:27	2037-26-5	
4-Bromofluorobenzene (S)	95	%	55-148		1		05/13/10 15:27	460-00-4	1p
1,2-Dichloroethane-d4 (S)	94	%	80-131		1		05/13/10 15:27	17060-07-0	

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Woodland Bayou **Lab ID: 3511394003** Collected: 05/07/10 03:30 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Aluminum	**6700**	mg/kg	8.0	4.0	1	05/13/10 13:40	05/13/10 21:14	7429-90-5	
Antimony	**0.60U**	mg/kg	1.2	0.60	1	05/13/10 13:40	05/13/10 21:14	7440-36-0	
Arsenic	**15.2**	mg/kg	0.80	0.40	1	05/13/10 13:40	05/13/10 21:14	7440-38-2	
Barium	**5.0**	mg/kg	0.80	0.40	1	05/13/10 13:40	05/13/10 21:14	7440-39-3	
Beryllium	**0.49**	mg/kg	0.080	0.040	1	05/13/10 13:40	05/13/10 21:14	7440-41-7	
Cadmium	**0.45**	mg/kg	0.080	0.040	1	05/13/10 13:40	05/13/10 21:14	7440-43-9	
Calcium	**2740**	mg/kg	40.2	20.1	1	05/13/10 13:40	05/13/10 21:14	7440-70-2	
Chromium	**36.7**	mg/kg	0.40	0.20	1	05/13/10 13:40	05/13/10 21:14	7440-47-3	
Cobalt	**1.2**	mg/kg	0.80	0.40	1	05/13/10 13:40	05/13/10 21:14	7440-48-4	
Copper	**57.1**	mg/kg	0.40	0.20	1	05/13/10 13:40	05/13/10 21:14	7440-50-8	
Iron	**13400**	mg/kg	3.2	1.6	1	05/13/10 13:40	05/13/10 21:14	7439-89-6	
Lead	**21.4**	mg/kg	0.80	0.40	1	05/13/10 13:40	05/13/10 21:14	7439-92-1	
Magnesium	**5800**	mg/kg	40.2	20.1	1	05/13/10 13:40	05/13/10 21:14	7439-95-4	
Manganese	**75.9**	mg/kg	0.40	0.20	1	05/13/10 13:40	05/13/10 21:14	7439-96-5	
Nickel	**4.8**	mg/kg	0.40	0.20	1	05/13/10 13:40	05/13/10 21:14	7440-02-0	
Potassium	**2300**	mg/kg	80.5	40.2	1	05/13/10 13:40	05/13/10 21:14	7440-09-7	
Selenium	**0.93 I**	mg/kg	1.2	0.60	1	05/13/10 13:40	05/13/10 21:14	7782-49-2	
Silver	**0.20U**	mg/kg	0.40	0.20	1	05/13/10 13:40	05/13/10 21:14	7440-22-4	
Sodium	**26900**	mg/kg	80.5	40.2	1	05/13/10 13:40	05/13/10 21:14	7440-23-5	
Thallium	**0.60U**	mg/kg	1.2	0.60	1	05/13/10 13:40	05/13/10 21:14	7440-28-0	
Vanadium	**13.8**	mg/kg	0.80	0.40	1	05/13/10 13:40	05/13/10 21:14	7440-62-2	
Zinc	**95.0**	mg/kg	1.6	0.80	1	05/13/10 13:40	05/13/10 21:14	7440-66-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.098**	mg/kg	0.033	0.0082	1	05/13/10 13:50	05/17/10 12:29	7439-97-6	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**54.2U**	ug/kg	540	54.2	1	05/13/10 10:28	05/13/10 16:28	83-32-9	
Acenaphthylene	**64.0U**	ug/kg	540	64.0	1	05/13/10 10:28	05/13/10 16:28	208-96-8	
Anthracene	**76.8 I**	ug/kg	540	33.5	1	05/13/10 10:28	05/13/10 16:28	120-12-7	
Benzo(a)anthracene	**48.4U**	ug/kg	540	48.4	1	05/13/10 10:28	05/13/10 16:28	56-55-3	
Benzo(a)pyrene	**133 I**	ug/kg	540	59.2	1	05/13/10 10:28	05/13/10 16:28	50-32-8	
Benzo(b)fluoranthene	**38.0U**	ug/kg	540	38.0	1	05/13/10 10:28	05/13/10 16:28	205-99-2	
Benzo(g,h,i)perylene	**87.2 I**	ug/kg	540	49.9	1	05/13/10 10:28	05/13/10 16:28	191-24-2	
Benzo(k)fluoranthene	**80.4U**	ug/kg	540	80.4	1	05/13/10 10:28	05/13/10 16:28	207-08-9	
Chrysene	**48.4U**	ug/kg	540	48.4	1	05/13/10 10:28	05/13/10 16:28	218-01-9	
Dibenz(a,h)anthracene	**57.8U**	ug/kg	540	57.8	1	05/13/10 10:28	05/13/10 16:28	53-70-3	
Fluoranthene	**260 I**	ug/kg	540	60.6	1	05/13/10 10:28	05/13/10 16:28	206-44-0	
Fluorene	**40.7U**	ug/kg	540	40.7	1	05/13/10 10:28	05/13/10 16:28	86-73-7	
Indeno(1,2,3-cd)pyrene	**57.5U**	ug/kg	540	57.5	1	05/13/10 10:28	05/13/10 16:28	193-39-5	
1-Methylnaphthalene	**68.4U**	ug/kg	540	68.4	1	05/13/10 10:28	05/13/10 16:28	90-12-0	
2-Methylnaphthalene	**75.3U**	ug/kg	540	75.3	1	05/13/10 10:28	05/13/10 16:28	91-57-6	
Naphthalene	**57.6U**	ug/kg	540	57.6	1	05/13/10 10:28	05/13/10 16:28	91-20-3	
Phenanthrene	**95.8 I**	ug/kg	540	51.3	1	05/13/10 10:28	05/13/10 16:28	85-01-8	
Pyrene	**188 I**	ug/kg	540	65.7	1	05/13/10 10:28	05/13/10 16:28	129-00-0	

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Woodland Bayou **Lab ID: 3511394003** Collected: 05/07/10 03:30 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Nitrobenzene-d5 (S)	56	%	10-110		1	05/13/10 10:28	05/13/10 16:28	4165-60-0	
2-Fluorobiphenyl (S)	52	%	18-110		1	05/13/10 10:28	05/13/10 16:28	321-60-8	
Terphenyl-d14 (S)	42	%	10-123		1	05/13/10 10:28	05/13/10 16:28	1718-51-0	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260								
Acetone	**91.8U**	ug/kg	184	91.8	1		05/13/10 15:53	67-64-1	
Benzene	**23.5U**	ug/kg	45.9	23.5	1		05/13/10 15:53	71-43-2	
Bromodichloromethane	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	75-27-4	
Bromoform	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	75-25-2	
Bromomethane	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	74-83-9	
2-Butanone (MEK)	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	78-93-3	
Carbon disulfide	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	75-15-0	
Carbon tetrachloride	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	56-23-5	
Chlorobenzene	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	108-90-7	
Chloroethane	**32.9U**	ug/kg	45.9	32.9	1		05/13/10 15:53	75-00-3	
Chloroform	**27.2U**	ug/kg	45.9	27.2	1		05/13/10 15:53	67-66-3	
Chloromethane	**25.7U**	ug/kg	45.9	25.7	1		05/13/10 15:53	74-87-3	
Dibromochloromethane	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	124-48-1	
1,1-Dichloroethane	**25.1U**	ug/kg	45.9	25.1	1		05/13/10 15:53	75-34-3	
1,2-Dichloroethane	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	107-06-2	
1,1-Dichloroethene	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	75-35-4	
cis-1,2-Dichloroethene	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	156-59-2	
trans-1,2-Dichloroethene	**28.0U**	ug/kg	45.9	28.0	1		05/13/10 15:53	156-60-5	
1,2-Dichloropropane	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	78-87-5	
cis-1,3-Dichloropropene	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	10061-01-5	
trans-1,3-Dichloropropene	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	10061-02-6	
Ethylbenzene	**26.0U**	ug/kg	45.9	26.0	1		05/13/10 15:53	100-41-4	
2-Hexanone	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	591-78-6	
Methylene Chloride	**50.6**	ug/kg	45.9	22.9	1		05/13/10 15:53	75-09-2	V,Z3
4-Methyl-2-pentanone (MIBK)	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	108-10-1	
Methyl-tert-butyl ether	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	1634-04-4	
Styrene	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	100-42-5	
1,1,2,2-Tetrachloroethane	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	79-34-5	
Tetrachloroethene	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	127-18-4	
Toluene	**24.8U**	ug/kg	45.9	24.8	1		05/13/10 15:53	108-88-3	
1,1,1-Trichloroethane	**25.1U**	ug/kg	45.9	25.1	1		05/13/10 15:53	71-55-6	
1,1,2-Trichloroethane	**22.9U**	ug/kg	45.9	22.9	1		05/13/10 15:53	79-00-5	
Trichloroethene	**25.9U**	ug/kg	45.9	25.9	1		05/13/10 15:53	79-01-6	
Vinyl chloride	**24.7U**	ug/kg	45.9	24.7	1		05/13/10 15:53	75-01-4	
Xylene (Total)	**47.2U**	ug/kg	138	47.2	1		05/13/10 15:53	1330-20-7	
Dibromofluoromethane (S)	98	%	82-115		1		05/13/10 15:53	1868-53-7	
Toluene-d8 (S)	94	%	84-117		1		05/13/10 15:53	2037-26-5	
4-Bromofluorobenzene (S)	80	%	55-148		1		05/13/10 15:53	460-00-4	1p
1,2-Dichloroethane-d4 (S)	90	%	80-131		1		05/13/10 15:53	17060-07-0	

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Navy Cove **Lab ID: 3511394004** Collected: 05/07/10 03:15 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Nitrobenzene-d5 (S)	61	%	10-110		1	05/13/10 10:28	05/13/10 16:57	4165-60-0	
2-Fluorobiphenyl (S)	68	%	18-110		1	05/13/10 10:28	05/13/10 16:57	321-60-8	
Terphenyl-d14 (S)	74	%	10-123		1	05/13/10 10:28	05/13/10 16:57	1718-51-0	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260								
Acetone	**12.0U**	ug/kg	24.0	12.0	1		05/13/10 16:20	67-64-1	
Benzene	**3.1U**	ug/kg	6.0	3.1	1		05/13/10 16:20	71-43-2	
Bromodichloromethane	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	75-27-4	
Bromoform	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	75-25-2	
Bromomethane	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	74-83-9	
2-Butanone (MEK)	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	78-93-3	
Carbon disulfide	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	75-15-0	
Carbon tetrachloride	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	56-23-5	
Chlorobenzene	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	108-90-7	
Chloroethane	**4.3U**	ug/kg	6.0	4.3	1		05/13/10 16:20	75-00-3	
Chloroform	**3.6U**	ug/kg	6.0	3.6	1		05/13/10 16:20	67-66-3	
Chloromethane	**3.4U**	ug/kg	6.0	3.4	1		05/13/10 16:20	74-87-3	
Dibromochloromethane	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	124-48-1	
1,1-Dichloroethane	**3.3U**	ug/kg	6.0	3.3	1		05/13/10 16:20	75-34-3	
1,2-Dichloroethane	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	107-06-2	
1,1-Dichloroethene	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	75-35-4	
cis-1,2-Dichloroethene	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	156-59-2	
trans-1,2-Dichloroethene	**3.7U**	ug/kg	6.0	3.7	1		05/13/10 16:20	156-60-5	
1,2-Dichloropropane	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	78-87-5	
cis-1,3-Dichloropropene	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	10061-01-5	
trans-1,3-Dichloropropene	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	10061-02-6	
Ethylbenzene	**3.4U**	ug/kg	6.0	3.4	1		05/13/10 16:20	100-41-4	
2-Hexanone	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	591-78-6	
Methylene Chloride	**4.6 I**	ug/kg	6.0	3.0	1		05/13/10 16:20	75-09-2	V,Z3
4-Methyl-2-pentanone (MIBK)	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	108-10-1	
Methyl-tert-butyl ether	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	1634-04-4	
Styrene	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	100-42-5	
1,1,2,2-Tetrachloroethane	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	79-34-5	
Tetrachloroethene	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	127-18-4	
Toluene	**3.2U**	ug/kg	6.0	3.2	1		05/13/10 16:20	108-88-3	
1,1,1-Trichloroethane	**3.3U**	ug/kg	6.0	3.3	1		05/13/10 16:20	71-55-6	
1,1,2-Trichloroethane	**3.0U**	ug/kg	6.0	3.0	1		05/13/10 16:20	79-00-5	
Trichloroethene	**3.4U**	ug/kg	6.0	3.4	1		05/13/10 16:20	79-01-6	
Vinyl chloride	**3.2U**	ug/kg	6.0	3.2	1		05/13/10 16:20	75-01-4	
Xylene (Total)	**6.2U**	ug/kg	18.0	6.2	1		05/13/10 16:20	1330-20-7	
Dibromofluoromethane (S)	100	%	82-115		1		05/13/10 16:20	1868-53-7	
Toluene-d8 (S)	99	%	84-117		1		05/13/10 16:20	2037-26-5	
4-Bromofluorobenzene (S)	94	%	55-148		1		05/13/10 16:20	460-00-4	1p
1,2-Dichloroethane-d4 (S)	98	%	80-131		1		05/13/10 16:20	17060-07-0	

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Navy Cove **Lab ID: 3511394004** Collected: 05/07/10 03:15 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Aluminum	**101**	mg/kg	5.1	2.6	1	05/13/10 13:40	05/13/10 21:19	7429-90-5	
Antimony	**0.38U**	mg/kg	0.77	0.38	1	05/13/10 13:40	05/13/10 21:19	7440-36-0	
Arsenic	**0.58**	mg/kg	0.51	0.26	1	05/13/10 13:40	05/13/10 21:19	7440-38-2	
Barium	**0.46 I**	mg/kg	0.51	0.26	1	05/13/10 13:40	05/13/10 21:19	7440-39-3	
Beryllium	**0.026U**	mg/kg	0.051	0.026	1	05/13/10 13:40	05/13/10 21:19	7440-41-7	
Cadmium	**0.026U**	mg/kg	0.051	0.026	1	05/13/10 13:40	05/13/10 21:19	7440-43-9	
Calcium	**2880**	mg/kg	25.5	12.8	1	05/13/10 13:40	05/13/10 21:19	7440-70-2	
Chromium	**4.0**	mg/kg	0.26	0.13	1	05/13/10 13:40	05/13/10 21:19	7440-47-3	
Cobalt	**0.26U**	mg/kg	0.51	0.26	1	05/13/10 13:40	05/13/10 21:19	7440-48-4	
Copper	**2.2**	mg/kg	0.26	0.13	1	05/13/10 13:40	05/13/10 21:19	7440-50-8	
Iron	**431**	mg/kg	2.0	1.0	1	05/13/10 13:40	05/13/10 21:19	7439-89-6	
Lead	**12.5**	mg/kg	0.51	0.26	1	05/13/10 13:40	05/13/10 21:19	7439-92-1	
Magnesium	**209**	mg/kg	25.5	12.8	1	05/13/10 13:40	05/13/10 21:19	7439-95-4	
Manganese	**3.6**	mg/kg	0.26	0.13	1	05/13/10 13:40	05/13/10 21:19	7439-96-5	
Nickel	**0.13U**	mg/kg	0.26	0.13	1	05/13/10 13:40	05/13/10 21:19	7440-02-0	
Potassium	**52.6**	mg/kg	51.1	25.5	1	05/13/10 13:40	05/13/10 21:19	7440-09-7	
Selenium	**0.38U**	mg/kg	0.77	0.38	1	05/13/10 13:40	05/13/10 21:19	7782-49-2	
Silver	**0.13U**	mg/kg	0.26	0.13	1	05/13/10 13:40	05/13/10 21:19	7440-22-4	
Sodium	**776**	mg/kg	51.1	25.5	1	05/13/10 13:40	05/13/10 21:19	7440-23-5	
Thallium	**0.38U**	mg/kg	0.77	0.38	1	05/13/10 13:40	05/13/10 21:19	7440-28-0	
Vanadium	**0.83**	mg/kg	0.51	0.26	1	05/13/10 13:40	05/13/10 21:19	7440-62-2	
Zinc	**1.8**	mg/kg	1.0	0.51	1	05/13/10 13:40	05/13/10 21:19	7440-66-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.0024U**	mg/kg	0.0097	0.0024	1	05/13/10 13:50	05/17/10 12:32	7439-97-6	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.1U**	ug/kg	40.8	4.1	1	05/13/10 10:28	05/13/10 16:57	83-32-9	
Acenaphthylene	**4.8U**	ug/kg	40.8	4.8	1	05/13/10 10:28	05/13/10 16:57	208-96-8	
Anthracene	**3.8 I**	ug/kg	40.8	2.5	1	05/13/10 10:28	05/13/10 16:57	120-12-7	
Benzo(a)anthracene	**12.4 I**	ug/kg	40.8	3.7	1	05/13/10 10:28	05/13/10 16:57	56-55-3	
Benzo(a)pyrene	**7.2 I**	ug/kg	40.8	4.5	1	05/13/10 10:28	05/13/10 16:57	50-32-8	
Benzo(b)fluoranthene	**9.1 I**	ug/kg	40.8	2.9	1	05/13/10 10:28	05/13/10 16:57	205-99-2	
Benzo(g,h,i)perylene	**3.8U**	ug/kg	40.8	3.8	1	05/13/10 10:28	05/13/10 16:57	191-24-2	
Benzo(k)fluoranthene	**6.1U**	ug/kg	40.8	6.1	1	05/13/10 10:28	05/13/10 16:57	207-08-9	
Chrysene	**9.8 I**	ug/kg	40.8	3.7	1	05/13/10 10:28	05/13/10 16:57	218-01-9	
Dibenz(a,h)anthracene	**4.4U**	ug/kg	40.8	4.4	1	05/13/10 10:28	05/13/10 16:57	53-70-3	
Fluoranthene	**8.7 I**	ug/kg	40.8	4.6	1	05/13/10 10:28	05/13/10 16:57	206-44-0	
Fluorene	**3.1U**	ug/kg	40.8	3.1	1	05/13/10 10:28	05/13/10 16:57	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.3U**	ug/kg	40.8	4.3	1	05/13/10 10:28	05/13/10 16:57	193-39-5	
1-Methylnaphthalene	**5.2U**	ug/kg	40.8	5.2	1	05/13/10 10:28	05/13/10 16:57	90-12-0	
2-Methylnaphthalene	**5.7U**	ug/kg	40.8	5.7	1	05/13/10 10:28	05/13/10 16:57	91-57-6	
Naphthalene	**4.4U**	ug/kg	40.8	4.4	1	05/13/10 10:28	05/13/10 16:57	91-20-3	
Phenanthrene	**7.5 I**	ug/kg	40.8	3.9	1	05/13/10 10:28	05/13/10 16:57	85-01-8	
Pyrene	**14.3 I**	ug/kg	40.8	5.0	1	05/13/10 10:28	05/13/10 16:57	129-00-0	

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Pace Analytical Services, Inc.
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Catawba **Lab ID: 3511394005** Collected: 05/07/10 03:00 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Aluminum	**57.9**	mg/kg	5.5	2.7	1	05/13/10 13:40	05/13/10 21:23	7429-90-5	
Antimony	**0.41U**	mg/kg	0.82	0.41	1	05/13/10 13:40	05/13/10 21:23	7440-36-0	
Arsenic	**0.27U**	mg/kg	0.55	0.27	1	05/13/10 13:40	05/13/10 21:23	7440-38-2	
Barium	**0.27U**	mg/kg	0.55	0.27	1	05/13/10 13:40	05/13/10 21:23	7440-39-3	
Beryllium	**0.027U**	mg/kg	0.055	0.027	1	05/13/10 13:40	05/13/10 21:23	7440-41-7	
Cadmium	**0.027U**	mg/kg	0.055	0.027	1	05/13/10 13:40	05/13/10 21:23	7440-43-9	
Calcium	**83.0**	mg/kg	27.3	13.6	1	05/13/10 13:40	05/13/10 21:23	7440-70-2	
Chromium	**0.14 I**	mg/kg	0.27	0.14	1	05/13/10 13:40	05/13/10 21:23	7440-47-3	
Cobalt	**0.27U**	mg/kg	0.55	0.27	1	05/13/10 13:40	05/13/10 21:23	7440-48-4	
Copper	**0.18 I**	mg/kg	0.27	0.14	1	05/13/10 13:40	05/13/10 21:23	7440-50-8	
Iron	**54.5**	mg/kg	2.2	1.1	1	05/13/10 13:40	05/13/10 21:23	7439-89-6	
Lead	**0.27U**	mg/kg	0.55	0.27	1	05/13/10 13:40	05/13/10 21:23	7439-92-1	
Magnesium	**190**	mg/kg	27.3	13.6	1	05/13/10 13:40	05/13/10 21:23	7439-95-4	
Manganese	**0.18 I**	mg/kg	0.27	0.14	1	05/13/10 13:40	05/13/10 21:23	7439-96-5	
Nickel	**0.14U**	mg/kg	0.27	0.14	1	05/13/10 13:40	05/13/10 21:23	7440-02-0	
Potassium	**81.9**	mg/kg	54.6	27.3	1	05/13/10 13:40	05/13/10 21:23	7440-09-7	
Selenium	**0.41U**	mg/kg	0.82	0.41	1	05/13/10 13:40	05/13/10 21:23	7782-49-2	
Silver	**0.14U**	mg/kg	0.27	0.14	1	05/13/10 13:40	05/13/10 21:23	7440-22-4	
Sodium	**1340**	mg/kg	54.6	27.3	1	05/13/10 13:40	05/13/10 21:23	7440-23-5	
Thallium	**0.41U**	mg/kg	0.82	0.41	1	05/13/10 13:40	05/13/10 21:23	7440-28-0	
Vanadium	**0.27U**	mg/kg	0.55	0.27	1	05/13/10 13:40	05/13/10 21:23	7440-62-2	
Zinc	**0.68 I**	mg/kg	1.1	0.55	1	05/13/10 13:40	05/13/10 21:23	7440-66-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.0025U**	mg/kg	0.0099	0.0025	1	05/13/10 13:50	05/17/10 12:35	7439-97-6	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.2U**	ug/kg	42.2	4.2	1	05/13/10 10:28	05/13/10 17:26	83-32-9	
Acenaphthylene	**5.0U**	ug/kg	42.2	5.0	1	05/13/10 10:28	05/13/10 17:26	208-96-8	
Anthracene	**2.6U**	ug/kg	42.2	2.6	1	05/13/10 10:28	05/13/10 17:26	120-12-7	
Benzo(a)anthracene	**3.8U**	ug/kg	42.2	3.8	1	05/13/10 10:28	05/13/10 17:26	56-55-3	
Benzo(a)pyrene	**4.6U**	ug/kg	42.2	4.6	1	05/13/10 10:28	05/13/10 17:26	50-32-8	
Benzo(b)fluoranthene	**3.0U**	ug/kg	42.2	3.0	1	05/13/10 10:28	05/13/10 17:26	205-99-2	
Benzo(g,h,i)perylene	**3.9U**	ug/kg	42.2	3.9	1	05/13/10 10:28	05/13/10 17:26	191-24-2	
Benzo(k)fluoranthene	**6.3U**	ug/kg	42.2	6.3	1	05/13/10 10:28	05/13/10 17:26	207-08-9	
Chrysene	**3.8U**	ug/kg	42.2	3.8	1	05/13/10 10:28	05/13/10 17:26	218-01-9	
Dibenz(a,h)anthracene	**4.5U**	ug/kg	42.2	4.5	1	05/13/10 10:28	05/13/10 17:26	53-70-3	
Fluoranthene	**4.7U**	ug/kg	42.2	4.7	1	05/13/10 10:28	05/13/10 17:26	206-44-0	
Fluorene	**3.2U**	ug/kg	42.2	3.2	1	05/13/10 10:28	05/13/10 17:26	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.5U**	ug/kg	42.2	4.5	1	05/13/10 10:28	05/13/10 17:26	193-39-5	
1-Methylnaphthalene	**5.3U**	ug/kg	42.2	5.3	1	05/13/10 10:28	05/13/10 17:26	90-12-0	
2-Methylnaphthalene	**5.9U**	ug/kg	42.2	5.9	1	05/13/10 10:28	05/13/10 17:26	91-57-6	
Naphthalene	**4.5U**	ug/kg	42.2	4.5	1	05/13/10 10:28	05/13/10 17:26	91-20-3	
Phenanthrene	**4.0U**	ug/kg	42.2	4.0	1	05/13/10 10:28	05/13/10 17:26	85-01-8	
Pyrene	**5.1U**	ug/kg	42.2	5.1	1	05/13/10 10:28	05/13/10 17:26	129-00-0	

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Catawba **Lab ID: 3511394005** Collected: 05/07/10 03:00 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Nitrobenzene-d5 (S)	58	%	10-110		1	05/13/10 10:28	05/13/10 17:26	4165-60-0	
2-Fluorobiphenyl (S)	66	%	18-110		1	05/13/10 10:28	05/13/10 17:26	321-60-8	
Terphenyl-d14 (S)	72	%	10-123		1	05/13/10 10:28	05/13/10 17:26	1718-51-0	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260								
Acetone	**13.8U**	ug/kg	27.6	13.8	1		05/13/10 16:47	67-64-1	
Benzene	**3.5U**	ug/kg	6.9	3.5	1		05/13/10 16:47	71-43-2	
Bromodichloromethane	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	75-27-4	
Bromoform	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	75-25-2	
Bromomethane	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	74-83-9	
2-Butanone (MEK)	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	78-93-3	
Carbon disulfide	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	75-15-0	
Carbon tetrachloride	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	56-23-5	
Chlorobenzene	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	108-90-7	
Chloroethane	**5.0U**	ug/kg	6.9	5.0	1		05/13/10 16:47	75-00-3	
Chloroform	**4.1U**	ug/kg	6.9	4.1	1		05/13/10 16:47	67-66-3	
Chloromethane	**3.9U**	ug/kg	6.9	3.9	1		05/13/10 16:47	74-87-3	
Dibromochloromethane	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	124-48-1	
1,1-Dichloroethane	**3.8U**	ug/kg	6.9	3.8	1		05/13/10 16:47	75-34-3	
1,2-Dichloroethane	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	107-06-2	
1,1-Dichloroethene	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	75-35-4	
cis-1,2-Dichloroethene	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	156-59-2	
trans-1,2-Dichloroethene	**4.2U**	ug/kg	6.9	4.2	1		05/13/10 16:47	156-60-5	
1,2-Dichloropropane	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	78-87-5	
cis-1,3-Dichloropropene	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	10061-01-5	
trans-1,3-Dichloropropene	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	10061-02-6	
Ethylbenzene	**3.9U**	ug/kg	6.9	3.9	1		05/13/10 16:47	100-41-4	
2-Hexanone	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	591-78-6	
Methylene Chloride	**4.8 I**	ug/kg	6.9	3.4	1		05/13/10 16:47	75-09-2	V,Z3
4-Methyl-2-pentanone (MIBK)	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	108-10-1	
Methyl-tert-butyl ether	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	1634-04-4	
Styrene	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	100-42-5	
1,1,2,2-Tetrachloroethane	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	79-34-5	
Tetrachloroethene	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	127-18-4	
Toluene	**3.7U**	ug/kg	6.9	3.7	1		05/13/10 16:47	108-88-3	
1,1,1-Trichloroethane	**3.8U**	ug/kg	6.9	3.8	1		05/13/10 16:47	71-55-6	
1,1,2-Trichloroethane	**3.4U**	ug/kg	6.9	3.4	1		05/13/10 16:47	79-00-5	
Trichloroethene	**3.9U**	ug/kg	6.9	3.9	1		05/13/10 16:47	79-01-6	
Vinyl chloride	**3.7U**	ug/kg	6.9	3.7	1		05/13/10 16:47	75-01-4	
Xylene (Total)	**7.1U**	ug/kg	20.7	7.1	1		05/13/10 16:47	1330-20-7	
Dibromofluoromethane (S)	99	%	82-115		1		05/13/10 16:47	1868-53-7	
Toluene-d8 (S)	99	%	84-117		1		05/13/10 16:47	2037-26-5	
4-Bromofluorobenzene (S)	94	%	55-148		1		05/13/10 16:47	460-00-4	1p
1,2-Dichloroethane-d4 (S)	95	%	80-131		1		05/13/10 16:47	17060-07-0	

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Malago **Lab ID: 3511394006** Collected: 05/07/10 03:10 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Aluminum	**157**	mg/kg	5.0	2.5	1	05/13/10 13:40	05/13/10 21:27	7429-90-5	
Antimony	**0.37U**	mg/kg	0.75	0.37	1	05/13/10 13:40	05/13/10 21:27	7440-36-0	
Arsenic	**0.25U**	mg/kg	0.50	0.25	1	05/13/10 13:40	05/13/10 21:27	7440-38-2	
Barium	**0.32 I**	mg/kg	0.50	0.25	1	05/13/10 13:40	05/13/10 21:27	7440-39-3	
Beryllium	**0.025U**	mg/kg	0.050	0.025	1	05/13/10 13:40	05/13/10 21:27	7440-41-7	
Cadmium	**0.025U**	mg/kg	0.050	0.025	1	05/13/10 13:40	05/13/10 21:27	7440-43-9	
Calcium	**40.6**	mg/kg	25.0	12.5	1	05/13/10 13:40	05/13/10 21:27	7440-70-2	
Chromium	**0.27**	mg/kg	0.25	0.12	1	05/13/10 13:40	05/13/10 21:27	7440-47-3	
Cobalt	**0.25U**	mg/kg	0.50	0.25	1	05/13/10 13:40	05/13/10 21:27	7440-48-4	
Copper	**0.25**	mg/kg	0.25	0.12	1	05/13/10 13:40	05/13/10 21:27	7440-50-8	
Iron	**137**	mg/kg	2.0	1.0	1	05/13/10 13:40	05/13/10 21:27	7439-89-6	
Lead	**0.31 I**	mg/kg	0.50	0.25	1	05/13/10 13:40	05/13/10 21:27	7439-92-1	
Magnesium	**78.5**	mg/kg	25.0	12.5	1	05/13/10 13:40	05/13/10 21:27	7439-95-4	
Manganese	**0.38**	mg/kg	0.25	0.12	1	05/13/10 13:40	05/13/10 21:27	7439-96-5	
Nickel	**0.12U**	mg/kg	0.25	0.12	1	05/13/10 13:40	05/13/10 21:27	7440-02-0	
Potassium	**32.8 I**	mg/kg	50.0	25.0	1	05/13/10 13:40	05/13/10 21:27	7440-09-7	
Selenium	**0.37U**	mg/kg	0.75	0.37	1	05/13/10 13:40	05/13/10 21:27	7782-49-2	
Silver	**0.12U**	mg/kg	0.25	0.12	1	05/13/10 13:40	05/13/10 21:27	7440-22-4	
Sodium	**520**	mg/kg	50.0	25.0	1	05/13/10 13:40	05/13/10 21:27	7440-23-5	
Thallium	**0.37U**	mg/kg	0.75	0.37	1	05/13/10 13:40	05/13/10 21:27	7440-28-0	
Vanadium	**0.30 I**	mg/kg	0.50	0.25	1	05/13/10 13:40	05/13/10 21:27	7440-62-2	
Zinc	**0.61 I**	mg/kg	1.0	0.50	1	05/13/10 13:40	05/13/10 21:27	7440-66-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.0025U**	mg/kg	0.010	0.0025	1	05/13/10 13:50	05/17/10 12:38	7439-97-6	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.3U**	ug/kg	42.4	4.3	1	05/13/10 10:28	05/13/10 17:55	83-32-9	
Acenaphthylene	**5.0U**	ug/kg	42.4	5.0	1	05/13/10 10:28	05/13/10 17:55	208-96-8	
Anthracene	**2.6U**	ug/kg	42.4	2.6	1	05/13/10 10:28	05/13/10 17:55	120-12-7	
Benzo(a)anthracene	**3.8U**	ug/kg	42.4	3.8	1	05/13/10 10:28	05/13/10 17:55	56-55-3	
Benzo(a)pyrene	**4.6U**	ug/kg	42.4	4.6	1	05/13/10 10:28	05/13/10 17:55	50-32-8	
Benzo(b)fluoranthene	**3.0U**	ug/kg	42.4	3.0	1	05/13/10 10:28	05/13/10 17:55	205-99-2	
Benzo(g,h,i)perylene	**3.9U**	ug/kg	42.4	3.9	1	05/13/10 10:28	05/13/10 17:55	191-24-2	
Benzo(k)fluoranthene	**6.3U**	ug/kg	42.4	6.3	1	05/13/10 10:28	05/13/10 17:55	207-08-9	
Chrysene	**3.8U**	ug/kg	42.4	3.8	1	05/13/10 10:28	05/13/10 17:55	218-01-9	
Dibenz(a,h)anthracene	**4.5U**	ug/kg	42.4	4.5	1	05/13/10 10:28	05/13/10 17:55	53-70-3	
Fluoranthene	**4.8U**	ug/kg	42.4	4.8	1	05/13/10 10:28	05/13/10 17:55	206-44-0	
Fluorene	**3.2U**	ug/kg	42.4	3.2	1	05/13/10 10:28	05/13/10 17:55	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.5U**	ug/kg	42.4	4.5	1	05/13/10 10:28	05/13/10 17:55	193-39-5	
1-Methylnaphthalene	**5.4U**	ug/kg	42.4	5.4	1	05/13/10 10:28	05/13/10 17:55	90-12-0	
2-Methylnaphthalene	**5.9U**	ug/kg	42.4	5.9	1	05/13/10 10:28	05/13/10 17:55	91-57-6	
Naphthalene	**4.5U**	ug/kg	42.4	4.5	1	05/13/10 10:28	05/13/10 17:55	91-20-3	
Phenanthrene	**4.0U**	ug/kg	42.4	4.0	1	05/13/10 10:28	05/13/10 17:55	85-01-8	
Pyrene	**5.2U**	ug/kg	42.4	5.2	1	05/13/10 10:28	05/13/10 17:55	129-00-0	

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Malago **Lab ID: 3511394006** Collected: 05/07/10 03:10 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Nitrobenzene-d5 (S)	58	%	10-110		1	05/13/10 10:28	05/13/10 17:55	4165-60-0	
2-Fluorobiphenyl (S)	59	%	18-110		1	05/13/10 10:28	05/13/10 17:55	321-60-8	
Terphenyl-d14 (S)	73	%	10-123		1	05/13/10 10:28	05/13/10 17:55	1718-51-0	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260								
Acetone	**12.4U**	ug/kg	24.8	12.4	1		05/13/10 17:13	67-64-1	
Benzene	**3.2U**	ug/kg	6.2	3.2	1		05/13/10 17:13	71-43-2	
Bromodichloromethane	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	75-27-4	
Bromoform	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	75-25-2	
Bromomethane	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	74-83-9	
2-Butanone (MEK)	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	78-93-3	
Carbon disulfide	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	75-15-0	
Carbon tetrachloride	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	56-23-5	
Chlorobenzene	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	108-90-7	
Chloroethane	**4.5U**	ug/kg	6.2	4.5	1		05/13/10 17:13	75-00-3	
Chloroform	**3.7U**	ug/kg	6.2	3.7	1		05/13/10 17:13	67-66-3	
Chloromethane	**3.5U**	ug/kg	6.2	3.5	1		05/13/10 17:13	74-87-3	
Dibromochloromethane	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	124-48-1	
1,1-Dichloroethane	**3.4U**	ug/kg	6.2	3.4	1		05/13/10 17:13	75-34-3	
1,2-Dichloroethane	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	107-06-2	
1,1-Dichloroethene	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	75-35-4	
cis-1,2-Dichloroethene	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	156-59-2	
trans-1,2-Dichloroethene	**3.8U**	ug/kg	6.2	3.8	1		05/13/10 17:13	156-60-5	
1,2-Dichloropropane	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	78-87-5	
cis-1,3-Dichloropropene	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	10061-01-5	
trans-1,3-Dichloropropene	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	10061-02-6	
Ethylbenzene	**3.5U**	ug/kg	6.2	3.5	1		05/13/10 17:13	100-41-4	
2-Hexanone	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	591-78-6	
Methylene Chloride	**3.9 I**	ug/kg	6.2	3.1	1		05/13/10 17:13	75-09-2	V,Z3
4-Methyl-2-pentanone (MIBK)	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	108-10-1	
Methyl-tert-butyl ether	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	1634-04-4	
Styrene	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	100-42-5	
1,1,2,2-Tetrachloroethane	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	79-34-5	
Tetrachloroethene	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	127-18-4	
Toluene	**3.3U**	ug/kg	6.2	3.3	1		05/13/10 17:13	108-88-3	
1,1,1-Trichloroethane	**3.4U**	ug/kg	6.2	3.4	1		05/13/10 17:13	71-55-6	
1,1,2-Trichloroethane	**3.1U**	ug/kg	6.2	3.1	1		05/13/10 17:13	79-00-5	
Trichloroethene	**3.5U**	ug/kg	6.2	3.5	1		05/13/10 17:13	79-01-6	
Vinyl chloride	**3.3U**	ug/kg	6.2	3.3	1		05/13/10 17:13	75-01-4	
Xylene (Total)	**6.4U**	ug/kg	18.6	6.4	1		05/13/10 17:13	1330-20-7	
Dibromofluoromethane (S)	102	%	82-115		1		05/13/10 17:13	1868-53-7	
Toluene-d8 (S)	99	%	84-117		1		05/13/10 17:13	2037-26-5	
4-Bromofluorobenzene (S)	96	%	55-148		1		05/13/10 17:13	460-00-4	1p
1,2-Dichloroethane-d4 (S)	95	%	80-131		1		05/13/10 17:13	17060-07-0	

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Shoreline Park **Lab ID: 3511394007** Collected: 05/07/10 02:45 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Aluminum	**62.7**	mg/kg	5.1	2.5	1	05/13/10 13:40	05/13/10 21:30	7429-90-5	
Antimony	**0.38U**	mg/kg	0.76	0.38	1	05/13/10 13:40	05/13/10 21:30	7440-36-0	
Arsenic	**0.25U**	mg/kg	0.51	0.25	1	05/13/10 13:40	05/13/10 21:30	7440-38-2	
Barium	**0.25U**	mg/kg	0.51	0.25	1	05/13/10 13:40	05/13/10 21:30	7440-39-3	
Beryllium	**0.025U**	mg/kg	0.051	0.025	1	05/13/10 13:40	05/13/10 21:30	7440-41-7	
Cadmium	**0.025U**	mg/kg	0.051	0.025	1	05/13/10 13:40	05/13/10 21:30	7440-43-9	
Calcium	**1250**	mg/kg	25.5	12.7	1	05/13/10 13:40	05/13/10 21:30	7440-70-2	
Chromium	**0.22 I**	mg/kg	0.25	0.13	1	05/13/10 13:40	05/13/10 21:30	7440-47-3	
Cobalt	**0.25U**	mg/kg	0.51	0.25	1	05/13/10 13:40	05/13/10 21:30	7440-48-4	
Copper	**0.36**	mg/kg	0.25	0.13	1	05/13/10 13:40	05/13/10 21:30	7440-50-8	
Iron	**93.8**	mg/kg	2.0	1.0	1	05/13/10 13:40	05/13/10 21:30	7439-89-6	
Lead	**0.57**	mg/kg	0.51	0.25	1	05/13/10 13:40	05/13/10 21:30	7439-92-1	
Magnesium	**268**	mg/kg	25.5	12.7	1	05/13/10 13:40	05/13/10 21:30	7439-95-4	
Manganese	**0.44**	mg/kg	0.25	0.13	1	05/13/10 13:40	05/13/10 21:30	7439-96-5	
Nickel	**0.14 I**	mg/kg	0.25	0.13	1	05/13/10 13:40	05/13/10 21:30	7440-02-0	
Potassium	**121**	mg/kg	51.0	25.5	1	05/13/10 13:40	05/13/10 21:30	7440-09-7	
Selenium	**0.38U**	mg/kg	0.76	0.38	1	05/13/10 13:40	05/13/10 21:30	7782-49-2	
Silver	**0.13U**	mg/kg	0.25	0.13	1	05/13/10 13:40	05/13/10 21:30	7440-22-4	
Sodium	**1640**	mg/kg	51.0	25.5	1	05/13/10 13:40	05/13/10 21:30	7440-23-5	
Thallium	**0.38U**	mg/kg	0.76	0.38	1	05/13/10 13:40	05/13/10 21:30	7440-28-0	
Vanadium	**0.25U**	mg/kg	0.51	0.25	1	05/13/10 13:40	05/13/10 21:30	7440-62-2	
Zinc	**1.4**	mg/kg	1.0	0.51	1	05/13/10 13:40	05/13/10 21:30	7440-66-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.0027U**	mg/kg	0.011	0.0027	1	05/13/10 13:50	05/17/10 12:41	7439-97-6	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.3U**	ug/kg	43.1	4.3	1	05/13/10 10:28	05/13/10 18:24	83-32-9	
Acenaphthylene	**5.1U**	ug/kg	43.1	5.1	1	05/13/10 10:28	05/13/10 18:24	208-96-8	
Anthracene	**2.7U**	ug/kg	43.1	2.7	1	05/13/10 10:28	05/13/10 18:24	120-12-7	
Benzo(a)anthracene	**3.9U**	ug/kg	43.1	3.9	1	05/13/10 10:28	05/13/10 18:24	56-55-3	
Benzo(a)pyrene	**4.7U**	ug/kg	43.1	4.7	1	05/13/10 10:28	05/13/10 18:24	50-32-8	
Benzo(b)fluoranthene	**3.0U**	ug/kg	43.1	3.0	1	05/13/10 10:28	05/13/10 18:24	205-99-2	
Benzo(g,h,i)perylene	**4.0U**	ug/kg	43.1	4.0	1	05/13/10 10:28	05/13/10 18:24	191-24-2	
Benzo(k)fluoranthene	**6.4U**	ug/kg	43.1	6.4	1	05/13/10 10:28	05/13/10 18:24	207-08-9	
Chrysene	**3.9U**	ug/kg	43.1	3.9	1	05/13/10 10:28	05/13/10 18:24	218-01-9	
Dibenz(a,h)anthracene	**4.6U**	ug/kg	43.1	4.6	1	05/13/10 10:28	05/13/10 18:24	53-70-3	
Fluoranthene	**4.8U**	ug/kg	43.1	4.8	1	05/13/10 10:28	05/13/10 18:24	206-44-0	
Fluorene	**3.2U**	ug/kg	43.1	3.2	1	05/13/10 10:28	05/13/10 18:24	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.6U**	ug/kg	43.1	4.6	1	05/13/10 10:28	05/13/10 18:24	193-39-5	
1-Methylnaphthalene	**5.5U**	ug/kg	43.1	5.5	1	05/13/10 10:28	05/13/10 18:24	90-12-0	
2-Methylnaphthalene	**6.0U**	ug/kg	43.1	6.0	1	05/13/10 10:28	05/13/10 18:24	91-57-6	
Naphthalene	**4.6U**	ug/kg	43.1	4.6	1	05/13/10 10:28	05/13/10 18:24	91-20-3	
Phenanthrene	**4.1U**	ug/kg	43.1	4.1	1	05/13/10 10:28	05/13/10 18:24	85-01-8	
Pyrene	**5.2U**	ug/kg	43.1	5.2	1	05/13/10 10:28	05/13/10 18:24	129-00-0	

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Shoreline Park **Lab ID: 3511394007** Collected: 05/07/10 02:45 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Nitrobenzene-d5 (S)	58	%	10-110		1	05/13/10 10:28	05/13/10 18:24	4165-60-0	
2-Fluorobiphenyl (S)	60	%	18-110		1	05/13/10 10:28	05/13/10 18:24	321-60-8	
Terphenyl-d14 (S)	60	%	10-123		1	05/13/10 10:28	05/13/10 18:24	1718-51-0	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260								
Acetone	**11.4U**	ug/kg	22.7	11.4	1		05/13/10 17:40	67-64-1	
Benzene	**2.9U**	ug/kg	5.7	2.9	1		05/13/10 17:40	71-43-2	
Bromodichloromethane	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	75-27-4	
Bromoform	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	75-25-2	
Bromomethane	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	74-83-9	
2-Butanone (MEK)	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	78-93-3	
Carbon disulfide	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	75-15-0	
Carbon tetrachloride	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	56-23-5	
Chlorobenzene	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	108-90-7	
Chloroethane	**4.1U**	ug/kg	5.7	4.1	1		05/13/10 17:40	75-00-3	
Chloroform	**3.4U**	ug/kg	5.7	3.4	1		05/13/10 17:40	67-66-3	
Chloromethane	**3.2U**	ug/kg	5.7	3.2	1		05/13/10 17:40	74-87-3	
Dibromochloromethane	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	124-48-1	
1,1-Dichloroethane	**3.1U**	ug/kg	5.7	3.1	1		05/13/10 17:40	75-34-3	
1,2-Dichloroethane	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	107-06-2	
1,1-Dichloroethene	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	75-35-4	
cis-1,2-Dichloroethene	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	156-59-2	
trans-1,2-Dichloroethene	**3.5U**	ug/kg	5.7	3.5	1		05/13/10 17:40	156-60-5	
1,2-Dichloropropane	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	78-87-5	
cis-1,3-Dichloropropene	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	10061-01-5	
trans-1,3-Dichloropropene	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	10061-02-6	
Ethylbenzene	**3.2U**	ug/kg	5.7	3.2	1		05/13/10 17:40	100-41-4	
2-Hexanone	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	591-78-6	
Methylene Chloride	**4.1 I**	ug/kg	5.7	2.8	1		05/13/10 17:40	75-09-2	V,Z3
4-Methyl-2-pentanone (MIBK)	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	108-10-1	
Methyl-tert-butyl ether	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	1634-04-4	
Styrene	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	100-42-5	
1,1,2,2-Tetrachloroethane	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	79-34-5	
Tetrachloroethene	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	127-18-4	
Toluene	**3.1U**	ug/kg	5.7	3.1	1		05/13/10 17:40	108-88-3	
1,1,1-Trichloroethane	**3.1U**	ug/kg	5.7	3.1	1		05/13/10 17:40	71-55-6	
1,1,2-Trichloroethane	**2.8U**	ug/kg	5.7	2.8	1		05/13/10 17:40	79-00-5	
Trichloroethene	**3.2U**	ug/kg	5.7	3.2	1		05/13/10 17:40	79-01-6	
Vinyl chloride	**3.1U**	ug/kg	5.7	3.1	1		05/13/10 17:40	75-01-4	
Xylene (Total)	**5.8U**	ug/kg	17.0	5.8	1		05/13/10 17:40	1330-20-7	
Dibromofluoromethane (S)	101	%	82-115		1		05/13/10 17:40	1868-53-7	
Toluene-d8 (S)	100	%	84-117		1		05/13/10 17:40	2037-26-5	
4-Bromofluorobenzene (S)	92	%	55-148		1		05/13/10 17:40	460-00-4	1p
1,2-Dichloroethane-d4 (S)	99	%	80-131		1		05/13/10 17:40	17060-07-0	

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Wayside Park **Lab ID: 3511394008** Collected: 05/07/10 01:45 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Aluminum	**1120**	mg/kg	5.6	2.8	1	05/13/10 13:40	05/13/10 21:34	7429-90-5	J(M0)
Antimony	**0.42U**	mg/kg	0.83	0.42	1	05/13/10 13:40	05/13/10 21:34	7440-36-0	
Arsenic	**0.28U**	mg/kg	0.56	0.28	1	05/13/10 13:40	05/13/10 21:34	7440-38-2	
Barium	**6.0**	mg/kg	0.56	0.28	1	05/13/10 13:40	05/13/10 21:34	7440-39-3	J(M0)
Beryllium	**0.058**	mg/kg	0.056	0.028	1	05/13/10 13:40	05/13/10 21:34	7440-41-7	
Cadmium	**0.028U**	mg/kg	0.056	0.028	1	05/13/10 13:40	05/13/10 21:34	7440-43-9	
Calcium	**24800**	mg/kg	139	69.6	5	05/13/10 13:40	05/17/10 19:27	7440-70-2	D4, J(M0), J(R1)
Chromium	**1.0**	mg/kg	0.28	0.14	1	05/13/10 13:40	05/13/10 21:34	7440-47-3	
Cobalt	**1.4U**	mg/kg	2.8	1.4	5	05/13/10 13:40	05/17/10 19:27	7440-48-4	D3
Copper	**0.45**	mg/kg	0.28	0.14	1	05/13/10 13:40	05/13/10 21:34	7440-50-8	
Iron	**584**	mg/kg	2.2	1.1	1	05/13/10 13:40	05/13/10 21:34	7439-89-6	J(M0)
Lead	**1.5**	mg/kg	0.56	0.28	1	05/13/10 13:40	05/13/10 21:34	7439-92-1	
Magnesium	**522**	mg/kg	27.8	13.9	1	05/13/10 13:40	05/13/10 21:34	7439-95-4	
Manganese	**40.2**	mg/kg	0.28	0.14	1	05/13/10 13:40	05/13/10 21:34	7439-96-5	J(M0)
Nickel	**0.24 I**	mg/kg	0.28	0.14	1	05/13/10 13:40	05/13/10 21:34	7440-02-0	
Potassium	**307**	mg/kg	55.6	27.8	1	05/13/10 13:40	05/13/10 21:34	7440-09-7	
Selenium	**0.42U**	mg/kg	0.83	0.42	1	05/13/10 13:40	05/13/10 21:34	7782-49-2	J(M0)
Silver	**0.14U**	mg/kg	0.28	0.14	1	05/13/10 13:40	05/13/10 21:34	7440-22-4	
Sodium	**1850**	mg/kg	55.6	27.8	1	05/13/10 13:40	05/13/10 21:34	7440-23-5	
Thallium	**0.42U**	mg/kg	0.83	0.42	1	05/13/10 13:40	05/13/10 21:34	7440-28-0	
Vanadium	**0.99**	mg/kg	0.56	0.28	1	05/13/10 13:40	05/13/10 21:34	7440-62-2	
Zinc	**2.7**	mg/kg	1.1	0.56	1	05/13/10 13:40	05/13/10 21:34	7440-66-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.0028U**	mg/kg	0.011	0.0028	1	05/13/10 13:50	05/17/10 12:43	7439-97-6	J(M0)
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.4U**	ug/kg	44.1	4.4	1	05/13/10 10:28	05/13/10 18:53	83-32-9	
Acenaphthylene	**5.2U**	ug/kg	44.1	5.2	1	05/13/10 10:28	05/13/10 18:53	208-96-8	
Anthracene	**2.8 I**	ug/kg	44.1	2.7	1	05/13/10 10:28	05/13/10 18:53	120-12-7	
Benzo(a)anthracene	**10.2 I**	ug/kg	44.1	4.0	1	05/13/10 10:28	05/13/10 18:53	56-55-3	
Benzo(a)pyrene	**9.4 I**	ug/kg	44.1	4.8	1	05/13/10 10:28	05/13/10 18:53	50-32-8	
Benzo(b)fluoranthene	**15.7 I**	ug/kg	44.1	3.1	1	05/13/10 10:28	05/13/10 18:53	205-99-2	
Benzo(g,h,i)perylene	**7.2 I**	ug/kg	44.1	4.1	1	05/13/10 10:28	05/13/10 18:53	191-24-2	
Benzo(k)fluoranthene	**6.6U**	ug/kg	44.1	6.6	1	05/13/10 10:28	05/13/10 18:53	207-08-9	
Chrysene	**10.3 I**	ug/kg	44.1	4.0	1	05/13/10 10:28	05/13/10 18:53	218-01-9	
Dibenz(a,h)anthracene	**4.7U**	ug/kg	44.1	4.7	1	05/13/10 10:28	05/13/10 18:53	53-70-3	
Fluoranthene	**17.2 I**	ug/kg	44.1	5.0	1	05/13/10 10:28	05/13/10 18:53	206-44-0	
Fluorene	**3.3U**	ug/kg	44.1	3.3	1	05/13/10 10:28	05/13/10 18:53	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.7U**	ug/kg	44.1	4.7	1	05/13/10 10:28	05/13/10 18:53	193-39-5	
1-Methylnaphthalene	**5.6U**	ug/kg	44.1	5.6	1	05/13/10 10:28	05/13/10 18:53	90-12-0	
2-Methylnaphthalene	**6.2U**	ug/kg	44.1	6.2	1	05/13/10 10:28	05/13/10 18:53	91-57-6	
Naphthalene	**4.7U**	ug/kg	44.1	4.7	1	05/13/10 10:28	05/13/10 18:53	91-20-3	

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Wayside Park **Lab ID: 3511394008** Collected: 05/07/10 01:45 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Phenanthrene	**9.7 I**	ug/kg	44.1	4.2	1	05/13/10 10:28	05/13/10 18:53	85-01-8	
Pyrene	**16.3 I**	ug/kg	44.1	5.4	1	05/13/10 10:28	05/13/10 18:53	129-00-0	
Nitrobenzene-d5 (S)	57	%	10-110		1	05/13/10 10:28	05/13/10 18:53	4165-60-0	
2-Fluorobiphenyl (S)	63	%	18-110		1	05/13/10 10:28	05/13/10 18:53	321-60-8	
Terphenyl-d14 (S)	70	%	10-123		1	05/13/10 10:28	05/13/10 18:53	1718-51-0	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260								
Acetone	**13.7U**	ug/kg	27.4	13.7	1		05/13/10 18:07	67-64-1	
Benzene	**3.5U**	ug/kg	6.8	3.5	1		05/13/10 18:07	71-43-2	
Bromodichloromethane	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	75-27-4	
Bromoform	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	75-25-2	
Bromomethane	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	74-83-9	
2-Butanone (MEK)	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	78-93-3	
Carbon disulfide	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	75-15-0	
Carbon tetrachloride	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	56-23-5	
Chlorobenzene	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	108-90-7	
Chloroethane	**4.9U**	ug/kg	6.8	4.9	1		05/13/10 18:07	75-00-3	
Chloroform	**4.1U**	ug/kg	6.8	4.1	1		05/13/10 18:07	67-66-3	
Chloromethane	**3.8U**	ug/kg	6.8	3.8	1		05/13/10 18:07	74-87-3	
Dibromochloromethane	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	124-48-1	
1,1-Dichloroethane	**3.7U**	ug/kg	6.8	3.7	1		05/13/10 18:07	75-34-3	
1,2-Dichloroethane	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	107-06-2	
1,1-Dichloroethene	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	75-35-4	
cis-1,2-Dichloroethene	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	156-59-2	
trans-1,2-Dichloroethene	**4.2U**	ug/kg	6.8	4.2	1		05/13/10 18:07	156-60-5	
1,2-Dichloropropane	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	78-87-5	
cis-1,3-Dichloropropene	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	10061-01-5	
trans-1,3-Dichloropropene	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	10061-02-6	
Ethylbenzene	**3.9U**	ug/kg	6.8	3.9	1		05/13/10 18:07	100-41-4	
2-Hexanone	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	591-78-6	
Methylene Chloride	**4.5 I**	ug/kg	6.8	3.4	1		05/13/10 18:07	75-09-2	V,Z3
4-Methyl-2-pentanone (MIBK)	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	108-10-1	
Methyl-tert-butyl ether	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	1634-04-4	
Styrene	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	100-42-5	
1,1,2,2-Tetrachloroethane	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	79-34-5	
Tetrachloroethene	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	127-18-4	
Toluene	**3.7U**	ug/kg	6.8	3.7	1		05/13/10 18:07	108-88-3	
1,1,1-Trichloroethane	**3.7U**	ug/kg	6.8	3.7	1		05/13/10 18:07	71-55-6	
1,1,2-Trichloroethane	**3.4U**	ug/kg	6.8	3.4	1		05/13/10 18:07	79-00-5	
Trichloroethene	**3.9U**	ug/kg	6.8	3.9	1		05/13/10 18:07	79-01-6	
Vinyl chloride	**3.7U**	ug/kg	6.8	3.7	1		05/13/10 18:07	75-01-4	
Xylene (Total)	**7.0U**	ug/kg	20.5	7.0	1		05/13/10 18:07	1330-20-7	
Dibromofluoromethane (S)	102	%	82-115		1		05/13/10 18:07	1868-53-7	
Toluene-d8 (S)	99	%	84-117		1		05/13/10 18:07	2037-26-5	
4-Bromofluorobenzene (S)	92	%	55-148		1		05/13/10 18:07	460-00-4	1p

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ANALYTICAL RESULTS

Project: City of Gulf Breeze
Pace Project No.: 3511394

Sample: Wayside Park **Lab ID: 3511394008** Collected: 05/07/10 01:45 Received: 05/11/10 11:30 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Low Level	Analytical Method: EPA 8260								
1,2-Dichloroethane-d4 (S)	98	%	80-131		1		05/13/10 18:07	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**25.7**	%	0.10	0.10	1		05/13/10 15:50		

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QUALITY CONTROL DATA

Project: City of Gulf Breeze
Pace Project No.: 3511394

QC Batch: MPRP/2252 Analysis Method: EPA 6010
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 3511394001, 3511394002, 3511394003, 3511394004, 3511394005, 3511394006, 3511394007, 3511394008

METHOD BLANK: 72749 Matrix: Solid
Associated Lab Samples: 3511394001, 3511394002, 3511394003, 3511394004, 3511394005, 3511394006, 3511394007, 3511394008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	2.0U	4.0	05/13/10 20:51	
Antimony	mg/kg	0.30U	0.60	05/13/10 20:51	
Arsenic	mg/kg	0.20U	0.40	05/13/10 20:51	
Barium	mg/kg	0.20U	0.40	05/13/10 20:51	
Beryllium	mg/kg	0.020U	0.040	05/13/10 20:51	
Cadmium	mg/kg	0.020U	0.040	05/13/10 20:51	
Calcium	mg/kg	10.0U	20.0	05/13/10 20:51	
Chromium	mg/kg	0.10U	0.20	05/13/10 20:51	
Cobalt	mg/kg	0.20U	0.40	05/13/10 20:51	
Copper	mg/kg	0.10U	0.20	05/13/10 20:51	
Iron	mg/kg	0.80U	1.6	05/13/10 20:51	
Lead	mg/kg	0.20U	0.40	05/13/10 20:51	
Magnesium	mg/kg	10.0U	20.0	05/13/10 20:51	
Manganese	mg/kg	0.10U	0.20	05/13/10 20:51	
Nickel	mg/kg	0.10U	0.20	05/13/10 20:51	
Potassium	mg/kg	20.0U	40.0	05/13/10 20:51	
Selenium	mg/kg	0.30U	0.60	05/13/10 20:51	
Silver	mg/kg	0.10U	0.20	05/13/10 20:51	
Sodium	mg/kg	20.0U	40.0	05/13/10 20:51	
Thallium	mg/kg	0.30U	0.60	05/13/10 20:51	
Vanadium	mg/kg	0.20U	0.40	05/13/10 20:51	
Zinc	mg/kg	0.40U	0.80	05/13/10 20:51	

LABORATORY CONTROL SAMPLE: 72750

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	100	100	100	80-120	
Antimony	mg/kg	10	10.7	107	80-120	
Arsenic	mg/kg	10	10.6	106	80-120	
Barium	mg/kg	10	10.3	103	80-120	
Beryllium	mg/kg	1	1.1	107	80-120	
Cadmium	mg/kg	1	1.1	112	80-120	
Calcium	mg/kg	500	540	108	80-120	
Chromium	mg/kg	10	11.0	110	80-120	
Cobalt	mg/kg	10	11.0	110	80-120	
Copper	mg/kg	10	10.2	102	80-120	
Iron	mg/kg	100	110	110	80-120	
Lead	mg/kg	10	11.0	110	80-120	
Magnesium	mg/kg	500	540	108	80-120	
Manganese	mg/kg	10	11.0	110	80-120	
Nickel	mg/kg	10	11.0	110	80-120	

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QUALITY CONTROL DATA

Project: City of Gulf Breeze
Pace Project No.: 3511394

LABORATORY CONTROL SAMPLE: 72750

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	mg/kg	500	560	112	80-120	
Selenium	mg/kg	10	10.4	104	80-120	
Silver	mg/kg	1	1.1	106	80-120	
Sodium	mg/kg	500	528	106	80-120	
Thallium	mg/kg	10	10.5	105	80-120	
Vanadium	mg/kg	10	10.9	109	80-120	
Zinc	mg/kg	50	54.8	110	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 72751 72752

Parameter	Units	3511394008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	1120	132	134	474	512	-490	-458	75-125	8	20	J(M3)
Antimony	mg/kg	0.42U	13.2	13.3	11.1	11.6	84	87	75-125	4	20	
Arsenic	mg/kg	0.28U	13.2	13.3	12.6	13.1	95	98	75-125	4	20	
Barium	mg/kg	6.0	13.2	13.3	13.6	14.1	58	61	75-125	3	20	J(M3)
Beryllium	mg/kg	0.058	1.3	1.3	1.2	1.4	90	97	75-125	8	20	
Cadmium	mg/kg	0.028U	1.3	1.3	1.3	1.4	97	103	75-125	6	20	
Calcium	mg/kg	24800	662	668	39800	18600	2260	-923	75-125	72	20	D4, J(M0), J(R1)
Chromium	mg/kg	1.0	13.2	13.3	13.4	14.1	94	98	75-125	5	20	
Cobalt	mg/kg	1.4U	13.2	13.3	10.8	13.1	81	98	75-125	19	20	D3
Copper	mg/kg	0.45	13.2	13.3	13.5	14.1	98	102	75-125	5	20	
Iron	mg/kg	584	132	134	423	472	-122	-84	75-125	11	20	J(M3)
Lead	mg/kg	1.5	13.2	13.3	14.9	15.4	102	104	75-125	3	20	
Magnesium	mg/kg	522	662	668	1290	1220	116	105	75-125	6	20	
Manganese	mg/kg	40.2	13.2	13.3	36.3	41.1	-30	6	75-125	12	20	J(M3)
Nickel	mg/kg	0.24 I	13.2	13.3	13.1	14.1	97	103	75-125	7	20	
Potassium	mg/kg	307	662	668	1040	994	110	103	75-125	4	20	
Selenium	mg/kg	0.42U	13.2	13.3	6.3	7.0	47	52	75-125	11	20	J(M3)
Silver	mg/kg	0.14U	1.3	1.3	1.2	1.3	89	97	75-125	9	20	
Sodium	mg/kg	1850	662	668	2610	2610	114	114	75-125	.2	20	
Thallium	mg/kg	0.42U	13.2	13.3	12.9	13.6	97	102	75-125	5	20	
Vanadium	mg/kg	0.99	13.2	13.3	13.6	14.4	95	100	75-125	5	20	
Zinc	mg/kg	2.7	66.2	66.8	70.0	74.3	102	107	75-125	6	20	

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QUALITY CONTROL DATA

Project: City of Gulf Breeze
Pace Project No.: 3511394

QC Batch: MERP/1326 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 3511394001, 3511394002, 3511394003, 3511394004, 3511394005, 3511394006, 3511394007, 3511394008

METHOD BLANK: 72753 Matrix: Solid
Associated Lab Samples: 3511394001, 3511394002, 3511394003, 3511394004, 3511394005, 3511394006, 3511394007, 3511394008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	0.0020U	0.0080	05/17/10 12:04	

LABORATORY CONTROL SAMPLE: 72754

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.04	0.041	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 72755 72756

Parameter	Units	3511394008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.0028 U	.053	.055	0.044	0.047	84	84	85-115	6	20	J(M3)

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QUALITY CONTROL DATA

Project: City of Gulf Breeze
Pace Project No.: 3511394

QC Batch: OEXT/2335 Analysis Method: EPA 8270
QC Batch Method: EPA 3546 Analysis Description: 8270 Solid MSSV Microwave Short Spike
Associated Lab Samples: 3511394001, 3511394002, 3511394003, 3511394004, 3511394005, 3511394006, 3511394007, 3511394008

METHOD BLANK: 72312 Matrix: Solid
Associated Lab Samples: 3511394001, 3511394002, 3511394003, 3511394004, 3511394005, 3511394006, 3511394007, 3511394008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	4.1U	32.6	05/13/10 13:04	
2-Methylnaphthalene	ug/kg	4.5U	32.6	05/13/10 13:04	
Acenaphthene	ug/kg	3.3U	32.6	05/13/10 13:04	
Acenaphthylene	ug/kg	3.9U	32.6	05/13/10 13:04	
Anthracene	ug/kg	2.0U	32.6	05/13/10 13:04	
Benzo(a)anthracene	ug/kg	2.9U	32.6	05/13/10 13:04	
Benzo(a)pyrene	ug/kg	3.6U	32.6	05/13/10 13:04	
Benzo(b)fluoranthene	ug/kg	2.3U	32.6	05/13/10 13:04	
Benzo(g,h,i)perylene	ug/kg	3.0U	32.6	05/13/10 13:04	
Benzo(k)fluoranthene	ug/kg	4.8U	32.6	05/13/10 13:04	
Chrysene	ug/kg	2.9U	32.6	05/13/10 13:04	
Dibenz(a,h)anthracene	ug/kg	3.5U	32.6	05/13/10 13:04	
Fluoranthene	ug/kg	3.7U	32.6	05/13/10 13:04	
Fluorene	ug/kg	2.5U	32.6	05/13/10 13:04	
Indeno(1,2,3-cd)pyrene	ug/kg	3.5U	32.6	05/13/10 13:04	
Naphthalene	ug/kg	3.5U	32.6	05/13/10 13:04	
Phenanthrene	ug/kg	3.1U	32.6	05/13/10 13:04	
Pyrene	ug/kg	4.0U	32.6	05/13/10 13:04	
2-Fluorobiphenyl (S)	%	64	18-110	05/13/10 13:04	
Nitrobenzene-d5 (S)	%	64	10-110	05/13/10 13:04	
Terphenyl-d14 (S)	%	79	10-123	05/13/10 13:04	

LABORATORY CONTROL SAMPLE: 72313

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	1660	1210	73	27-123	
2-Methylnaphthalene	ug/kg	1660	1240	75	16-137	
Acenaphthene	ug/kg	1660	1170	71	37-110	
Acenaphthylene	ug/kg	1660	1240	75	41-110	
Anthracene	ug/kg	1660	1290	77	45-113	
Benzo(a)anthracene	ug/kg	1660	1370	82	44-117	
Benzo(a)pyrene	ug/kg	1660	1420	86	44-123	
Benzo(b)fluoranthene	ug/kg	1660	1330	80	37-124	
Benzo(g,h,i)perylene	ug/kg	1660	1450	87	42-125	
Benzo(k)fluoranthene	ug/kg	1660	1390	84	44-126	
Chrysene	ug/kg	1660	1410	85	45-116	
Dibenz(a,h)anthracene	ug/kg	1660	1440	87	43-124	
Fluoranthene	ug/kg	1660	1430	86	45-116	
Fluorene	ug/kg	1660	1270	76	42-120	
Indeno(1,2,3-cd)pyrene	ug/kg	1660	1450	87	43-123	
Naphthalene	ug/kg	1660	1070	64	40-100	

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QUALITY CONTROL DATA

Project: City of Gulf Breeze
Pace Project No.: 3511394

LABORATORY CONTROL SAMPLE: 72313

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenanthrene	ug/kg	1660	1320	80	36-125	
Pyrene	ug/kg	1660	1360	82	41-123	
2-Fluorobiphenyl (S)	%			65	18-110	
Nitrobenzene-d5 (S)	%			61	10-110	
Terphenyl-d14 (S)	%			74	10-123	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 72314 72315

Parameter	Units	3511310001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Methylnaphthalene	ug/kg	0.0050 U mg/kg	2000	2010	1140	1130	57	56	27-123	.6	40	
2-Methylnaphthalene	ug/kg	0.0055 U mg/kg	2000	2010	1200	1190	60	59	16-137	.5	40	
Acenaphthene	ug/kg	0.0040 U mg/kg	2000	2010	1060	1090	53	54	37-110	3	40	
Acenaphthylene	ug/kg	0.0047 U mg/kg	2000	2010	1140	1180	57	59	41-110	4	40	
Anthracene	ug/kg	0.0025 U mg/kg	2000	2010	1370	1260	69	63	45-113	8	40	
Benzo(a)anthracene	ug/kg	0.0036 U mg/kg	2000	2010	1520	1440	76	72	44-117	5	40	
Benzo(a)pyrene	ug/kg	0.0043 U mg/kg	2000	2010	1530	1440	77	72	44-123	6	40	
Benzo(b)fluoranthene	ug/kg	0.0028 U mg/kg	2000	2010	1400	1330	70	66	37-124	5	40	
Benzo(g,h,i)perylene	ug/kg	0.0037 U mg/kg	2000	2010	1600	1500	80	75	42-125	6	40	
Benzo(k)fluoranthene	ug/kg	0.0059 U mg/kg	2000	2010	1570	1470	79	73	44-126	7	40	
Chrysene	ug/kg	0.0036 U mg/kg	2000	2010	1550	1430	77	71	45-116	7	40	
Dibenz(a,h)anthracene	ug/kg	0.0042 U mg/kg	2000	2010	1560	1510	78	75	43-124	3	40	
Fluoranthene	ug/kg	0.0044 U mg/kg	2000	2010	1590	1440	79	72	45-116	10	40	
Fluorene	ug/kg	0.0030 U mg/kg	2000	2010	1150	1170	57	58	42-120	2	40	
Indeno(1,2,3-cd)pyrene	ug/kg	0.0042 U mg/kg	2000	2010	1570	1490	79	74	43-123	6	40	
Naphthalene	ug/kg	0.0042 U mg/kg	2000	2010	1020	993	51	49	40-100	2	40	
Phenanthrene	ug/kg	0.0038 U mg/kg	2000	2010	1320	1260	66	63	36-125	5	40	
Pyrene	ug/kg	0.0048 U mg/kg	2000	2010	1460	1380	73	69	41-123	6	40	
2-Fluorobiphenyl (S)	%						51	52	18-110			
Nitrobenzene-d5 (S)	%						46	47	10-110			
Terphenyl-d14 (S)	%						68	64	10-123			

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QUALITY CONTROL DATA

Project: City of Gulf Breeze
Pace Project No.: 3511394

LABORATORY CONTROL SAMPLE: 72671

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/kg	20.9	20.6	98	74.4-118.6	
1,1,2,2-Tetrachloroethane	ug/kg	20.9	21.5	103	80.9-121.2	
1,1,2-Trichloroethane	ug/kg	20.9	20.1	96	73.5-119.7	
1,1-Dichloroethane	ug/kg	20.9	20.5	98	81.4-118.5	
1,1-Dichloroethene	ug/kg	20.9	20.7	99	79.2-118.8	
1,2-Dichloroethane	ug/kg	20.9	19.9	95	82.9-112.8	
1,2-Dichloropropane	ug/kg	20.9	21.4	103	77.6-120.2	
2-Butanone (MEK)	ug/kg	20.9	26.2	126	43.9-166.5	
2-Hexanone	ug/kg	20.9	21.0	100	45.8-166.9	
4-Methyl-2-pentanone (MIBK)	ug/kg	20.9	22.0	106	58.7-140.4	
Acetone	ug/kg	20.9	23.5	113	26.9-191.5	
Benzene	ug/kg	20.9	21.8	104	81.6-116.8	
Bromodichloromethane	ug/kg	20.9	19.6	94	81-115.5	
Bromoform	ug/kg	20.9	17.7	85	64.7-126.7	
Bromomethane	ug/kg	20.9	13.2	63	51.1-147.8	
Carbon disulfide	ug/kg	20.9	20.0	96	64.7-129.6	
Carbon tetrachloride	ug/kg	20.9	19.8	95	65.6-126	
Chlorobenzene	ug/kg	20.9	21.2	101	79.7-113	
Chloroethane	ug/kg	20.9	22.2	106	54.9-139.8	
Chloroform	ug/kg	20.9	20.7	99	80.5-119.9	
Chloromethane	ug/kg	20.9	21.3	102	58.6-125.9	
cis-1,2-Dichloroethene	ug/kg	20.9	22.4	107	77.3-119.3	
cis-1,3-Dichloropropene	ug/kg	20.9	21.4	102	65.1-126.2	
Dibromochloromethane	ug/kg	20.9	19.1	91	59.4-129.2	
Ethylbenzene	ug/kg	20.9	21.1	101	83.4-116.6	
Methyl-tert-butyl ether	ug/kg	20.9	21.9	105	76.4-127.2	
Methylene Chloride	ug/kg	20.9	22.2	106	71.6-136.7	
Styrene	ug/kg	20.9	21.6	103	81.1-119.8	
Tetrachloroethene	ug/kg	20.9	20.2	97	45-143	
Toluene	ug/kg	20.9	21.5	103	71.4-120	
trans-1,2-Dichloroethene	ug/kg	20.9	21.0	101	81.3-118.1	
trans-1,3-Dichloropropene	ug/kg	20.9	20.2	97	58-137.6	
Trichloroethene	ug/kg	20.9	21.6	103	76.2-118.2	
Vinyl chloride	ug/kg	20.9	23.8	114	76-120.2	
Xylene (Total)	ug/kg	62.6	63.6	102	83.4-118.9	
1,2-Dichloroethane-d4 (S)	%			96	80-131	
4-Bromofluorobenzene (S)	%			98	55-148	
Dibromofluoromethane (S)	%			97	82-115	
Toluene-d8 (S)	%			100	84-117	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 72672 72673

Parameter	Units	3511394001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/kg	3.3U	26.5	25.8	24.2	22.3	92	87	70-130	8	40	
1,1,2,2-Tetrachloroethane	ug/kg	3.0U	26.5	25.8	25.4	24.2	96	94	70-130	5	40	
1,1,2-Trichloroethane	ug/kg	3.0U	26.5	25.8	25.7	23.7	97	92	70-130	8	40	

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8 East Tower Circle
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(386)672-5668

QUALITY CONTROL DATA

Project: City of Gulf Breeze
Pace Project No.: 3511394

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 72672 72673

Parameter	Units	3511394001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1-Dichloroethane	ug/kg	3.3U	26.5	25.8	24.6	23.1	93	90	70-130	6	40	
1,1-Dichloroethene	ug/kg	3.0U	26.5	25.8	23.9	22.1	90	86	70-130	8	40	
1,2-Dichloroethane	ug/kg	3.0U	26.5	25.8	25.6	23.7	97	92	70-130	8	40	
1,2-Dichloropropane	ug/kg	3.0U	26.5	25.8	25.3	24.6	96	96	70-130	3	40	
2-Butanone (MEK)	ug/kg	3.0U	26.5	25.8	26.2	20.6	99	80	70-130	24	40	
2-Hexanone	ug/kg	3.0U	26.5	25.8	21.6	18.4	82	72	70-130	16	40	
4-Methyl-2-pentanone (MIBK)	ug/kg	3.0U	26.5	25.8	23.2	21.1	88	82	70-130	9	40	
Acetone	ug/kg	12.2U	26.5	25.8	28.3	25.6 I	91	83	70-130		40	
Benzene	ug/kg	3.1U	26.5	25.8	25.2	23.6	95	92	70-130	7	40	
Bromodichloromethane	ug/kg	3.0U	26.5	25.8	25.1	21.9	95	85	70-130	13	40	
Bromoform	ug/kg	3.0U	26.5	25.8	20.6	18.0	78	70	70-130	13	40	
Bromomethane	ug/kg	3.0U	26.5	25.8	22.5	22.9	85	89	70-130	2	40	
Carbon disulfide	ug/kg	3.0U	26.5	25.8	21.8	19.7	83	76	70-130	11	40	
Carbon tetrachloride	ug/kg	3.0U	26.5	25.8	22.4	20.5	85	80	70-130	9	40	
Chlorobenzene	ug/kg	3.0U	26.5	25.8	25.3	22.9	96	89	70-130	10	40	
Chloroethane	ug/kg	4.4U	26.5	25.8	26.3	23.4	99	91	70-130	11	40	
Chloroform	ug/kg	3.6U	26.5	25.8	25.9	24.3	98	95	70-130	6	40	
Chloromethane	ug/kg	3.4U	26.5	25.8	23.9	22.8	90	89	70-130	5	40	
cis-1,2-Dichloroethene	ug/kg	3.0U	26.5	25.8	25.7	24.2	97	94	70-130	6	40	
cis-1,3-Dichloropropene	ug/kg	3.0U	26.5	25.8	23.6	22.0	89	85	70-130	7	40	
Dibromochloromethane	ug/kg	3.0U	26.5	25.8	23.3	20.6	88	80	70-130	12	40	
Ethylbenzene	ug/kg	3.4U	26.5	25.8	24.4	22.8	92	89	70-130	7	40	
Methyl-tert-butyl ether	ug/kg	3.0U	26.5	25.8	27.4	25.6	102	99	70-130	7	40	
Methylene Chloride	ug/kg	5.9 I	26.5	25.8	35.3	33.1	111	106	70-130	7	40	
Styrene	ug/kg	3.0U	26.5	25.8	24.7	23.0	93	90	70-130	7	40	
Tetrachloroethene	ug/kg	3.0U	26.5	25.8	24.6	22.8	93	89	70-130	8	40	
Toluene	ug/kg	3.3U	26.5	25.8	25.4	23.6	96	92	70-130	7	40	
trans-1,2-Dichloroethene	ug/kg	3.7U	26.5	25.8	25.6	23.0	97	90	70-130	11	40	
trans-1,3-Dichloropropene	ug/kg	3.0U	26.5	25.8	22.9	21.6	86	84	70-130	6	40	
Trichloroethene	ug/kg	3.4U	26.5	25.8	24.6	23.1	93	90	70-130	6	40	
Vinyl chloride	ug/kg	3.3U	26.5	25.8	26.7	25.6	101	99	70-130	4	40	
Xylene (Total)	ug/kg	6.3U	79.4	77.2	73.6	68.4	93	89	70-130	7	40	
1,2-Dichloroethane-d4 (S)	%						97	95	80-131			
4-Bromofluorobenzene (S)	%						99	96	55-148			
Dibromofluoromethane (S)	%						103	100	82-115			
Toluene-d8 (S)	%						101	101	84-117			

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8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

QUALITY CONTROL DATA

Project: City of Gulf Breeze
Pace Project No.: 3511394

QC Batch: WET/3877 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 3511394001, 3511394002, 3511394003, 3511394004, 3511394005, 3511394006, 3511394007, 3511394008

SAMPLE DUPLICATE: 73925

Parameter	Units	3511339001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	97.1	97.1	.008	10	

SAMPLE DUPLICATE: 73926

Parameter	Units	3511394001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.5	19.0	3	10	

SAMPLE DUPLICATE: 73927

Parameter	Units	3511430001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	97.0	97.0	.05	10	

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8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

QUALIFIERS

Project: City of Gulf Breeze
Pace Project No.: 3511394

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

U - Indicates the compound was analyzed for, but not detected.

LABORATORIES

PASI-O	Pace Analytical Services - Ormond Beach

ANALYTE QUALIFIERS

I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
1p	Samples were analyzed from soil jars due to improper sampling of the 5035 Terracore kits. Soil jars were received outside of the 48 hour window required by Method 5035.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D4	Sample was diluted due to the presence of high levels of target analytes.
J(M0)	Estimated Value. Matrix spike recovery was outside laboratory control limits.
J(M3)	Estimated Value. Matrix spike recovery was outside laboratory control limits due to matrix interferences.
J(R1)	Estimated Value. RPD value was outside control limits.
V	Indicates that the analyte was detected in both the sample and the associated method blank.
Z3	Methylene chloride is a common laboratory contaminant. Results for this analyte should be considered estimated unless the amount found in the sample is 3 to 5 times higher than that found in the method blank.

Sample Cross Reference

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Project: 20108681

Client: PASI Florida

Project ID: 3511394 / Ecological Consult

Client Sample ID	Lab ID	Matrix	Collection Date/Time	Received Date/Time
BAYCLIFF	20785528	Soil	07-May-10 04:45	13-May-10 10:20
TB	20785529	Soil	07-May-10 04:00	13-May-10 10:20
WOODLAND BAYOU	20785530	Soil	07-May-10 03:30	13-May-10 10:20
NAVY COVE	20785531	Soil	07-May-10 03:15	13-May-10 10:20
CATAWBA	20785532	Soil	07-May-10 03:00	13-May-10 10:20
MALAGO	20785533	Soil	07-May-10 03:10	13-May-10 10:20
SHORELINE PARK	20785534	Soil	07-May-10 02:45	13-May-10 10:20
WAYSIDE PARK	20785535	Soil	07-May-10 01:45	13-May-10 10:20

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Project: 20108681

Sample Receipt Condition:

All samples were received in accordance with EPA protocol.

Holding Times:

All holding times were met.

Blanks:

All blank results were below reporting limits.

Laboratory Control Samples:

All LCS recoveries were within QC limits.

Matrix Spikes and Duplicates:

All MS/MSD recoveries or duplicate RPDs were within QC limits.

Surrogates:

Surrogate recoveries outside of QC limits are qualified in the surrogate results section.

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Project: 20108681

Analytical Method	Batch	Sample used for QC
EPA 8015 Mod Ext	139162	Project sample BAYCLIFF
EPA 8015/8021	139237	Project sample BAYCLIFF
Dry Weight Moisture	139179	Project sample BAYCLIFF

For the sample used as the original for the DUP or MS/MSD for the batch:

Project sample means a sample from this project was used.
Client sample means a sample from the same client but in a different project was used.
Batch sample means a sample from a different client was used.

Sample Results

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Client: PASI Florida

Client ID: BAYCLIFF
Project: 20108681
Project ID: 3511394 / Ecological Consult
Site: None
Lab ID: 20785528
Matrix: Soil
% Moisture: 26.4 Corrected
Description: None
Prep Level: Soil
Batch: 139162
Method: EPA 8015 Mod Ext
8015 TPH Extractables Soil
Collected: 07-May-10
Received: 13-May-10
Prepared: 14-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Diesel Range Organics (C10-28)	1	< 9.76	U	13.4	9.76		16-May-10 18:07 SNP1
	Oil Range Organics (>C28-40)	1	< 11.7	U	67.2	11.7		16-May-10 18:07 SNP1

2 compound(s) reported

Protocol 5/19/2010 11:52:44

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Sample Results

Client: PASI Florida

Client ID: BAYCLIFF
Project: 20108681
Project ID: 3511394 / Ecological Consult
Site: None
Lab ID: 20785528
Matrix: Soil
% Moisture: 26.4 Corrected
Description: None
Prep Level: Soil
Batch: 139237
Method: EPA 8015/8021
8015/8021 Med Soil
Collected: 07-May-10
Received: 13-May-10
Prepared: 17-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Gasoline Range Organics(C6-10)	1	0.865	I	3.40	0.756		18-May-10 01:33 MHM

1 compound(s) reported

Protocol 5/19/2010 11:52:44

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Sample Results

Pace Analytical Services, Inc.
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(504) 469-0333

Client: PASI Florida

Client ID: TB
Project: 20108681
Project ID: 3511394 / Ecological Consult
Site: None
Lab ID: 20785529
Matrix: Soil
% Moisture: 22.2 Corrected
Description: None
Prep Level: Soil
Batch: 139162
Method: EPA 8015 Mod Ext
8015 TPH Extractables Soil
Collected: 07-May-10
Received: 13-May-10
Prepared: 14-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Diesel Range Organics (C10-28)	1	< 8.90	U	12.2	8.90		16-May-10 14:47 SNP1
	Oil Range Organics (>C28-40)	1	< 10.6	U	61.2	10.6		16-May-10 14:47 SNP1

2 compound(s) reported

Protocol 5/19/2010 11:52:44

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Sample Results

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Client: PASI Florida

Client ID: TB
Project: 20108681
Project ID: 3511394 / Ecological Consult
Site: None
Lab ID: 20785529
Matrix: Soil
% Moisture: 22.2 Corrected
Description: None
Prep Level: Soil
Batch: 139237
Method: EPA 8015/8021
8015/8021 Med Soil
Collected: 07-May-10
Received: 13-May-10
Prepared: 17-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Gasoline Range Organics(C6-10)	1	0.793	I	3.21	0.716		18-May-10 03:45 MHM

1 compound(s) reported

Protocol 5/19/2010 11:52:44

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Pace Analytical Services, Inc.
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(504) 469-0333

Sample Results

Client: PASI Florida

Client ID: WOODLAND BAYOU
Project: 20108681
Project ID: 3511394 / Ecological Consult
Site: None
Lab ID: 20785530
Matrix: Soil
% Moisture: 95.8 Corrected
Description: None
Prep Level: Soil
Batch: 139162
Method: EPA 8015 Mod Ext
8015 TPH Extractables Soil
Collected: 07-May-10
Received: 13-May-10
Prepared: 14-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Diesel Range Organics (C10-28)	1	337.		235.	171.		16-May-10 15:16 SNP1
	Oil Range Organics (>C28-40)	1	< 204.	U	1180	204.		16-May-10 15:16 SNP1

2 compound(s) reported

Protocol 5/19/2010 11:52:44

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Sample Results

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Client: PASI Florida

Client ID: WOODLAND BAYOU
Project: 20108681
Project ID: 3511394 / Ecological Consult
Site: None
Lab ID: 20785530
Matrix: Soil
% Moisture: 95.8 Corrected
Description: None
Prep Level: Soil
Batch: 139237
Method: EPA 8015/8021
8015/8021 Med Soil
Collected: 07-May-10
Received: 13-May-10
Prepared: 17-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Gasoline Range Organics(C6-10)	1	16.4	I M1	60.2	13.4		18-May-10 04:12 MHM

1 compound(s) reported

Protocol 5/19/2010 11:52:44

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Sample Results

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Client: PASI Florida

Client ID: NAVY COVE
Project: 20108681
Project ID: 3511394 / Ecological Consult
Site: None
Lab ID: 20785531
Matrix: Soil
% Moisture: 21.8 Corrected
Description: None
Prep Level: Soil
Batch: 139162
Method: EPA 8015 Mod Ext
8015 TPH Extractables Soil
Collected: 07-May-10
Received: 13-May-10
Prepared: 14-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Diesel Range Organics (C10-28)	1	< 9.15	U	12.6	9.15		16-May-10 17:10 SNP1
	Oil Range Organics (>C28-40)	1	< 10.9	U	63.0	10.9		16-May-10 17:10 SNP1

2 compound(s) reported

Protocol 5/19/2010 11:52:44

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Client: PASI Florida

Client ID: NAVY COVE
Project ID: 3511394 / Ecological Consult
Lab ID: 20785531
Description: None
Method: EPA 8015/8021
8015/8021 Med Soil

Project: 20108681
Site: None
Matrix: Soil
Prep Level: Soil
% Moisture: 21.8 Corrected
Batch: 139237

Collected: 07-May-10
Received: 13-May-10
Prepared: 17-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Gasoline Range Organics(C6-10)	1	0.934	I	3.20	0.713		18-May-10 04:38 MHM

1 compound(s) reported

Sample Results

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Client: PASI Florida

Client ID: CATAWBA
Project: 20108681
Project ID: 3511394 / Ecological Consult
Site: None
Lab ID: 20785532
Matrix: Soil
% Moisture: 27 Corrected
Description: None
Prep Level: Soil
Batch: 139162
Method: EPA 8015 Mod Ext
8015 TPH Extractables Soil
Collected: 07-May-10
Received: 13-May-10
Prepared: 14-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Diesel Range Organics (C10-28)	1	< 9.67	U	13.3	9.67		16-May-10 15:44 SNP1
	Oil Range Organics (>C28-40)	1	< 11.6	U	66.6	11.6		16-May-10 15:44 SNP1

2 compound(s) reported

Protocol 5/19/2010 11:52:44

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Sample Results

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Client: PASI Florida

Client ID: CATAWBA
Project: 20108681
Project ID: 3511394 / Ecological Consult
Site: None
Lab ID: 20785532
Matrix: Soil
% Moisture: 27 Corrected
Description: None
Prep Level: Soil
Batch: 139237
Method: EPA 8015/8021
8015/8021 Med Soil
Collected: 07-May-10
Received: 13-May-10
Prepared: 17-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Gasoline Range Organics(C6-10)	1	0.916	I	3.42	0.763		18-May-10 05:04 MHM

1 compound(s) reported

Protocol 5/19/2010 11:52:44

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Sample Results

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Client: PASI Florida

Client ID: MALAGO
Project: 20108681
Project ID: 3511394 / Ecological Consult
Site: None
Lab ID: 20785533
Matrix: Soil
% Moisture: 22.1 Corrected
Description: None
Prep Level: Soil
Batch: 139162
Method: EPA 8015 Mod Ext
8015 TPH Extractables Soil
Collected: 07-May-10
Received: 13-May-10
Prepared: 14-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Diesel Range Organics (C10-28)	1	< 8.90	U	12.3	8.90		16-May-10 16:13 SNP1
	Oil Range Organics (>C28-40)	1	< 10.6	U	61.3	10.6		16-May-10 16:13 SNP1

2 compound(s) reported

Protocol 5/19/2010 11:52:45

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Client: PASI Florida

Client ID: MALAGO
Project ID: 3511394 / Ecological Consult
Lab ID: 20785533
Description: None
Method: EPA 8015/8021
8015/8021 Med Soil

Project: 20108681
Site: None
Matrix: Soil
Prep Level: Soil
Collected: 07-May-10
Prepared: 17-May-10

% Moisture: 22.1 Corrected
Batch: 139237
Received: 13-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Gasoline Range Organics(C6-10)	1	< 0.715	U	3.21	0.715		18-May-10 05:31 MHM

1 compound(s) reported

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Sample Results

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St. Rose, LA 70087
(504) 469-0333

Client: PASI Florida

Client ID: SHORELINE PARK
Project: 20108681
Project ID: 3511394 / Ecological Consult
Site: None
Lab ID: 20785534
Matrix: Soil
% Moisture: 26.8 Corrected
Description: None
Prep Level: Soil
Batch: 139162
Method: EPA 8015 Mod Ext
8015 TPH Extractables Soil
Collected: 07-May-10
Received: 13-May-10
Prepared: 14-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Diesel Range Organics (C10-28)	1	< 9.86	U	13.6	9.86		16-May-10 16:41 SNP1
	Oil Range Organics (>C28-40)	1	< 11.8	U	67.8	11.8		16-May-10 16:41 SNP1

2 compound(s) reported

Protocol 5/19/2010 11:52:45

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Sample Results

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Client: PASI Florida

Client ID: SHORELINE PARK
Project: 20108681
Project ID: 3511394 / Ecological Consult
Site: None
Lab ID: 20785534
Matrix: Soil
% Moisture: 26.8 Corrected
Description: None
Prep Level: Soil
Batch: 139237
Method: EPA 8015/8021
8015/8021 Med Soil
Collected: 07-May-10
Received: 13-May-10
Prepared: 17-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Gasoline Range Organics(C6-10)	1	0.791	I	3.42	0.761		18-May-10 05:57 MHM

1 compound(s) reported

Protocol 5/19/2010 11:52:45

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Client: PASI Florida

Client ID: WAYSIDE PARK
Project: 20108681
Project ID: 3511394 / Ecological Consult
Site: None
Lab ID: 20785535
Matrix: Soil
% Moisture: 29.7 Corrected
Description: None
Prep Level: Soil
Batch: 139162
Method: EPA 8015 Mod Ext
8015 TPH Extractables Soil
Collected: 07-May-10
Received: 13-May-10
Prepared: 14-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Diesel Range Organics (C10-28)	1	23.1		13.8	10.0		16-May-10 17:38 SNP1
	Oil Range Organics (>C28-40)	1	< 12.0	U	69.1	12.0		16-May-10 17:38 SNP1

2 compound(s) reported

Sample Results

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
(504) 469-0333

Client: PASI Florida

Client ID: WAYSIDE PARK
Project: 20108681
Project ID: 3511394 / Ecological Consult
Site: None
Lab ID: 20785535
Matrix: Soil
% Moisture: 29.7 Corrected
Description: None
Prep Level: Soil
Batch: 139237
Method: EPA 8015/8021
8015/8021 Med Soil
Collected: 07-May-10
Received: 13-May-10
Prepared: 17-May-10

Units: mg/kg

CAS No.	Analyte	Dilution	Result	Qu	PQL	MDL	Reg Limit	Analysis
	Gasoline Range Organics(C6-10)	1	0.976	I	3.55	0.792		18-May-10 06:24 MHM

1 compound(s) reported

Protocol 5/19/2010 11:52:45

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Batch: 139162 **Project:** 20108681 **LCS:** 20785609 14-May-10 18:03

Method: GC TPH/EPH **LCSD:**

MS: 20785610 16-May-10 18:35

Units: mg/kg **MSD:** 20785611 16-May-10 19:04

Original for MS: Client Sample 20785528

Parameter Name	LCS Spike	LCS Found	LCSD Found	LCS %Rec	LCSD %Rec	RPD	MS Spike	Sample Found	MS Found	MSD Found	MS %Rec	MSD %Rec	RPD	QC Limits LCS	QC Limits MS/MSD	Max RPD	Qu
Diesel Range Organics	40.0	35.5		89			52.5	11.0	42.9	41.7	61	60	3	44-131	10-175	20	

1 compound(s) reported

*** denotes recovery outside of QC limits.**
MS/MSD RPD is calculated via SW-846 rules on the basis of spiked sample concentrations rather than spike recoveries.

Batch: 139237 **Project:** 20108681 **LCS:** 20786008 18-May-10 0:41

Method: GC Volatile Organics **LCSD:**

MS: 20786009 18-May-10 2:00

Units: mg/kg **MSD:** 20786010 18-May-10 2:26

Original for MS: Client Sample 20785528

Parameter Name	LCS Spike	LCS Found	LCSD Found	LCS %Rec	LCSD %Rec	RPD	MS Spike	Sample Found	MS Found	MSD Found	MS %Rec	MSD %Rec	RPD	QC Limits LCS	QC Limits MS/MSD	Max RPD	Qu
Gasoline Range Organi	25.0	26.2		105			34.0	0.865	28.8	28.2	82	80	2	63-140	16-152	20	

1 compound(s) reported

*** denotes recovery outside of QC limits.**
MS/MSD RPD is calculated via SW-846 rules on the basis of spiked sample concentrations rather than spike recoveries.

Batch: 139162 **Project:** 20108681

Method: Soil GC TPH/EPH

Lab ID	Sample ID	Qu	Sur 1 %Rec	Sur 2 %Rec	Sur 3 %Rec	Sur 4 %Rec	Sur 5 %Rec	Sur 6 %Rec	Sur 7 %Rec	Sur 8 %Rec
20785608	139162 BLANK 1		81	84						
20785609	139162 LCS 1		80	87						
20785528	BAYCLIFF		77	87						
20785610	BAYCLIFF MS 1		69	82						
20785611	BAYCLIFF MSD 1		74	86						
20785532	CATAWBA		69	67						
20785533	MALAGO		57	64						
20785531	NAVY COVE		70	90						
20785534	SHORELINE PARK		76	88						
20785529	TB		75	74						
20785535	WAYSIDE PARK		57	72						
20785530	WOODLAND BAYOU		29	49						
	QC limits:		16-147	16-127						

Sur 1: n-Pentacosane (S)
Sur 2: o-Terphenyl (S)

*** denotes surrogate recovery outside of QC limits.**
D denotes surrogate recovery is outside of QC limits due to sample dilution, and is not considered an excursion.

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Surrogate Recovery

Batch: 139237 **Project:** 20108681

Method: Soil GC Volatile Organics

Lab ID	Sample ID	Qu	Sur 1 %Rec	Sur 2 %Rec	Sur 3 %Rec	Sur 4 %Rec	Sur 5 %Rec	Sur 6 %Rec	Sur 7 %Rec	Sur 8 %Rec
20786007	139237 BLANK 1		100							
20786008	139237 LCS 1		108							
20785528	BAYCLIFF		80							
20786009	BAYCLIFF MS 1		86							
20786010	BAYCLIFF MSD 1		85							
20785532	CATAWBA		80							
20785533	MALAGO		80							
20785531	NAVY COVE		82							
20785534	SHORELINE PARK		76							
20785529	TB		80							
20785535	WAYSIDE PARK		80							
20785530	WOODLAND BAYOU	M1	51 *							
	QC limits:		60-129							

Sur 1: 4-Bromofluorobenzene (S)

*** denotes surrogate recovery outside of QC limits.**

D denotes surrogate recovery is outside of QC limits due to sample dilution, and is not considered an excursion.

Organics Method Blank

Pace Analytical Services, Inc.
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Blank ID: 139162 BLANK 1 **Project:** 20108681

Lab ID: 20785608

Prep Level: Soil **Batch:** 139162

Method: Soil GC TPH/EPH

Prepared: 14-May-10

Units: mg/kg

CAS Numb	Analyte	Dilution	Result	Qu	Reporting PQL	MDL	Analysis
	Diesel Range Organics (C10-28)	1	< 7.27	U	10.0	7.27	14-May-10 17:35 SNP1
	Oil Range Organics (>C28-40)	1	< 8.68	U	50.0	8.68	14-May-10 17:35 SNP1

2 compound(s) reported

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Organics Method Blank

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St. Rose, LA 70087
(504) 469-0333

Blank ID: 139237 BLANK 1 **Project:** 20108681

Lab ID: 20786007

Prep Level: Soil **Batch:** 139237

Method: Soil GC Volatile Organics

Prepared: 17-May-10

Units: mg/kg

CAS Numb	Analyte	Dilution	Result	Qu	Reporting PQL	MDL	Analysis
	Gasoline Range Organics(C6-10)	1	0.652	I	2.50	0.557	18-May-10 00:14 MHM

1 compound(s) reported

Protocol Blank 5/19/2010 11:52:49

ND denotes the analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL denotes method detection limit
PQL denotes practical quantitation limit

Limits are corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.
Regulatory limit may denote an actual regulatory limit or a client-requested notification limit.

Project: 20108681

Value	Description
M1	The sample required reextraction and/or reanalysis due to surrogate recoveries outside the QC limits. Reanalysis yielded similar results, indicating a sample matrix effect. The results reported are from the original analysis.
I	This estimated value for the analyte is below the adjusted reporting limit but above the instrument reporting limit.
U	The analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
V	This analyte was detected in the method blank.
L	The sample concentration is above the linear calibrated range of the analysis.
ND	The analyte was analyzed for but not detected at the reporting limit or method detection limit indicated.
MDL	The adjusted method detection limit.
LCS(D)	Laboratory Control Sample (Duplicate).
MS(D)	Matrix Spike (Duplicate).
DUP	Sample Duplicate.
RPD	Relative Percent Difference.

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Appendices

Appendix 8

Pre-impact Sediment and Water Sampling Results

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Pace Analytical Services, Inc.
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

CERTIFICATIONS

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Ormond Beach Certification IDs

Alabama Certification #: 41320
Arizona Certification #: AZ0735
8 East Tower Circle Ormond Beach, FL 32174
Wyoming Certification: FL NELAC Reciprocity
Virginia Certification #: 00432
Texas Certification: FL NELAC Reciprocity
Tennessee Certification #: TN02974
Puerto Rico Certification #: FL01264
Pennsylvania Certification #: 68-547
North Carolina Certification #: 12710
New York Certification #: 11608
New Jersey Certification #: FL765
New Hampshire Certification #: 2958
Nevada Certification: FL NELAC Reciprocity
Montana Certification #: Cert 0074
Colorado Certification: FL NELAC Reciprocity
Connecticut Certification #: PH 0216
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: LA090012
Maine Certification #: FL1264
Massachusetts Certification #: M-FL1264
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity

Green Bay Certification IDs

Wisconsin DATCP Certification #: 105-444
Wisconsin Certification #: 405132750
South Carolina Certification #: 83006001
North Dakota Certification #: R-150
North Carolina Certification #: 503
New York Certification #: 11888
1241 Bellevue Street Green Bay, WI 54302
Minnesota Certification #: 055-999-334
Louisiana Certification #: 04168
Kentucky Certification #: 82
Illinois Certification #: 200050
Florida/NELAP Certification #: E87948
California Certification #: 09268CA
New York Certification #: 11887

Pace Analytical Services, Inc.
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Ormond Beach, FL 32174
(386)672-5668

SAMPLE SUMMARY

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Lab ID	Sample ID	Matrix	Date Collected	Date Received
3510939001	**DI Shallow A1**	Solid	05/01/10 13:30	05/04/10 12:25
3510939002	**DI Shallow A2**	Solid	05/01/10 13:30	05/04/10 12:25
3510939003	**DI Shallow A3**	Solid	05/01/10 13:30	05/04/10 12:25
3510939004	**DI Middle M1**	Solid	05/01/10 13:35	05/04/10 12:25
3510939005	**DI Middle M2**	Solid	05/01/10 13:35	05/04/10 12:25
3510939006	**DI Middle M3**	Solid	05/01/10 13:35	05/04/10 12:25
3510939007	**DI Deep C1**	Solid	05/01/10 14:30	05/04/10 12:25
3510939008	**DI Deep C2**	Solid	05/01/10 14:30	05/04/10 12:25
3510939009	**DI Deep C3**	Solid	05/01/10 14:30	05/04/10 12:25
3510939010	**DI Intertidal I1**	Solid	05/01/10 12:00	05/04/10 12:25
3510939011	**DI Intertidal I2**	Solid	05/01/10 12:00	05/04/10 12:25

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SAMPLE ANALYTE COUNT

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
3510939001	**DI Shallow A1**	FL-PRO	AE1	3	PASI-O
		EPA 8270	EAO	21	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
		EPA 9060 Modified	DJR	4	PASI-G
3510939002	**DI Shallow A2**	FL-PRO	AE1	3	PASI-O
		EPA 8270	EAO	21	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
		EPA 9060 Modified	DJR	4	PASI-G
3510939003	**DI Shallow A3**	FL-PRO	AE1	3	PASI-O
		EPA 8270	EAO	21	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
		EPA 9060 Modified	DJR	4	PASI-G
3510939004	**DI Middle M1**	FL-PRO	AE1	3	PASI-O
		EPA 8270	EAO	21	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
		EPA 9060 Modified	DJR	4	PASI-G
3510939005	**DI Middle M2**	FL-PRO	AE1	3	PASI-O
		EPA 8270	EAO	21	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
		EPA 9060 Modified	DJR	4	PASI-G
3510939006	**DI Middle M3**	FL-PRO	AE1	3	PASI-O
		EPA 8270	EAO	21	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
		EPA 9060 Modified	DJR	4	PASI-G
3510939007	**DI Deep C1**	FL-PRO	AE1	3	PASI-O
		EPA 8270	EAO	21	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
		EPA 9060 Modified	DJR	4	PASI-G
3510939008	**DI Deep C2**	FL-PRO	AE1	3	PASI-O
		EPA 8270	EAO	21	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
		EPA 9060 Modified	DJR	4	PASI-G
3510939009	**DI Deep C3**	FL-PRO	AE1	3	PASI-O
		EPA 8270	EAO	21	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
		EPA 9060 Modified	DJR	4	PASI-G
3510939010	**DI Intertidal I1**	FL-PRO	AE1	3	PASI-O

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8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

SAMPLE ANALYTE COUNT

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8270	EAO	21	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
		EPA 9060 Modified	DJR	4	PASI-G
3510939011	**DI Intertidal I2**	FL-PRO	AE1	3	PASI-O
		EPA 8270	EAO	21	PASI-O
		ASTM D2974-87	GMD	1	PASI-O
		EPA 9060 Modified	DJR	4	PASI-G

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PROJECT NARRATIVE

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Method: **FL-PRO**
Description: FL-PRO Soil Microwave
Client: Ecological Consulting Services, Inc.*_Gulf
Date: May 28, 2010

General Information:
11 samples were analyzed for FL-PRO. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Method: **EPA 8270**
Description: 8270 MSSV Short List Microwave
Client: Ecological Consulting Services, Inc.*_Gulf
Date: May 28, 2010

General Information:
11 samples were analyzed for EPA 8270. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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Ormond Beach, FL 32174
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PROJECT NARRATIVE

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Method: **ASTM D2974-87**
Description: Percent Moisture
Client: Ecological Consulting Services, Inc.*_Gulf
Date: May 28, 2010

General Information:
11 samples were analyzed for ASTM D2974-87. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Method: **EPA 9060 Modified**
Description: Total Organic Carbon
Client: Ecological Consulting Services, Inc.*_Gulf
Date: May 28, 2010

General Information:
11 samples were analyzed for EPA 9060 Modified. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Sample: DI Shallow A1 **Lab ID: 3510939001** Collected: 05/01/10 13:30 Received: 05/04/10 12:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
FL-PRO Soil Microwave	Analytical Method: FL-PRO Preparation Method: EPA 3546								
Petroleum Range Organics	**3.1U**	mg/kg	4.9	3.1	1	05/06/10 13:41	05/06/10 19:05		
C-39 (S)	64	%	60-118		1	05/06/10 13:41	05/06/10 19:05		
o-Terphenyl (S)	72	%	62-109		1	05/06/10 13:41	05/06/10 19:05	84-15-1	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.0U**	ug/kg	40.0	4.0	1	05/04/10 16:27	05/04/10 19:28	83-32-9	
Acenaphthylene	**4.7U**	ug/kg	40.0	4.7	1	05/04/10 16:27	05/04/10 19:28	208-96-8	
Anthracene	**2.5U**	ug/kg	40.0	2.5	1	05/04/10 16:27	05/04/10 19:28	120-12-7	
Benzo(a)anthracene	**3.6U**	ug/kg	40.0	3.6	1	05/04/10 16:27	05/04/10 19:28	56-55-3	
Benzo(a)pyrene	**4.4U**	ug/kg	40.0	4.4	1	05/04/10 16:27	05/04/10 19:28	50-32-8	
Benzo(b)fluoranthene	**2.8U**	ug/kg	40.0	2.8	1	05/04/10 16:27	05/04/10 19:28	205-99-2	
Benzo(g,h,i)perylene	**3.7U**	ug/kg	40.0	3.7	1	05/04/10 16:27	05/04/10 19:28	191-24-2	
Benzo(k)fluoranthene	**5.9U**	ug/kg	40.0	5.9	1	05/04/10 16:27	05/04/10 19:28	207-08-9	
Chrysene	**3.6U**	ug/kg	40.0	3.6	1	05/04/10 16:27	05/04/10 19:28	218-01-9	
Dibenz(a,h)anthracene	**4.3U**	ug/kg	40.0	4.3	1	05/04/10 16:27	05/04/10 19:28	53-70-3	
Fluoranthene	**4.5U**	ug/kg	40.0	4.5	1	05/04/10 16:27	05/04/10 19:28	206-44-0	
Fluorene	**3.0U**	ug/kg	40.0	3.0	1	05/04/10 16:27	05/04/10 19:28	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.3U**	ug/kg	40.0	4.3	1	05/04/10 16:27	05/04/10 19:28	193-39-5	
1-Methylnaphthalene	**5.1U**	ug/kg	40.0	5.1	1	05/04/10 16:27	05/04/10 19:28	90-12-0	
2-Methylnaphthalene	**5.6U**	ug/kg	40.0	5.6	1	05/04/10 16:27	05/04/10 19:28	91-57-6	
Naphthalene	**4.3U**	ug/kg	40.0	4.3	1	05/04/10 16:27	05/04/10 19:28	91-20-3	
Phenanthrene	**3.8U**	ug/kg	40.0	3.8	1	05/04/10 16:27	05/04/10 19:28	85-01-8	
Pyrene	**4.9U**	ug/kg	40.0	4.9	1	05/04/10 16:27	05/04/10 19:28	129-00-0	
Nitrobenzene-d5 (S)	57	%	10-110		1	05/04/10 16:27	05/04/10 19:28	4165-60-0	
2-Fluorobiphenyl (S)	60	%	18-110		1	05/04/10 16:27	05/04/10 19:28	321-60-8	
Terphenyl-d14 (S)	58	%	10-123		1	05/04/10 16:27	05/04/10 19:28	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.6**	%	0.10	0.10	1		05/04/10 15:00		
Total Organic Carbon	Analytical Method: EPA 9060 Modified								
RPD%	**9.5**	%			1		05/11/10 10:24		
Total Organic Carbon	**324**	mg/kg	252	70.5	1		05/11/10 10:20	7440-44-0	
Total Organic Carbon	**295**	mg/kg	253	70.7	1		05/11/10 10:24	7440-44-0	
Mean Total Organic Carbon	**310**	mg/kg	252	70.6	1		05/11/10 10:24	7440-44-0	

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ANALYTICAL RESULTS

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Sample: DI Shallow A2 **Lab ID: 3510939002** Collected: 05/01/10 13:30 Received: 05/04/10 12:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
FL-PRO Soil Microwave	Analytical Method: FL-PRO Preparation Method: EPA 3546								
Petroleum Range Organics	**3.3U**	mg/kg	5.1	3.3	1	05/06/10 13:41	05/06/10 20:42		
C-39 (S)	85	%	60-118		1	05/06/10 13:41	05/06/10 20:42		
o-Terphenyl (S)	97	%	62-109		1	05/06/10 13:41	05/06/10 20:42	84-15-1	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.2U**	ug/kg	42.3	4.2	1	05/04/10 16:27	05/04/10 19:58	83-32-9	
Acenaphthylene	**5.0U**	ug/kg	42.3	5.0	1	05/04/10 16:27	05/04/10 19:58	208-96-8	
Anthracene	**2.6U**	ug/kg	42.3	2.6	1	05/04/10 16:27	05/04/10 19:58	120-12-7	
Benzo(a)anthracene	**3.8U**	ug/kg	42.3	3.8	1	05/04/10 16:27	05/04/10 19:58	56-55-3	
Benzo(a)pyrene	**4.6U**	ug/kg	42.3	4.6	1	05/04/10 16:27	05/04/10 19:58	50-32-8	
Benzo(b)fluoranthene	**3.0U**	ug/kg	42.3	3.0	1	05/04/10 16:27	05/04/10 19:58	205-99-2	
Benzo(g,h,i)perylene	**3.9U**	ug/kg	42.3	3.9	1	05/04/10 16:27	05/04/10 19:58	191-24-2	
Benzo(k)fluoranthene	**6.3U**	ug/kg	42.3	6.3	1	05/04/10 16:27	05/04/10 19:58	207-08-9	
Chrysene	**3.8U**	ug/kg	42.3	3.8	1	05/04/10 16:27	05/04/10 19:58	218-01-9	
Dibenz(a,h)anthracene	**4.5U**	ug/kg	42.3	4.5	1	05/04/10 16:27	05/04/10 19:58	53-70-3	
Fluoranthene	**4.7U**	ug/kg	42.3	4.7	1	05/04/10 16:27	05/04/10 19:58	206-44-0	
Fluorene	**3.2U**	ug/kg	42.3	3.2	1	05/04/10 16:27	05/04/10 19:58	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.5U**	ug/kg	42.3	4.5	1	05/04/10 16:27	05/04/10 19:58	193-39-5	
1-Methylnaphthalene	**5.4U**	ug/kg	42.3	5.4	1	05/04/10 16:27	05/04/10 19:58	90-12-0	
2-Methylnaphthalene	**5.9U**	ug/kg	42.3	5.9	1	05/04/10 16:27	05/04/10 19:58	91-57-6	
Naphthalene	**4.5U**	ug/kg	42.3	4.5	1	05/04/10 16:27	05/04/10 19:58	91-20-3	
Phenanthrene	**4.0U**	ug/kg	42.3	4.0	1	05/04/10 16:27	05/04/10 19:58	85-01-8	
Pyrene	**5.1U**	ug/kg	42.3	5.1	1	05/04/10 16:27	05/04/10 19:58	129-00-0	
Nitrobenzene-d5 (S)	53	%	10-110		1	05/04/10 16:27	05/04/10 19:58	4165-60-0	
2-Fluorobiphenyl (S)	56	%	18-110		1	05/04/10 16:27	05/04/10 19:58	321-60-8	
Terphenyl-d14 (S)	70	%	10-123		1	05/04/10 16:27	05/04/10 19:58	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**23.2**	%	0.10	0.10	1		05/04/10 15:00		
Total Organic Carbon	Analytical Method: EPA 9060 Modified								
RPD%	**2.1**	%			1		05/11/10 11:01		
Total Organic Carbon	**151 I**	mg/kg	251	70.2	1		05/11/10 10:54	7440-44-0	
Total Organic Carbon	**154 I**	mg/kg	251	70.2	1		05/11/10 11:01	7440-44-0	
Mean Total Organic Carbon	**153 I**	mg/kg	251	70.2	1		05/11/10 11:01	7440-44-0	

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ANALYTICAL RESULTS

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Sample: DI Shallow A3 **Lab ID: 3510939003** Collected: 05/01/10 13:30 Received: 05/04/10 12:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
FL-PRO Soil Microwave	Analytical Method: FL-PRO Preparation Method: EPA 3546								
Petroleum Range Organics	**3.3U**	mg/kg	5.2	3.3	1	05/06/10 13:41	05/06/10 21:46		
C-39 (S)	84	%	60-118		1	05/06/10 13:41	05/06/10 21:46		
o-Terphenyl (S)	91	%	62-109		1	05/06/10 13:41	05/06/10 21:46	84-15-1	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.3U**	ug/kg	42.6	4.3	1	05/04/10 16:27	05/04/10 20:27	83-32-9	
Acenaphthylene	**5.0U**	ug/kg	42.6	5.0	1	05/04/10 16:27	05/04/10 20:27	208-96-8	
Anthracene	**2.6U**	ug/kg	42.6	2.6	1	05/04/10 16:27	05/04/10 20:27	120-12-7	
Benzo(a)anthracene	**3.8U**	ug/kg	42.6	3.8	1	05/04/10 16:27	05/04/10 20:27	56-55-3	
Benzo(a)pyrene	**4.7U**	ug/kg	42.6	4.7	1	05/04/10 16:27	05/04/10 20:27	50-32-8	
Benzo(b)fluoranthene	**3.0U**	ug/kg	42.6	3.0	1	05/04/10 16:27	05/04/10 20:27	205-99-2	
Benzo(g,h,i)perylene	**3.9U**	ug/kg	42.6	3.9	1	05/04/10 16:27	05/04/10 20:27	191-24-2	
Benzo(k)fluoranthene	**6.3U**	ug/kg	42.6	6.3	1	05/04/10 16:27	05/04/10 20:27	207-08-9	
Chrysene	**3.8U**	ug/kg	42.6	3.8	1	05/04/10 16:27	05/04/10 20:27	218-01-9	
Dibenz(a,h)anthracene	**4.6U**	ug/kg	42.6	4.6	1	05/04/10 16:27	05/04/10 20:27	53-70-3	
Fluoranthene	**4.8U**	ug/kg	42.6	4.8	1	05/04/10 16:27	05/04/10 20:27	206-44-0	
Fluorene	**3.2U**	ug/kg	42.6	3.2	1	05/04/10 16:27	05/04/10 20:27	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.5U**	ug/kg	42.6	4.5	1	05/04/10 16:27	05/04/10 20:27	193-39-5	
1-Methylnaphthalene	**5.4U**	ug/kg	42.6	5.4	1	05/04/10 16:27	05/04/10 20:27	90-12-0	
2-Methylnaphthalene	**5.9U**	ug/kg	42.6	5.9	1	05/04/10 16:27	05/04/10 20:27	91-57-6	
Naphthalene	**4.5U**	ug/kg	42.6	4.5	1	05/04/10 16:27	05/04/10 20:27	91-20-3	
Phenanthrene	**4.0U**	ug/kg	42.6	4.0	1	05/04/10 16:27	05/04/10 20:27	85-01-8	
Pyrene	**5.2U**	ug/kg	42.6	5.2	1	05/04/10 16:27	05/04/10 20:27	129-00-0	
Nitrobenzene-d5 (S)	74	%	10-110		1	05/04/10 16:27	05/04/10 20:27	4165-60-0	
2-Fluorobiphenyl (S)	79	%	18-110		1	05/04/10 16:27	05/04/10 20:27	321-60-8	
Terphenyl-d14 (S)	82	%	10-123		1	05/04/10 16:27	05/04/10 20:27	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**23.3**	%	0.10	0.10	1		05/04/10 15:00		
Total Organic Carbon	Analytical Method: EPA 9060 Modified								
RPD%	**37.2**	%			1		05/11/10 11:15		
Total Organic Carbon	**530**	mg/kg	251	70.4	1		05/11/10 11:09	7440-44-0	
Total Organic Carbon	**772**	mg/kg	250	70.0	1		05/11/10 11:15	7440-44-0	
Mean Total Organic Carbon	**651**	mg/kg	251	70.2	1		05/11/10 11:15	7440-44-0	

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ANALYTICAL RESULTS

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Sample: DI Middle M1 **Lab ID: 3510939004** Collected: 05/01/10 13:35 Received: 05/04/10 12:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
FL-PRO Soil Microwave	Analytical Method: FL-PRO Preparation Method: EPA 3546								
Petroleum Range Organics	**3.3U**	mg/kg	5.1	3.3	1	05/06/10 13:41	05/06/10 22:18		
C-39 (S)	75	%	60-118		1	05/06/10 13:41	05/06/10 22:18		
o-Terphenyl (S)	84	%	62-109		1	05/06/10 13:41	05/06/10 22:18	84-15-1	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.2U**	ug/kg	41.9	4.2	1	05/04/10 16:27	05/04/10 20:56	83-32-9	
Acenaphthylene	**5.0U**	ug/kg	41.9	5.0	1	05/04/10 16:27	05/04/10 20:56	208-96-8	
Anthracene	**2.6U**	ug/kg	41.9	2.6	1	05/04/10 16:27	05/04/10 20:56	120-12-7	
Benzo(a)anthracene	**3.7U**	ug/kg	41.9	3.7	1	05/04/10 16:27	05/04/10 20:56	56-55-3	
Benzo(a)pyrene	**4.6U**	ug/kg	41.9	4.6	1	05/04/10 16:27	05/04/10 20:56	50-32-8	
Benzo(b)fluoranthene	**2.9U**	ug/kg	41.9	2.9	1	05/04/10 16:27	05/04/10 20:56	205-99-2	
Benzo(g,h,i)perylene	**3.9U**	ug/kg	41.9	3.9	1	05/04/10 16:27	05/04/10 20:56	191-24-2	
Benzo(k)fluoranthene	**6.2U**	ug/kg	41.9	6.2	1	05/04/10 16:27	05/04/10 20:56	207-08-9	
Chrysene	**3.7U**	ug/kg	41.9	3.7	1	05/04/10 16:27	05/04/10 20:56	218-01-9	
Dibenz(a,h)anthracene	**4.5U**	ug/kg	41.9	4.5	1	05/04/10 16:27	05/04/10 20:56	53-70-3	
Fluoranthene	**4.7U**	ug/kg	41.9	4.7	1	05/04/10 16:27	05/04/10 20:56	206-44-0	
Fluorene	**3.2U**	ug/kg	41.9	3.2	1	05/04/10 16:27	05/04/10 20:56	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.5U**	ug/kg	41.9	4.5	1	05/04/10 16:27	05/04/10 20:56	193-39-5	
1-Methylnaphthalene	**5.3U**	ug/kg	41.9	5.3	1	05/04/10 16:27	05/04/10 20:56	90-12-0	
2-Methylnaphthalene	**5.8U**	ug/kg	41.9	5.8	1	05/04/10 16:27	05/04/10 20:56	91-57-6	
Naphthalene	**4.5U**	ug/kg	41.9	4.5	1	05/04/10 16:27	05/04/10 20:56	91-20-3	
Phenanthrene	**4.0U**	ug/kg	41.9	4.0	1	05/04/10 16:27	05/04/10 20:56	85-01-8	
Pyrene	**5.1U**	ug/kg	41.9	5.1	1	05/04/10 16:27	05/04/10 20:56	129-00-0	
Nitrobenzene-d5 (S)	70	%	10-110		1	05/04/10 16:27	05/04/10 20:56	4165-60-0	
2-Fluorobiphenyl (S)	78	%	18-110		1	05/04/10 16:27	05/04/10 20:56	321-60-8	
Terphenyl-d14 (S)	78	%	10-123		1	05/04/10 16:27	05/04/10 20:56	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**22.2**	%	0.10	0.10	1		05/04/10 15:00		
Total Organic Carbon	Analytical Method: EPA 9060 Modified								
RPD%	**1.0**	%			1		05/11/10 11:24		
Total Organic Carbon	**286**	mg/kg	250	70.0	1		05/11/10 11:20	7440-44-0	
Total Organic Carbon	**289**	mg/kg	251	70.4	1		05/11/10 11:24	7440-44-0	
Mean Total Organic Carbon	**287**	mg/kg	251	70.4	1		05/11/10 11:24	7440-44-0	

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ANALYTICAL RESULTS

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Sample: DI Middle M2 **Lab ID: 3510939005** Collected: 05/01/10 13:35 Received: 05/04/10 12:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
FL-PRO Soil Microwave	Analytical Method: FL-PRO Preparation Method: EPA 3546								
Petroleum Range Organics	**3.2U**	mg/kg	5.0	3.2	1	05/06/10 13:41	05/06/10 22:50		
C-39 (S)	92	%	60-118		1	05/06/10 13:41	05/06/10 22:50		
o-Terphenyl (S)	96	%	62-109		1	05/06/10 13:41	05/06/10 22:50	84-15-1	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.2U**	ug/kg	41.6	4.2	1	05/04/10 16:27	05/04/10 21:26	83-32-9	
Acenaphthylene	**4.9U**	ug/kg	41.6	4.9	1	05/04/10 16:27	05/04/10 21:26	208-96-8	
Anthracene	**2.6U**	ug/kg	41.6	2.6	1	05/04/10 16:27	05/04/10 21:26	120-12-7	
Benzo(a)anthracene	**3.7U**	ug/kg	41.6	3.7	1	05/04/10 16:27	05/04/10 21:26	56-55-3	
Benzo(a)pyrene	**4.6U**	ug/kg	41.6	4.6	1	05/04/10 16:27	05/04/10 21:26	50-32-8	
Benzo(b)fluoranthene	**2.9U**	ug/kg	41.6	2.9	1	05/04/10 16:27	05/04/10 21:26	205-99-2	
Benzo(g,h,i)perylene	**3.8U**	ug/kg	41.6	3.8	1	05/04/10 16:27	05/04/10 21:26	191-24-2	
Benzo(k)fluoranthene	**6.2U**	ug/kg	41.6	6.2	1	05/04/10 16:27	05/04/10 21:26	207-08-9	
Chrysene	**3.7U**	ug/kg	41.6	3.7	1	05/04/10 16:27	05/04/10 21:26	218-01-9	
Dibenz(a,h)anthracene	**4.4U**	ug/kg	41.6	4.4	1	05/04/10 16:27	05/04/10 21:26	53-70-3	
Fluoranthene	**4.7U**	ug/kg	41.6	4.7	1	05/04/10 16:27	05/04/10 21:26	206-44-0	
Fluorene	**3.1U**	ug/kg	41.6	3.1	1	05/04/10 16:27	05/04/10 21:26	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.4U**	ug/kg	41.6	4.4	1	05/04/10 16:27	05/04/10 21:26	193-39-5	
1-Methylnaphthalene	**5.3U**	ug/kg	41.6	5.3	1	05/04/10 16:27	05/04/10 21:26	90-12-0	
2-Methylnaphthalene	**5.8U**	ug/kg	41.6	5.8	1	05/04/10 16:27	05/04/10 21:26	91-57-6	
Naphthalene	**4.4U**	ug/kg	41.6	4.4	1	05/04/10 16:27	05/04/10 21:26	91-20-3	
Phenanthrene	**4.0U**	ug/kg	41.6	4.0	1	05/04/10 16:27	05/04/10 21:26	85-01-8	
Pyrene	**5.1U**	ug/kg	41.6	5.1	1	05/04/10 16:27	05/04/10 21:26	129-00-0	
Nitrobenzene-d5 (S)	41	%	10-110		1	05/04/10 16:27	05/04/10 21:26	4165-60-0	
2-Fluorobiphenyl (S)	41	%	18-110		1	05/04/10 16:27	05/04/10 21:26	321-60-8	
Terphenyl-d14 (S)	41	%	10-123		1	05/04/10 16:27	05/04/10 21:26	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**21.2**	%	0.10	0.10	1		05/04/10 15:00		
Total Organic Carbon	Analytical Method: EPA 9060 Modified								
RPD%	**3.0**	%			1		05/11/10 11:39		
Total Organic Carbon	**594**	mg/kg	250	70.0	1		05/11/10 11:35	7440-44-0	
Total Organic Carbon	**577**	mg/kg	251	70.4	1		05/11/10 11:39	7440-44-0	
Mean Total Organic Carbon	**585**	mg/kg	251	70.2	1		05/11/10 11:39	7440-44-0	

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ANALYTICAL RESULTS

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Sample: DI Middle M3 **Lab ID: 3510939006** Collected: 05/01/10 13:35 Received: 05/04/10 12:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
FL-PRO Soil Microwave	Analytical Method: FL-PRO Preparation Method: EPA 3546								
Petroleum Range Organics	**3.2U**	mg/kg	5.0	3.2	1	05/06/10 13:41	05/06/10 23:23		
C-39 (S)	90	%	60-118		1	05/06/10 13:41	05/06/10 23:23		
o-Terphenyl (S)	92	%	62-109		1	05/06/10 13:41	05/06/10 23:23	84-15-1	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.1U**	ug/kg	41.1	4.1	1	05/04/10 16:27	05/04/10 21:55	83-32-9	
Acenaphthylene	**4.9U**	ug/kg	41.1	4.9	1	05/04/10 16:27	05/04/10 21:55	208-96-8	
Anthracene	**2.5U**	ug/kg	41.1	2.5	1	05/04/10 16:27	05/04/10 21:55	120-12-7	
Benzo(a)anthracene	**3.7U**	ug/kg	41.1	3.7	1	05/04/10 16:27	05/04/10 21:55	56-55-3	
Benzo(a)pyrene	**4.5U**	ug/kg	41.1	4.5	1	05/04/10 16:27	05/04/10 21:55	50-32-8	
Benzo(b)fluoranthene	**2.9U**	ug/kg	41.1	2.9	1	05/04/10 16:27	05/04/10 21:55	205-99-2	
Benzo(g,h,i)perylene	**3.8U**	ug/kg	41.1	3.8	1	05/04/10 16:27	05/04/10 21:55	191-24-2	
Benzo(k)fluoranthene	**6.1U**	ug/kg	41.1	6.1	1	05/04/10 16:27	05/04/10 21:55	207-08-9	
Chrysene	**3.7U**	ug/kg	41.1	3.7	1	05/04/10 16:27	05/04/10 21:55	218-01-9	
Dibenz(a,h)anthracene	**4.4U**	ug/kg	41.1	4.4	1	05/04/10 16:27	05/04/10 21:55	53-70-3	
Fluoranthene	**4.6U**	ug/kg	41.1	4.6	1	05/04/10 16:27	05/04/10 21:55	206-44-0	
Fluorene	**3.1U**	ug/kg	41.1	3.1	1	05/04/10 16:27	05/04/10 21:55	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.4U**	ug/kg	41.1	4.4	1	05/04/10 16:27	05/04/10 21:55	193-39-5	
1-Methylnaphthalene	**5.2U**	ug/kg	41.1	5.2	1	05/04/10 16:27	05/04/10 21:55	90-12-0	
2-Methylnaphthalene	**5.7U**	ug/kg	41.1	5.7	1	05/04/10 16:27	05/04/10 21:55	91-57-6	
Naphthalene	**4.4U**	ug/kg	41.1	4.4	1	05/04/10 16:27	05/04/10 21:55	91-20-3	
Phenanthrene	**3.9U**	ug/kg	41.1	3.9	1	05/04/10 16:27	05/04/10 21:55	85-01-8	
Pyrene	**5.0U**	ug/kg	41.1	5.0	1	05/04/10 16:27	05/04/10 21:55	129-00-0	
Nitrobenzene-d5 (S)	66	%	10-110		1	05/04/10 16:27	05/04/10 21:55	4165-60-0	
2-Fluorobiphenyl (S)	71	%	18-110		1	05/04/10 16:27	05/04/10 21:55	321-60-8	
Terphenyl-d14 (S)	79	%	10-123		1	05/04/10 16:27	05/04/10 21:55	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**20.8**	%	0.10	0.10	1		05/04/10 15:00		
Total Organic Carbon	Analytical Method: EPA 9060 Modified								
RPD%	**2.2**	%			1		05/11/10 12:41		
Total Organic Carbon	**789**	mg/kg	251	70.2	1		05/11/10 12:25	7440-44-0	
Total Organic Carbon	**771**	mg/kg	252	70.5	1		05/11/10 12:41	7440-44-0	
Mean Total Organic Carbon	**780**	mg/kg	251	70.4	1		05/11/10 12:41	7440-44-0	

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ANALYTICAL RESULTS

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Sample: DI Deep C1 **Lab ID: 3510939007** Collected: 05/01/10 14:30 Received: 05/04/10 12:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
FL-PRO Soil Microwave	Analytical Method: FL-PRO Preparation Method: EPA 3546								
Petroleum Range Organics	**3.1U**	mg/kg	4.9	3.1	1	05/06/10 13:41	05/06/10 23:55		
C-39 (S)	95	%	60-118		1	05/06/10 13:41	05/06/10 23:55		
o-Terphenyl (S)	95	%	62-109		1	05/06/10 13:41	05/06/10 23:55	84-15-1	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.1U**	ug/kg	41.0	4.1	1	05/04/10 16:27	05/04/10 22:24	83-32-9	
Acenaphthylene	**4.9U**	ug/kg	41.0	4.9	1	05/04/10 16:27	05/04/10 22:24	208-96-8	
Anthracene	**2.5U**	ug/kg	41.0	2.5	1	05/04/10 16:27	05/04/10 22:24	120-12-7	
Benzo(a)anthracene	**3.7U**	ug/kg	41.0	3.7	1	05/04/10 16:27	05/04/10 22:24	56-55-3	
Benzo(a)pyrene	**4.5U**	ug/kg	41.0	4.5	1	05/04/10 16:27	05/04/10 22:24	50-32-8	
Benzo(b)fluoranthene	**2.9U**	ug/kg	41.0	2.9	1	05/04/10 16:27	05/04/10 22:24	205-99-2	
Benzo(g,h,i)perylene	**3.8U**	ug/kg	41.0	3.8	1	05/04/10 16:27	05/04/10 22:24	191-24-2	
Benzo(k)fluoranthene	**6.1U**	ug/kg	41.0	6.1	1	05/04/10 16:27	05/04/10 22:24	207-08-9	
Chrysene	**3.7U**	ug/kg	41.0	3.7	1	05/04/10 16:27	05/04/10 22:24	218-01-9	
Dibenz(a,h)anthracene	**4.4U**	ug/kg	41.0	4.4	1	05/04/10 16:27	05/04/10 22:24	53-70-3	
Fluoranthene	**4.6U**	ug/kg	41.0	4.6	1	05/04/10 16:27	05/04/10 22:24	206-44-0	
Fluorene	**3.1U**	ug/kg	41.0	3.1	1	05/04/10 16:27	05/04/10 22:24	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.4U**	ug/kg	41.0	4.4	1	05/04/10 16:27	05/04/10 22:24	193-39-5	
1-Methylnaphthalene	**5.2U**	ug/kg	41.0	5.2	1	05/04/10 16:27	05/04/10 22:24	90-12-0	
2-Methylnaphthalene	**5.7U**	ug/kg	41.0	5.7	1	05/04/10 16:27	05/04/10 22:24	91-57-6	
Naphthalene	**4.4U**	ug/kg	41.0	4.4	1	05/04/10 16:27	05/04/10 22:24	91-20-3	
Phenanthrene	**3.9U**	ug/kg	41.0	3.9	1	05/04/10 16:27	05/04/10 22:24	85-01-8	
Pyrene	**5.0U**	ug/kg	41.0	5.0	1	05/04/10 16:27	05/04/10 22:24	129-00-0	
Nitrobenzene-d5 (S)	70	%	10-110		1	05/04/10 16:27	05/04/10 22:24	4165-60-0	
2-Fluorobiphenyl (S)	70	%	18-110		1	05/04/10 16:27	05/04/10 22:24	321-60-8	
Terphenyl-d14 (S)	80	%	10-123		1	05/04/10 16:27	05/04/10 22:24	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**20.4**	%	0.10	0.10	1		05/04/10 15:00		
Total Organic Carbon	Analytical Method: EPA 9060 Modified								
RPD%	**2.1**	%			1		05/11/10 13:20		
Total Organic Carbon	**311**	mg/kg	251	70.2	1		05/11/10 13:02	7440-44-0	
Total Organic Carbon	**318**	mg/kg	250	70.0	1		05/11/10 13:20	7440-44-0	
Mean Total Organic Carbon	**314**	mg/kg	250	70.1	1		05/11/10 13:20	7440-44-0	

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ANALYTICAL RESULTS

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Sample: DI Deep C2 **Lab ID: 3510939008** Collected: 05/01/10 14:30 Received: 05/04/10 12:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
FL-PRO Soil Microwave	Analytical Method: FL-PRO Preparation Method: EPA 3546								
Petroleum Range Organics	**3.1U**	mg/kg	4.9	3.1	1	05/06/10 13:41	05/07/10 00:27		
C-39 (S)	89	%	60-118		1	05/06/10 13:41	05/07/10 00:27		
o-Terphenyl (S)	101	%	62-109		1	05/06/10 13:41	05/07/10 00:27	84-15-1	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.1U**	ug/kg	40.5	4.1	1	05/04/10 16:27	05/04/10 22:53	83-32-9	
Acenaphthylene	**4.8U**	ug/kg	40.5	4.8	1	05/04/10 16:27	05/04/10 22:53	208-96-8	
Anthracene	**2.5U**	ug/kg	40.5	2.5	1	05/04/10 16:27	05/04/10 22:53	120-12-7	
Benzo(a)anthracene	**3.6U**	ug/kg	40.5	3.6	1	05/04/10 16:27	05/04/10 22:53	56-55-3	
Benzo(a)pyrene	**4.4U**	ug/kg	40.5	4.4	1	05/04/10 16:27	05/04/10 22:53	50-32-8	
Benzo(b)fluoranthene	**2.8U**	ug/kg	40.5	2.8	1	05/04/10 16:27	05/04/10 22:53	205-99-2	
Benzo(g,h,i)perylene	**3.7U**	ug/kg	40.5	3.7	1	05/04/10 16:27	05/04/10 22:53	191-24-2	
Benzo(k)fluoranthene	**6.0U**	ug/kg	40.5	6.0	1	05/04/10 16:27	05/04/10 22:53	207-08-9	
Chrysene	**3.6U**	ug/kg	40.5	3.6	1	05/04/10 16:27	05/04/10 22:53	218-01-9	
Dibenz(a,h)anthracene	**4.3U**	ug/kg	40.5	4.3	1	05/04/10 16:27	05/04/10 22:53	53-70-3	
Fluoranthene	**4.5U**	ug/kg	40.5	4.5	1	05/04/10 16:27	05/04/10 22:53	206-44-0	
Fluorene	**3.0U**	ug/kg	40.5	3.0	1	05/04/10 16:27	05/04/10 22:53	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.3U**	ug/kg	40.5	4.3	1	05/04/10 16:27	05/04/10 22:53	193-39-5	
1-Methylnaphthalene	**5.1U**	ug/kg	40.5	5.1	1	05/04/10 16:27	05/04/10 22:53	90-12-0	
2-Methylnaphthalene	**5.6U**	ug/kg	40.5	5.6	1	05/04/10 16:27	05/04/10 22:53	91-57-6	
Naphthalene	**4.3U**	ug/kg	40.5	4.3	1	05/04/10 16:27	05/04/10 22:53	91-20-3	
Phenanthrene	**3.8U**	ug/kg	40.5	3.8	1	05/04/10 16:27	05/04/10 22:53	85-01-8	
Pyrene	**4.9U**	ug/kg	40.5	4.9	1	05/04/10 16:27	05/04/10 22:53	129-00-0	
Nitrobenzene-d5 (S)	74	%	10-110		1	05/04/10 16:27	05/04/10 22:53	4165-60-0	
2-Fluorobiphenyl (S)	80	%	18-110		1	05/04/10 16:27	05/04/10 22:53	321-60-8	
Terphenyl-d14 (S)	81	%	10-123		1	05/04/10 16:27	05/04/10 22:53	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**19.8**	%	0.10	0.10	1		05/04/10 15:00		
Total Organic Carbon	Analytical Method: EPA 9060 Modified								
RPD%	**7.1**	%			1		05/11/10 13:44		
Total Organic Carbon	**273**	mg/kg	251	70.2	1		05/11/10 13:31	7440-44-0	
Total Organic Carbon	**254**	mg/kg	251	70.4	1		05/11/10 13:44	7440-44-0	
Mean Total Organic Carbon	**264**	mg/kg	251	70.3	1		05/11/10 13:44	7440-44-0	

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ANALYTICAL RESULTS

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Sample: DI Deep C3 **Lab ID: 3510939009** Collected: 05/01/10 14:30 Received: 05/04/10 12:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
FL-PRO Soil Microwave	Analytical Method: FL-PRO Preparation Method: EPA 3546								
Petroleum Range Organics	**12.0**	mg/kg	4.9	3.1	1	05/06/10 13:41	05/07/10 00:59		
C-39 (S)	82	%	60-118		1	05/06/10 13:41	05/07/10 00:59		
o-Terphenyl (S)	100	%	62-109		1	05/06/10 13:41	05/07/10 00:59	84-15-1	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.1U**	ug/kg	40.4	4.1	1	05/04/10 16:27	05/04/10 23:22	83-32-9	
Acenaphthylene	**4.8U**	ug/kg	40.4	4.8	1	05/04/10 16:27	05/04/10 23:22	208-96-8	
Anthracene	**2.5U**	ug/kg	40.4	2.5	1	05/04/10 16:27	05/04/10 23:22	120-12-7	
Benzo(a)anthracene	**3.6U**	ug/kg	40.4	3.6	1	05/04/10 16:27	05/04/10 23:22	56-55-3	
Benzo(a)pyrene	**4.4U**	ug/kg	40.4	4.4	1	05/04/10 16:27	05/04/10 23:22	50-32-8	
Benzo(b)fluoranthene	**2.8U**	ug/kg	40.4	2.8	1	05/04/10 16:27	05/04/10 23:22	205-99-2	
Benzo(g,h,i)perylene	**3.7U**	ug/kg	40.4	3.7	1	05/04/10 16:27	05/04/10 23:22	191-24-2	
Benzo(k)fluoranthene	**6.0U**	ug/kg	40.4	6.0	1	05/04/10 16:27	05/04/10 23:22	207-08-9	
Chrysene	**3.6U**	ug/kg	40.4	3.6	1	05/04/10 16:27	05/04/10 23:22	218-01-9	
Dibenz(a,h)anthracene	**4.3U**	ug/kg	40.4	4.3	1	05/04/10 16:27	05/04/10 23:22	53-70-3	
Fluoranthene	**4.5U**	ug/kg	40.4	4.5	1	05/04/10 16:27	05/04/10 23:22	206-44-0	
Fluorene	**3.0U**	ug/kg	40.4	3.0	1	05/04/10 16:27	05/04/10 23:22	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.3U**	ug/kg	40.4	4.3	1	05/04/10 16:27	05/04/10 23:22	193-39-5	
1-Methylnaphthalene	**5.1U**	ug/kg	40.4	5.1	1	05/04/10 16:27	05/04/10 23:22	90-12-0	
2-Methylnaphthalene	**5.6U**	ug/kg	40.4	5.6	1	05/04/10 16:27	05/04/10 23:22	91-57-6	
Naphthalene	**4.3U**	ug/kg	40.4	4.3	1	05/04/10 16:27	05/04/10 23:22	91-20-3	
Phenanthrene	**3.8U**	ug/kg	40.4	3.8	1	05/04/10 16:27	05/04/10 23:22	85-01-8	
Pyrene	**4.9U**	ug/kg	40.4	4.9	1	05/04/10 16:27	05/04/10 23:22	129-00-0	
Nitrobenzene-d5 (S)	71	%	10-110		1	05/04/10 16:27	05/04/10 23:22	4165-60-0	
2-Fluorobiphenyl (S)	80	%	18-110		1	05/04/10 16:27	05/04/10 23:22	321-60-8	
Terphenyl-d14 (S)	81	%	10-123		1	05/04/10 16:27	05/04/10 23:22	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**19.2**	%	0.10	0.10	1		05/04/10 15:00		
Total Organic Carbon	Analytical Method: EPA 9060 Modified								
RPD%	**10.7**	%			1		05/11/10 13:57		
Total Organic Carbon	**178 I**	mg/kg	251	70.2	1		05/11/10 13:53	7440-44-0	
Total Organic Carbon	**198 I**	mg/kg	250	70.0	1		05/11/10 13:57	7440-44-0	
Mean Total Organic Carbon	**188 I**	mg/kg	250	70.1	1		05/11/10 13:57	7440-44-0	

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ANALYTICAL RESULTS

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Sample: DI Intertidal I1 **Lab ID: 3510939010** Collected: 05/01/10 12:00 Received: 05/04/10 12:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
FL-PRO Soil Microwave	Analytical Method: FL-PRO Preparation Method: EPA 3546								
Petroleum Range Organics	**3.2U**	mg/kg	5.0	3.2	1	05/06/10 13:41	05/07/10 01:31		
C-39 (S)	80	%	60-118		1	05/06/10 13:41	05/07/10 01:31		
o-Terphenyl (S)	89	%	62-109		1	05/06/10 13:41	05/07/10 01:31	84-15-1	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.2U**	ug/kg	41.5	4.2	1	05/04/10 16:27	05/04/10 23:50	83-32-9	
Acenaphthylene	**4.9U**	ug/kg	41.5	4.9	1	05/04/10 16:27	05/04/10 23:50	208-96-8	
Anthracene	**2.6U**	ug/kg	41.5	2.6	1	05/04/10 16:27	05/04/10 23:50	120-12-7	
Benzo(a)anthracene	**3.7U**	ug/kg	41.5	3.7	1	05/04/10 16:27	05/04/10 23:50	56-55-3	
Benzo(a)pyrene	**4.5U**	ug/kg	41.5	4.5	1	05/04/10 16:27	05/04/10 23:50	50-32-8	
Benzo(b)fluoranthene	**2.9U**	ug/kg	41.5	2.9	1	05/04/10 16:27	05/04/10 23:50	205-99-2	
Benzo(g,h,i)perylene	**3.8U**	ug/kg	41.5	3.8	1	05/04/10 16:27	05/04/10 23:50	191-24-2	
Benzo(k)fluoranthene	**6.2U**	ug/kg	41.5	6.2	1	05/04/10 16:27	05/04/10 23:50	207-08-9	
Chrysene	**3.7U**	ug/kg	41.5	3.7	1	05/04/10 16:27	05/04/10 23:50	218-01-9	
Dibenz(a,h)anthracene	**4.4U**	ug/kg	41.5	4.4	1	05/04/10 16:27	05/04/10 23:50	53-70-3	
Fluoranthene	**4.7U**	ug/kg	41.5	4.7	1	05/04/10 16:27	05/04/10 23:50	206-44-0	
Fluorene	**3.1U**	ug/kg	41.5	3.1	1	05/04/10 16:27	05/04/10 23:50	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.4U**	ug/kg	41.5	4.4	1	05/04/10 16:27	05/04/10 23:50	193-39-5	
1-Methylnaphthalene	**5.3U**	ug/kg	41.5	5.3	1	05/04/10 16:27	05/04/10 23:50	90-12-0	
2-Methylnaphthalene	**5.8U**	ug/kg	41.5	5.8	1	05/04/10 16:27	05/04/10 23:50	91-57-6	
Naphthalene	**4.4U**	ug/kg	41.5	4.4	1	05/04/10 16:27	05/04/10 23:50	91-20-3	
Phenanthrene	**3.9U**	ug/kg	41.5	3.9	1	05/04/10 16:27	05/04/10 23:50	85-01-8	
Pyrene	**5.0U**	ug/kg	41.5	5.0	1	05/04/10 16:27	05/04/10 23:50	129-00-0	
Nitrobenzene-d5 (S)	76	%	10-110		1	05/04/10 16:27	05/04/10 23:50	4165-60-0	
2-Fluorobiphenyl (S)	80	%	18-110		1	05/04/10 16:27	05/04/10 23:50	321-60-8	
Terphenyl-d14 (S)	85	%	10-123		1	05/04/10 16:27	05/04/10 23:50	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**20.8**	%	0.10	0.10	1		05/04/10 15:00		
Total Organic Carbon	Analytical Method: EPA 9060 Modified								
RPD%	**2.8**	%			1		05/11/10 14:45		
Total Organic Carbon	**97.0 I**	mg/kg	252	70.5	1		05/11/10 14:33	7440-44-0	
Total Organic Carbon	**99.7 I**	mg/kg	251	70.4	1		05/11/10 14:45	7440-44-0	
Mean Total Organic Carbon	**98.4 I**	mg/kg	252	70.4	1		05/11/10 14:45	7440-44-0	

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ANALYTICAL RESULTS

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Sample: DI Intertidal I2 **Lab ID: 3510939011** Collected: 05/01/10 12:00 Received: 05/04/10 12:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
FL-PRO Soil Microwave	Analytical Method: FL-PRO Preparation Method: EPA 3546								
Petroleum Range Organics	**3.3U**	mg/kg	5.1	3.3	1	05/06/10 13:41	05/07/10 02:03		
C-39 (S)	83	%	60-118		1	05/06/10 13:41	05/07/10 02:03		
o-Terphenyl (S)	98	%	62-109		1	05/06/10 13:41	05/07/10 02:03	84-15-1	
8270 MSSV Short List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**4.3U**	ug/kg	42.3	4.3	1	05/04/10 16:27	05/05/10 00:19	83-32-9	
Acenaphthylene	**5.0U**	ug/kg	42.3	5.0	1	05/04/10 16:27	05/05/10 00:19	208-96-8	
Anthracene	**2.6U**	ug/kg	42.3	2.6	1	05/04/10 16:27	05/05/10 00:19	120-12-7	
Benzo(a)anthracene	**3.8U**	ug/kg	42.3	3.8	1	05/04/10 16:27	05/05/10 00:19	56-55-3	
Benzo(a)pyrene	**4.6U**	ug/kg	42.3	4.6	1	05/04/10 16:27	05/05/10 00:19	50-32-8	
Benzo(b)fluoranthene	**3.0U**	ug/kg	42.3	3.0	1	05/04/10 16:27	05/05/10 00:19	205-99-2	
Benzo(g,h,i)perylene	**3.9U**	ug/kg	42.3	3.9	1	05/04/10 16:27	05/05/10 00:19	191-24-2	
Benzo(k)fluoranthene	**6.3U**	ug/kg	42.3	6.3	1	05/04/10 16:27	05/05/10 00:19	207-08-9	
Chrysene	**3.8U**	ug/kg	42.3	3.8	1	05/04/10 16:27	05/05/10 00:19	218-01-9	
Dibenz(a,h)anthracene	**4.5U**	ug/kg	42.3	4.5	1	05/04/10 16:27	05/05/10 00:19	53-70-3	
Fluoranthene	**4.7U**	ug/kg	42.3	4.7	1	05/04/10 16:27	05/05/10 00:19	206-44-0	
Fluorene	**3.2U**	ug/kg	42.3	3.2	1	05/04/10 16:27	05/05/10 00:19	86-73-7	
Indeno(1,2,3-cd)pyrene	**4.5U**	ug/kg	42.3	4.5	1	05/04/10 16:27	05/05/10 00:19	193-39-5	
1-Methylnaphthalene	**5.4U**	ug/kg	42.3	5.4	1	05/04/10 16:27	05/05/10 00:19	90-12-0	
2-Methylnaphthalene	**5.9U**	ug/kg	42.3	5.9	1	05/04/10 16:27	05/05/10 00:19	91-57-6	
Naphthalene	**4.5U**	ug/kg	42.3	4.5	1	05/04/10 16:27	05/05/10 00:19	91-20-3	
Phenanthrene	**4.0U**	ug/kg	42.3	4.0	1	05/04/10 16:27	05/05/10 00:19	85-01-8	
Pyrene	**5.1U**	ug/kg	42.3	5.1	1	05/04/10 16:27	05/05/10 00:19	129-00-0	
Nitrobenzene-d5 (S)	65	%	10-110		1	05/04/10 16:27	05/05/10 00:19	4165-60-0	
2-Fluorobiphenyl (S)	75	%	18-110		1	05/04/10 16:27	05/05/10 00:19	321-60-8	
Terphenyl-d14 (S)	82	%	10-123		1	05/04/10 16:27	05/05/10 00:19	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**22.1**	%	0.10	0.10	1		05/04/10 15:00		
Total Organic Carbon	Analytical Method: EPA 9060 Modified								
RPD%	**0.61**	%			1		05/11/10 15:27		
Total Organic Carbon	**243 I**	mg/kg	251	70.2	1		05/11/10 15:19	7440-44-0	
Total Organic Carbon	**245 I**	mg/kg	251	70.2	1		05/11/10 15:27	7440-44-0	
Mean Total Organic Carbon	**244 I**	mg/kg	251	70.2	1		05/11/10 15:27	7440-44-0	

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QUALITY CONTROL DATA

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

QC Batch: OEXT/2294 Analysis Method: FL-PRO
QC Batch Method: EPA 3546 Analysis Description: FL-PRO Soil
Associated Lab Samples: 3510939001, 3510939002, 3510939003, 3510939004, 3510939005, 3510939006, 3510939007, 3510939008, 3510939009, 3510939010, 3510939011

METHOD BLANK: 70039 Matrix: Solid
Associated Lab Samples: 3510939001, 3510939002, 3510939003, 3510939004, 3510939005, 3510939006, 3510939007, 3510939008, 3510939009, 3510939010, 3510939011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Petroleum Range Organics	mg/kg	2.5U	4.0	05/06/10 18:00	
C-39 (S)	%	100	60-118	05/06/10 18:00	
o-Terphenyl (S)	%	100	62-109	05/06/10 18:00	

LABORATORY CONTROL SAMPLE: 70040

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Petroleum Range Organics	mg/kg	200	192	96	63-153	
C-39 (S)	%			102	60-118	
o-Terphenyl (S)	%			105	62-109	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 70041 70042

Parameter	Units	3510939001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Petroleum Range Organics	mg/kg	3.1U	243	244	213	193	88	79	63-153	10	20	
C-39 (S)	%						93	88	60-118			
o-Terphenyl (S)	%						91	86	62-109			

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QUALITY CONTROL DATA

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

QC Batch: OEXT/2282 Analysis Method: EPA 8270
QC Batch Method: EPA 3546 Analysis Description: 8270 Solid MSSV Microwave Short Spike
Associated Lab Samples: 3510939001, 3510939002, 3510939003, 3510939004, 3510939005, 3510939006, 3510939007, 3510939008, 3510939009, 3510939010, 3510939011

METHOD BLANK: 69203 Matrix: Solid
Associated Lab Samples: 3510939001, 3510939002, 3510939003, 3510939004, 3510939005, 3510939006, 3510939007, 3510939008, 3510939009, 3510939010, 3510939011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	4.1U	32.6	05/04/10 17:01	
2-Methylnaphthalene	ug/kg	4.5U	32.6	05/04/10 17:01	
Acenaphthene	ug/kg	3.3U	32.6	05/04/10 17:01	
Acenaphthylene	ug/kg	3.9U	32.6	05/04/10 17:01	
Anthracene	ug/kg	2.0U	32.6	05/04/10 17:01	
Benzo(a)anthracene	ug/kg	2.9U	32.6	05/04/10 17:01	
Benzo(a)pyrene	ug/kg	3.6U	32.6	05/04/10 17:01	
Benzo(b)fluoranthene	ug/kg	2.3U	32.6	05/04/10 17:01	
Benzo(g,h,i)perylene	ug/kg	3.0U	32.6	05/04/10 17:01	
Benzo(k)fluoranthene	ug/kg	4.8U	32.6	05/04/10 17:01	
Chrysene	ug/kg	2.9U	32.6	05/04/10 17:01	
Dibenz(a,h)anthracene	ug/kg	3.5U	32.6	05/04/10 17:01	
Fluoranthene	ug/kg	3.7U	32.6	05/04/10 17:01	
Fluorene	ug/kg	2.5U	32.6	05/04/10 17:01	
Indeno(1,2,3-cd)pyrene	ug/kg	3.5U	32.6	05/04/10 17:01	
Naphthalene	ug/kg	3.5U	32.6	05/04/10 17:01	
Phenanthrene	ug/kg	3.1U	32.6	05/04/10 17:01	
Pyrene	ug/kg	4.0U	32.6	05/04/10 17:01	
2-Fluorobiphenyl (S)	%	79	18-110	05/04/10 17:01	
Nitrobenzene-d5 (S)	%	76	10-110	05/04/10 17:01	
Terphenyl-d14 (S)	%	92	10-123	05/04/10 17:01	

LABORATORY CONTROL SAMPLE: 69204

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	1650	1380	84	27-123	
2-Methylnaphthalene	ug/kg	1650	1500	91	16-137	
Acenaphthene	ug/kg	1650	1390	85	37-110	
Acenaphthylene	ug/kg	1650	1490	91	41-110	
Anthracene	ug/kg	1650	1450	88	45-113	
Benzo(a)anthracene	ug/kg	1650	1500	91	44-117	
Benzo(a)pyrene	ug/kg	1650	1530	93	44-123	
Benzo(b)fluoranthene	ug/kg	1650	1470	89	37-124	
Benzo(g,h,i)perylene	ug/kg	1650	1580	96	42-125	
Benzo(k)fluoranthene	ug/kg	1650	1480	90	44-126	
Chrysene	ug/kg	1650	1540	93	45-116	
Dibenz(a,h)anthracene	ug/kg	1650	1610	97	43-124	
Fluoranthene	ug/kg	1650	1570	95	45-116	
Fluorene	ug/kg	1650	1490	90	42-120	
Indeno(1,2,3-cd)pyrene	ug/kg	1650	1590	96	43-123	

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QUALITY CONTROL DATA

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

LABORATORY CONTROL SAMPLE: 69204

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/kg	1650	1270	77	40-100	
Phenanthrene	ug/kg	1650	1530	93	36-125	
Pyrene	ug/kg	1650	1500	91	41-123	
2-Fluorobiphenyl (S)	%			84	18-110	
Nitrobenzene-d5 (S)	%			76	10-110	
Terphenyl-d14 (S)	%			88	10-123	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 69205 69206

Parameter	Units	3510900001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Methylnaphthalene	ug/kg	0.0046 U mg/kg	1850	1840	1480	1530	80	83	27-123	3	40	
2-Methylnaphthalene	ug/kg	0.0051 U mg/kg	1850	1840	1610	1660	88	90	16-137	3	40	
Acenaphthene	ug/kg	0.0037 U mg/kg	1850	1840	1490	1510	81	82	37-110	.9	40	
Acenaphthylene	ug/kg	0.0043 U mg/kg	1850	1840	1590	1610	87	88	41-110	1	40	
Anthracene	ug/kg	0.0023 U mg/kg	1850	1840	1560	1580	85	86	45-113	1	40	
Benzo(a)anthracene	ug/kg	0.0033 U mg/kg	1850	1840	1590	1690	86	92	44-117	6	40	
Benzo(a)pyrene	ug/kg	0.0040 U mg/kg	1850	1840	1630	1720	89	94	44-123	5	40	
Benzo(b)fluoranthene	ug/kg	0.0026 U mg/kg	1850	1840	1580	1560	86	85	37-124	1	40	
Benzo(g,h,i)perylene	ug/kg	0.0034 U mg/kg	1850	1840	1650	1730	90	94	42-125	4	40	
Benzo(k)fluoranthene	ug/kg	0.0055 U mg/kg	1850	1840	1540	1730	84	94	44-126	12	40	
Chrysene	ug/kg	0.0033 U mg/kg	1850	1840	1610	1700	87	93	45-116	6	40	
Dibenz(a,h)anthracene	ug/kg	0.0039 U mg/kg	1850	1840	1680	1740	91	95	43-124	3	40	
Fluoranthene	ug/kg	0.0041 U mg/kg	1850	1840	1680	1760	91	96	45-116	4	40	
Fluorene	ug/kg	0.0028 U mg/kg	1850	1840	1590	1610	86	88	42-120	2	40	
Indeno(1,2,3-cd)pyrene	ug/kg	0.0039 U mg/kg	1850	1840	1660	1740	90	95	43-123	4	40	
Naphthalene	ug/kg	0.0039 U mg/kg	1850	1840	1360	1390	74	76	40-100	2	40	
Phenanthrene	ug/kg	0.0035 U mg/kg	1850	1840	1650	1700	90	93	36-125	3	40	
Pyrene	ug/kg	0.0045 U mg/kg	1850	1840	1620	1730	88	94	41-123	6	40	
2-Fluorobiphenyl (S)	%						82	83	18-110			
Nitrobenzene-d5 (S)	%						69	71	10-110			
Terphenyl-d14 (S)	%						85	90	10-123			

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QUALITY CONTROL DATA

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

QC Batch: WET/3727 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 3510939001, 3510939002, 3510939003, 3510939004, 3510939005, 3510939006, 3510939007, 3510939008, 3510939009, 3510939010, 3510939011

SAMPLE DUPLICATE: 69995

Parameter	Units	3510845001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	96.9	96.9	.009	10	

SAMPLE DUPLICATE: 69996

Parameter	Units	3510897001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	24.2	23.8	2	10	

SAMPLE DUPLICATE: 69997

Parameter	Units	3510866001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	85.6	85.6	.003	10	

SAMPLE DUPLICATE: 69998

Parameter	Units	3510899010 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	26.2	27.6	5	10	

SAMPLE DUPLICATE: 69999

Parameter	Units	3510939010 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	20.8	19.4	7	10	

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QUALITY CONTROL DATA

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

QC Batch: WETA/6344 Analysis Method: EPA 9060 Modified
QC Batch Method: EPA 9060 Modified Analysis Description: 9060 TOC Average
Associated Lab Samples: 3510939001, 3510939002, 3510939003, 3510939004, 3510939005, 3510939006, 3510939007, 3510939008, 3510939009, 3510939010, 3510939011

METHOD BLANK: 296896 Matrix: Solid
Associated Lab Samples: 3510939001, 3510939002, 3510939003, 3510939004, 3510939005, 3510939006, 3510939007, 3510939008, 3510939009, 3510939010, 3510939011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mean Total Organic Carbon	mg/kg	70.0U	250	05/11/10 09:46	

LABORATORY CONTROL SAMPLE: 296897

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mean Total Organic Carbon	mg/kg	1000	1010	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 296898 296899

Parameter	Units	3510939001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mean Total Organic Carbon	mg/kg	310	504	506	614	570	60	51	50-150	7	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 296900 296901

Parameter	Units	3510939010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mean Total Organic Carbon	mg/kg	98.4 I	504	503	464	469	72	74	50-150	1	30	

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QUALIFIERS

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Unc - Uncertainty

(MDC) - Minimum Detectable Concentration

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LABORATORIES

PASI-G	Pace Analytical Services - Green Bay
PASI-O	Pace Analytical Services - Ormond Beach

BATCH QUALIFIERS

Batch: WETA/6344

[WB] Results reported on dry weight basis per cited method.

Batch: WETA/6345

[WB] Results reported on dry weight basis per cited method.

ANALYTE QUALIFIERS

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
3510939001	**DI Shallow A1**	EPA 3546	OEXT/2294	FL-PRO	GCSV/1873
3510939002	**DI Shallow A2**	EPA 3546	OEXT/2294	FL-PRO	GCSV/1873
3510939003	**DI Shallow A3**	EPA 3546	OEXT/2294	FL-PRO	GCSV/1873
3510939004	**DI Middle M1**	EPA 3546	OEXT/2294	FL-PRO	GCSV/1873
3510939005	**DI Middle M2**	EPA 3546	OEXT/2294	FL-PRO	GCSV/1873
3510939006	**DI Middle M3**	EPA 3546	OEXT/2294	FL-PRO	GCSV/1873
3510939007	**DI Deep C1**	EPA 3546	OEXT/2294	FL-PRO	GCSV/1873
3510939008	**DI Deep C2**	EPA 3546	OEXT/2294	FL-PRO	GCSV/1873
3510939009	**DI Deep C3**	EPA 3546	OEXT/2294	FL-PRO	GCSV/1873
3510939010	**DI Intertidal I1**	EPA 3546	OEXT/2294	FL-PRO	GCSV/1873
3510939011	**DI Intertidal I2**	EPA 3546	OEXT/2294	FL-PRO	GCSV/1873
3510939001	**DI Shallow A1**	EPA 3546	OEXT/2282	EPA 8270	MSSV/1440
3510939002	**DI Shallow A2**	EPA 3546	OEXT/2282	EPA 8270	MSSV/1440
3510939003	**DI Shallow A3**	EPA 3546	OEXT/2282	EPA 8270	MSSV/1440
3510939004	**DI Middle M1**	EPA 3546	OEXT/2282	EPA 8270	MSSV/1440
3510939005	**DI Middle M2**	EPA 3546	OEXT/2282	EPA 8270	MSSV/1440
3510939006	**DI Middle M3**	EPA 3546	OEXT/2282	EPA 8270	MSSV/1440
3510939007	**DI Deep C1**	EPA 3546	OEXT/2282	EPA 8270	MSSV/1440
3510939008	**DI Deep C2**	EPA 3546	OEXT/2282	EPA 8270	MSSV/1440
3510939009	**DI Deep C3**	EPA 3546	OEXT/2282	EPA 8270	MSSV/1440
3510939010	**DI Intertidal I1**	EPA 3546	OEXT/2282	EPA 8270	MSSV/1440
3510939011	**DI Intertidal I2**	EPA 3546	OEXT/2282	EPA 8270	MSSV/1440
3510939001	**DI Shallow A1**	ASTM D2974-87	WET/3727		
3510939002	**DI Shallow A2**	ASTM D2974-87	WET/3727		
3510939003	**DI Shallow A3**	ASTM D2974-87	WET/3727		
3510939004	**DI Middle M1**	ASTM D2974-87	WET/3727		
3510939005	**DI Middle M2**	ASTM D2974-87	WET/3727		
3510939006	**DI Middle M3**	ASTM D2974-87	WET/3727		
3510939007	**DI Deep C1**	ASTM D2974-87	WET/3727		
3510939008	**DI Deep C2**	ASTM D2974-87	WET/3727		
3510939009	**DI Deep C3**	ASTM D2974-87	WET/3727		
3510939010	**DI Intertidal I1**	ASTM D2974-87	WET/3727		
3510939011	**DI Intertidal I2**	ASTM D2974-87	WET/3727		
3510939001	**DI Shallow A1**	EPA 9060 Modified	WETA/6344		
3510939001	**DI Shallow A1**	EPA 9060 Modified	WETA/6345		
3510939002	**DI Shallow A2**	EPA 9060 Modified	WETA/6344		
3510939002	**DI Shallow A2**	EPA 9060 Modified	WETA/6345		
3510939003	**DI Shallow A3**	EPA 9060 Modified	WETA/6344		
3510939003	**DI Shallow A3**	EPA 9060 Modified	WETA/6345		
3510939004	**DI Middle M1**	EPA 9060 Modified	WETA/6344		
3510939004	**DI Middle M1**	EPA 9060 Modified	WETA/6345		
3510939005	**DI Middle M2**	EPA 9060 Modified	WETA/6344		
3510939005	**DI Middle M2**	EPA 9060 Modified	WETA/6345		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BP THC/PAH/TOC
Pace Project No.: 3510939

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
3510939006	**DI Middle M3**	EPA 9060 Modified	WETA/6344		
3510939006	**DI Middle M3**	EPA 9060 Modified	WETA/6345		
3510939007	**DI Deep C1**	EPA 9060 Modified	WETA/6344		
3510939007	**DI Deep C1**	EPA 9060 Modified	WETA/6345		
3510939008	**DI Deep C2**	EPA 9060 Modified	WETA/6344		
3510939008	**DI Deep C2**	EPA 9060 Modified	WETA/6345		
3510939009	**DI Deep C3**	EPA 9060 Modified	WETA/6344		
3510939009	**DI Deep C3**	EPA 9060 Modified	WETA/6345		
3510939010	**DI Intertidal I1**	EPA 9060 Modified	WETA/6344		
3510939010	**DI Intertidal I1**	EPA 9060 Modified	WETA/6345		
3510939011	**DI Intertidal I2**	EPA 9060 Modified	WETA/6344		
3510939011	**DI Intertidal I2**	EPA 9060 Modified	WETA/6345		

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Appendices

Appendix 9

Pre-impact Deadman's Island Oyster Tissue Sampling Results

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CERTIFICATIONS

Project: BP PAH/Lipid
Pace Project No.: 3510943

Green Bay Certification IDs

California Certification #: 09268CA
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
1241 Bellevue Street Green Bay, WI 54302
New York Certification #: 11888
North Carolina Certification #: 503
North Dakota Certification #: R-150
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
New York Certification #: 11887

Protocols For Collecting NRDA Samples — SHELLFISH TISSUES

Sampling Objectives

- To document extent and duration of the area exposed to the spilled material. Bivalves uptake oil quickly, depurate them slowly, and can be used as "composite" samplers.
- To determine the spill source via fingerprinting analysis.
- To assess the risk to organisms from consuming contaminated prey.
- To document the bioavailability and exposure pathways of the spilled material.
- To maintain the integrity the sample(s) during sampling, transport, and storage.

Sample Size (*see back page for description of Analytical Methods)*

PAH by GC/MS-SIM	30 g wet weight (composite of ~20 individual organisms)
Lipid and Water Content	A sub-set of the sample is used for these analyses

Sampling Equipment

- Dredges, tongs, or grabs are used to collect shellfish from subtidal areas. Shovels are used to dig up infaunal shellfish from intertidal areas. A screen is useful for sieving sediments.
- If oil is present, decon dredges, knifes, etc. between samples. First wash with laboratory-grade detergent and clean water, with a triple clean water rinse (distilled water from a local store is OK). If the equipment was obviously contaminated, rinse with methanol or acetone, followed by methylene chloride or hexane (Capillary GC Pesticide Residue Grade or equivalent). Let solvent evaporate before use. Do not work with solvents downwind of exhaust or other airborne hydrocarbon source. Collect solvent rinsate for proper disposal.

Sample Collection Methods

- Attached organisms are pried away from the substrate with a knife, trowel, etc. Infaunal samples should be rinsed with site water to remove sediments. Collect primarily live animals (shells intact and tightly closed). Note the condition of dead animals if they are appropriate for collection. Photograph all collection sites prior to sampling.
- The sampler handling the shellfish should wear surgical gloves and change gloves after each sample. Record observations of any external evidence of contamination..
- Composite samples are recommended to provide enough sample weight to meet detection limit objectives and to average out the variations at a location among individual organisms. If uncertain about the number of individuals needed to meet minimum weight requirements, open, shuck, and weigh individuals of a certain size for calibration.
- Individuals should be the same shell (or body) size. Record size range collected or save shells for later measurement. Same size is not as important if only for fingerprinting.
- Shellfish should not be opened in the field to minimize the risk of contamination. Rather, sets of whole organisms are wrapped together in clean aluminum foil. Rinse the foil with methanol or acetone, then rinse again with methylene chloride or hexane (Capillary GC Pesticide Residue Grade or equivalent). Collect solvent rinsate for proper disposal.
- Wipe oiled shells with sorbent pads, wipes, etc. If heavily oiled, use a solvent on the wipe.
- Place all individuals of the same species from a site in a glass jar or double Ziploc bags.
- A waterproof sample label is placed between the two bags or on the sample jar and lid.
- Sample control and least oiled areas first, then sample the more contaminated areas.

- Use packing material around containers to prevent breakage during handling and shipping.

Preservation/Holding Times

- **Polynuclear Aromatic Hydrocarbons (PAH).** Since most of the toxicity in oil is due to the PAHs, it is the preferred analysis for assessing ingestion risk. The analytes must include the alkyl-substituted PAH homologs, in addition to the standard PAH "priority pollutants". This method is referred to as Modified EPA Method 8270, because the list of PAHs is expanded to include the alkylated homologs, using GC/MS in the selected ion monitoring mode. Detection levels should be 1 ppb for individual PAHs to support injury assessment using toxicity thresholds. PAHs are also used for fingerprint analysis and differentiating between the spilled material and background contamination.
- **Lipid Content.** Lipid content is defined as the percent of sample tissue extracted and remaining after solvent evaporation using dichlorormethane. It is used to normalize organic contaminants in tissues, to aid in spatial and temporal comparisons among samples.
- **Water Content.** Most results are reported as dry weight, to reduce sample variability.

Other Considerations

- Temperature can have a very large impact on shellfish physiology. Some animals stop feeding or even passing water over their gills at low or high temperatures. Be aware of these differences when selecting species for monitoring and comparing results among species.
- Uptake and depuration rates vary widely among species. Depuration usually takes weeks; thus shellfish sampling should be initiated within 1-2 weeks after maximum exposure.
- For mapping exposure, it is best to sample species with wide distribution in the study area. For ingestion risk assessment, target key food species.
- Avoid sources of contamination such as exhaust fumes and engine cooling systems on vessels. Work up-wind of any exhausts. Segregate dirty/clean areas. Lay out clean substrates to work on and replace frequently.
- Collect background samples from clean sites representative of pre-oiling conditions, as well as areas not yet oiled but in the potential path of the oil. These data will provide the best evidence of changes in contamination due to exposure to the spilled material.
- NOAA National Status and Trends, EPA EMAP, or state Mussel Watch programs may have background data for contaminants in shellfish and sampling protocols.
- Use a physical or mental model of the extent of water and sediment contamination to determine the number and location of samples. Minimum guidelines are at least three samples per area of relatively uniform exposure or distinct waterbody. Also, sample along exposure gradients at regular intervals proportionate to the exposure area so that at least six stations are sampled.

Key References

NOAA, 1993. Sampling and analytical methods of the National Status and Trends Program, National Benthic Surveillance and Mussel Water Projects, 1984-1992. Volumes I-IV, Comprehensive descriptions of trace organic analytical methods. Lauenstein, G.G. and A.Y. Cantillo (eds.). NOAA Tech. Memo NOS ORCA 71, Silver Spring, MD.

Sauer, T.C. and P.D. Boehm, 1995. Hydrocarbon chemistry for analytical methods for oil spill assessments. Marine Spill Response Corporation Technical Report Series 95-032, Washington, D.C. 114 pp.

USEPA, 1979. Methods for chemical analysis of water and wastes. EPA-600/4-79/020. USEPA Environmental Monitoring Systems Laboratory, Office of Research and Development, Cincinnati, Ohio.

USEPA, 1986. Test methods for evaluating solid waste. SW 846 Third Edition (and updates).

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SAMPLE SUMMARY

Project: BP PAH/Lipid
Pace Project No.: 3510943

Lab ID	Sample ID	Matrix	Date Collected	Date Received
3510943001	**D1 Reef Oysters**	Other	05/01/10 12:00	05/04/10 10:55

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SAMPLE ANALYTE COUNT

Project: BP PAH/Lipid
Pace Project No.: 3510943

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
3510943001	**D1 Reef Oysters**	EPA 8270 by SIM	ARO	20	PASI-G
		Pace Lipid	NJB	1	PASI-G

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PROJECT NARRATIVE

Project: BP PAH/Lipid
Pace Project No.: 3510943

Method: **EPA 8270 by SIM**
Description: 8270 MSSV PAH in Tissue
Client: Ecological Consulting Services, Inc.*_Gulf
Date: May 20, 2010

General Information:
1 sample was analyzed for EPA 8270 by SIM. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

QC Batch: MSSV/7275

J(L0): Estimated Value. Analyte recovery in the laboratory control sample (LCS) was outside QC limits.

- LCS (Lab ID: 299965)
  - Dibenz(a,h)anthracene

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MSSV/2606

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: BP PAH/Lipid
Pace Project No.: 3510943

Method: **Pace Lipid**
Description: Lipid
Client: Ecological Consulting Services, Inc.*_Gulf
Date: May 20, 2010

General Information:
1 sample was analyzed for Pace Lipid. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: BP PAH/Lipid
Pace Project No.: 3510943

Sample: D1 Reef Oysters **Lab ID: 3510943001** Collected: 05/01/10 12:00 Received: 05/04/10 10:55 Matrix: Other

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH in Tissue	Analytical Method: EPA 8270 by SIM								
Acenaphthene	**1.5 I**	ug/kg	2.3	1.1	1	05/14/10 14:56	05/18/10 11:54	83-32-9	
Acenaphthylene	**1.2U**	ug/kg	2.3	1.2	1	05/14/10 14:56	05/18/10 11:54	208-96-8	
Anthracene	**0.68 I**	ug/kg	2.3	0.38	1	05/14/10 14:56	05/18/10 11:54	120-12-7	
Benzo(a)anthracene	**0.46U**	ug/kg	2.3	0.46	1	05/14/10 14:56	05/18/10 11:54	56-55-3	
Benzo(a)pyrene	**0.35U**	ug/kg	2.3	0.35	1	05/14/10 14:56	05/18/10 11:54	50-32-8	
Benzo(b)fluoranthene	**0.81 I**	ug/kg	2.3	0.72	1	05/14/10 14:56	05/18/10 11:54	205-99-2	
Benzo(g,h,i)perylene	**0.98U**	ug/kg	2.3	0.98	1	05/14/10 14:56	05/18/10 11:54	191-24-2	
Benzo(k)fluoranthene	**1.2 I**	ug/kg	2.3	0.82	1	05/14/10 14:56	05/18/10 11:54	207-08-9	
Chrysene	**1.3 I**	ug/kg	2.3	0.80	1	05/14/10 14:56	05/18/10 11:54	218-01-9	
Dibenz(a,h)anthracene	**1.2U**	ug/kg	2.3	1.2	1	05/14/10 14:56	05/18/10 11:54	53-70-3	J(L2)
Fluoranthene	**2.0 I**	ug/kg	2.3	1.1	1	05/14/10 14:56	05/18/10 11:54	206-44-0	
Fluorene	**1.1 I**	ug/kg	2.3	0.25	1	05/14/10 14:56	05/18/10 11:54	86-73-7	V
Indeno(1,2,3-cd)pyrene	**0.48U**	ug/kg	2.3	0.48	1	05/14/10 14:56	05/18/10 11:54	193-39-5	
1-Methylnaphthalene	**1.2U**	ug/kg	2.3	1.2	1	05/14/10 14:56	05/18/10 11:54	90-12-0	
2-Methylnaphthalene	**1.5 I**	ug/kg	2.3	0.25	1	05/14/10 14:56	05/18/10 11:54	91-57-6	V
Naphthalene	**2.7**	ug/kg	2.3	0.37	1	05/14/10 14:56	05/18/10 11:54	91-20-3	V
Phenanthrene	**2.8**	ug/kg	2.3	0.92	1	05/14/10 14:56	05/18/10 11:54	85-01-8	V
Pyrene	**1.2 I**	ug/kg	2.3	0.78	1	05/14/10 14:56	05/18/10 11:54	129-00-0	
2-Fluorobiphenyl (S)	71	%-	27-130		1	05/14/10 14:56	05/18/10 11:54	321-60-8	
Terphenyl-d14 (S)	76	%-	26-130		1	05/14/10 14:56	05/18/10 11:54	1718-51-0	
Lipid	Analytical Method: Pace Lipid								
Lipid	**1.6**	%		0.10	1		05/17/10 13:30		

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QUALITY CONTROL DATA

Project: BP PAH/Lipid
Pace Project No.: 3510943

QC Batch: MSSV/7275
QC Batch Method: EPA 8270 by SIM
Analysis Method: EPA 8270 by SIM
Analysis Description: 8270 Tissue PAH by SIM MSSV
Associated Lab Samples: 3510943001

METHOD BLANK: 299964
Matrix: Tissue
Associated Lab Samples: 3510943001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	0.83U	1.7	05/18/10 10:45	
2-Methylnaphthalene	ug/kg	0.54 I	1.7	05/18/10 10:45	
Acenaphthene	ug/kg	0.76U	1.7	05/18/10 10:45	
Acenaphthylene	ug/kg	0.83U	1.7	05/18/10 10:45	
Anthracene	ug/kg	0.27U	1.7	05/18/10 10:45	
Benzo(a)anthracene	ug/kg	0.33U	1.7	05/18/10 10:45	
Benzo(a)pyrene	ug/kg	0.25U	1.7	05/18/10 10:45	
Benzo(b)fluoranthene	ug/kg	0.52U	1.7	05/18/10 10:45	
Benzo(g,h,i)perylene	ug/kg	2.4	1.7	05/18/10 10:45	
Benzo(k)fluoranthene	ug/kg	0.59U	1.7	05/18/10 10:45	
Chrysene	ug/kg	0.57U	1.7	05/18/10 10:45	
Dibenz(a,h)anthracene	ug/kg	0.83U	1.7	05/18/10 10:45	
Fluoranthene	ug/kg	0.78U	1.7	05/18/10 10:45	
Fluorene	ug/kg	0.56 I	1.7	05/18/10 10:45	
Indeno(1,2,3-cd)pyrene	ug/kg	0.34U	1.7	05/18/10 10:45	
Phenanthrene	ug/kg	1.3 I	1.7	05/18/10 10:45	
Pyrene	ug/kg	0.56U	1.7	05/18/10 10:45	
2-Fluorobiphenyl (S)	%-	69	27-130	05/18/10 10:45	
Terphenyl-d14 (S)	%-	81	26-130	05/18/10 10:45	

LABORATORY CONTROL SAMPLE & LCSD: 299965 299966

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1-Methylnaphthalene	ug/kg	33.3	27.6	25.2	83	76	50-140	9	40	
2-Methylnaphthalene	ug/kg	33.3	27.8	25.4	83	76	50-140	9	40	
Acenaphthene	ug/kg	33.3	27.1	24.4	81	73	50-140	10	40	
Acenaphthylene	ug/kg	33.3	25.7	22.8	77	68	50-140	12	40	
Anthracene	ug/kg	33.3	27.2	24.1	82	72	50-140	12	40	
Benzo(a)anthracene	ug/kg	33.3	30.6	25.9	92	78	50-140	17	40	
Benzo(a)pyrene	ug/kg	33.3	30.5	26.3	92	79	50-140	15	40	
Benzo(b)fluoranthene	ug/kg	33.3	30.4	26.4	91	79	50-140	14	40	
Benzo(g,h,i)perylene	ug/kg	33.3	18.9	19.0	57	57	50-140	.5	40	
Benzo(k)fluoranthene	ug/kg	33.3	32.6	26.8	98	80	50-140	20	40	
Chrysene	ug/kg	33.3	32.6	27.8	98	83	50-140	16	40	
Dibenz(a,h)anthracene	ug/kg	33.3	15.5	17.5	47	52	50-140	12	40	J(L0)
Fluoranthene	ug/kg	33.3	36.5	27.8	109	84	50-140	27	40	
Fluorene	ug/kg	33.3	27.2	24.5	82	74	50-140	10	40	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	18.2	18.8	55	56	50-140	3	40	
Naphthalene	ug/kg	33.3	29.2	27.1	88	81	50-140	8	40	
Phenanthrene	ug/kg	33.3	31.3	26.2	94	79	50-140	18	40	

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QUALITY CONTROL DATA

Project: BP PAH/Lipid
Pace Project No.: 3510943

LABORATORY CONTROL SAMPLE & LCSD: 299965 299966

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Pyrene	ug/kg	33.3	33.6	24.6	101	74	50-140	31	40	
2-Fluorobiphenyl (S)	%-				76	70	27-130			
Terphenyl-d14 (S)	%-				76	74	26-130			

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QUALITY CONTROL DATA

Project: BP PAH/Lipid
Pace Project No.: 3510943

QC Batch: OEXT/7279
QC Batch Method: Pace Lipid
Analysis Method: Pace Lipid
Analysis Description: LIPID
Associated Lab Samples: 3510943001

METHOD BLANK: 300724
Matrix: Tissue
Associated Lab Samples: 3510943001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lipid	%	0.10U		05/17/10 13:29	

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QUALIFIERS

Project: BP PAH/Lipid
Pace Project No.: 3510943

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

U - Indicates the compound was analyzed for, but not detected.

PASI-G	Pace Analytical Services - Green Bay

BATCH QUALIFIERS

Batch: MSSV/2606

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J(L0)	Estimated Value. Analyte recovery in the laboratory control sample (LCS) was outside QC limits.
J(L2)	Estimated Value. Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
V	Indicates that the analyte was detected in both the sample and the associated method blank.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BP PAH/Lipid
Pace Project No.: 3510943

3510943001	**D1 Reef Oysters**	EPA 8270 by SIM	MSSV/7275	EPA 8270 by SIM	MSSV/2606
3510943001	**D1 Reef Oysters**	Pace Lipid	OEXT/7279		

Appendices

Appendix 10

Due Diligence Checklist of a BP Certified Laboratory

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NO.	QUESTION	NO	YES	DETAILS
	questions is yes, supply details.			
6	What other companies, particularly U.S. and UK companies, does Contractor work with? Supply full names, addresses and other relevant contact information.			See List of References
7	How many years have you been engaged in the business for which BP is contemplating a contract with the Contractor? What level of expertise or experience do you have?			13 Years - Leading company in the environmental testing field, second largest firm in the US.
8	Is the Contractor or its owner a publicly traded company (i.e., are its shares registered with the U.S. SEC or listed on the London Stock Exchange or any other securities exchange)? If so, provide details.	X		
9	Has the Contractor made any public disclosures to any UK or US government authorities, including the US Department of Justice or the Securities and Exchange Commission, involving fraudulent or corrupt misconduct or improper accounting, including bribery? If so, supply details and a copy of any such written disclosure.	X		
10	Has the Contractor, any associated organization, any prior organization, any prior associated organization, any present or former principal director, officer, or employee been suspended from doing business in any capacity, been charged with any criminal act in any jurisdiction, or been the subject of any allegation of fraud, misrepresentation, bribery or other related activities? If so, supply information.	X		
11	Have any foreign government officials been entertained, received gifts, received high per diems, participated in any trips, or otherwise been provided with any money or other thing of value by the Contractor in connection with a bid or tender process? If so, provide details.	X		
12	Has the Contractor retained or utilized an agent or any other third party to perform any market development or other services in connection with the project or contract in question. Please specify the commercial reason for this?	X		
13	Has the Contractor or any of its affiliates or officers paid or received any incentive, finder's fee commission or gratuity in connection with the bid, tender, job or contract with BPTT? If so supply details.	X		

bp

DUE DILIGENCE CHECKLIST

CONTEXT

This pre-contract due diligence questionnaire is intended to be answered by suppliers of goods and services **prior to** entering into contracts

The purpose of this questionnaire is to determine whether further due diligence is necessary for BP to comply with various Anti-Corruption laws, including U.K. anti-bribery legislation and the U.S. Foreign Corrupt Practices Act.

In addition to these questions, Contractors are also required to submit the following documents

1. Certificate of Incorporation
2. Return of Directors
3. Annual Returns
4. Current List of Shareholders and Directors

For the purposes of this checklist, the term "government official" shall mean any director, officer or employee of any government or any department, agency or instrumentality thereof, and/or of any enterprise in which a government owns an interest, and/or of any public international organization. This term also includes any person acting in any official, administrative or judicial capacity for or on behalf of any such government or department, agency, instrumentality, company, or public international organisation.

NO.	QUESTION	NO	YES	DETAILS
1	Is the Contractor or any of its owners, directors, officers or key employees an elected or appointed government official, a former elected or appointed official, or employee of any government department (including military), agency or instrumentality, or of any public international organization? If so, provide details.	X		
2	Is the Contractor or any of its owners, directors, officers or key employees a political party, a political party official, or a candidate for political office? If so, provide details.	X		
3	Does any Government department, agency or instrumentality, any public international organization or any official or employee thereof, any political party, political party official or candidate for political office have any direct or indirect ownership or other financial interest in Contractor's organization, or an affiliate thereof? If so, provide details.	X		
4	Is any relative of any owner, director, officer, or key employee of Contractor a government official or employee, a political party official, or a candidate for political office in the relevant geographic market, or an official of any public international organization? If so provide details. (for the purpose of this questionnaire, Relative means siblings, spouse, parents and children)	X		
5	Is the Contractor or any of its owners, directors, officers or key employees employed by any other business? Does the Contractor or any of ts owners, directors, officers or key employees have any interest greater than 5% in any other business? If the answer to either of these	X		

Appendices

Appendix 11

Emergency Order 1-15

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STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In re:

EMERGENCY AUTHORIZATION FOR PROACTIVE MEASURES, RESTORATION, AND CERTAIN OTHER MEASURES MADE NECESSARY BY THE DEEPWATER HORIZON OIL SPILL

OGC NO. 10-1610

EMERGENCY FINAL ORDER

Under Sections 120.569(2)(n) and 252.36 of the Florida Statutes ("F.S."), and upon consideration of the State of Florida Executive Order Nos. 10-99 and 10-100 and the following findings of fact, the State of Florida Department of Environmental Protection ("Department") enters this Emergency Final Order ("Order"), including Findings of Fact and Conclusions of Law, in response to the imminent or immediate danger to the public health, safety, and welfare of the citizens of the State of Florida resulting from the Deepwater Horizon Oil Spill that commenced on April 20, 2010 ("the Spill"). British Petroleum ("BP") has been determined to be a responsible party for the Spill.

SPECIAL CONSIDERATIONS

Governmental entities seeking reimbursement of any activities authorized in this order must do so consistent with, and as specified in, Florida's Financial Plan for Response to the Deepwater Horizon Oil Spill.

Governmental entities performing any activities authorized in this order shall conduct those activities in a manner consistent with the National Contingency Plan and/or the Area Contingency Plan under the National Response System.

FINDINGS OF FACT

1. On the 20th day of April 2010, an explosion on the mobile drilling platform Deepwater Horizon occurred in the Gulf of Mexico, approximately 130 miles southeast of New Orleans, Louisiana. The rig ultimately sank on April 22, 2010; on April 24, 2010, the United States Coast Guard ("USCG") estimated that the damaged well was releasing approximately 42,000 gallons of crude oil per day. On April 28, 2010, the USCG increased this estimate to approximately 200,000 gallons per day. All efforts to contain the discharge have failed and may not succeed for an extended period of time. The resulting oil slick in the Gulf of Mexico is at least 600 miles in circumference and expanding, generally moving in a northerly direction. The Spill has the potential to cause widespread damage along Florida's shoreline and coastal estuaries within the following counties: Escambia, Santa Rosa, Okaloosa, Walton, Bay, Gulf, Franklin, Wakulla, Jefferson, Taylor, Dixie, Levy, Citrus, Hernando, Pasco, Pinellas, Hillsborough, Manatee and Sarasota. These counties shall constitute the specific area covered by this Emergency Final Order. This area shall herein be referred to as the "Emergency Area."

2. By State of Florida Executive Order Nos. 10-99 and 10-100, the Governor declared that a state of emergency exists throughout Escambia, Santa Rosa, Okaloosa, Walton, Bay, Gulf, Franklin, Wakulla, Jefferson, Taylor, Dixie, Levy, Citrus, Hernando, Pasco, Pinellas, Hillsborough, Manatee and Sarasota counties, based upon the serious threat to the public health, safety and welfare posed by the Spill.

3. The Department finds that the Spill has created a state of emergency threatening the public health, safety, welfare, and property throughout the Emergency Area. As a result of the emergency, immediate action by Florida's citizens and government is

necessary to prevent, contain or reduce damage to natural resources and property that may occur as a result of the Spill.

4. The Department finds that an emergency order is required to address the need for immediate action because the normal procedures for obtaining the necessary authorizations would not result in timely action to address the emergency.

5. The Department finds that immediate, strict compliance with the provisions of the statutes, rules, or orders noted within this Order would prevent, hinder, or delay necessary action in coping with the emergency, and that the actions authorized under this order are narrowly tailored to address the immediate need for action and are procedurally fair under the circumstances.

CONCLUSIONS OF LAW

1. Based on the findings recited above, it is hereby concluded that the emergency caused by the Spill continues to pose an immediate danger to the public health, safety, or welfare and requires an immediate order of the Department.

2. Under State of Florida Executive Order Nos. 10-99 and 10-100, and Sections 120.569(2)(n) and 252.36, F.S., the Secretary of the Department is authorized to issue this Emergency Final Order.

3. Suspension of statutes and rules as noted within this Order is required so as not to prevent, hinder, or delay necessary action in coping with the emergency.

THEREFORE, WITHIN THE EMERGENCY AREA, IT IS ORDERED:

A. SOLID WASTE MANAGEMENT

Field authorizations may be issued prior to or following a site inspection by Department personnel for staging areas to be used for temporary storage or processing of Spill-generated debris. Field authorizations may be requested by providing a notice to the local office of the Department containing a description of the staging area design and operation, the location of the staging area, and the name, address, and telephone number of the site manager. Field authorizations also may be issued by Department staff prior to receiving written notice. Written or electronic records of all field authorizations shall be created and maintained by Department staff. Field authorizations may include specific conditions for the operation and closure of the staging area, and may include a required closure date that extends beyond the expiration date of this Order. Staging areas shall be sited to avoid wetlands, beach and dune habitat, and other surface waters to the greatest extent possible; such areas that are used or affected must be fully restored upon cessation of use of the area. Persons wishing to locate staging areas on or near the beach and dune system shall utilize existing disturbed areas to the maximum extent practicable and shall first consult with the Florida Fish and Wildlife Conservation Commission ("FWC") and the Department's Bureau of Beaches and Coastal Systems. Staging areas must cease operation, and all Spill-generated debris must be removed from the site, by the expiration date of this Order, unless a different closing date or closure conditions are specified in the field authorization. Failure to comply with the conditions of the field authorization, or failure to adequately close the site by the required closure date, may

result in enforcement actions by the Department. Field authorizations issued prior to the effective date of this Order remain in effect but may be modified by the Department to include conditions and closure dates as specified herein.

B. WATERS, WETLANDS, BEACHES & COASTAL SYSTEMS, & SUBMERGED LANDS

1. No Notice Required

The following activities are authorized to be undertaken pursuant to Chapters 161, 253, 258, and Part IV of Chapter 373, F.S., and the applicable rules adopted thereunder, by BP and its contractors and by governmental entities to contain and prevent the spread of oil and oil contaminants, and to facilitate future clean-up of oil and oil contaminants. All booms, materials, and devices authorized below must be removed in their entirety once the threat of contamination has been abated, and must be disposed of in accordance with a Department approved waste disposal plan:

(a) Placement of temporary containment booms and sorbent materials. To the maximum extent practicable, all booms and sorbent materials shall be deployed and maintained so as to minimize lying on or shading wetlands and submerged aquatic vegetation, so as to not create a navigational hazard, and so as to minimize entanglement risk or other adverse impacts to aquatic and wetland dependant fish and wildlife.

(b) Placement and use of temporary floating devices designed exclusively to contain or collect oil contaminants at the mouths of water control structures, intake structures, canals, coastal inlets and passes, rivers, and streams, provided such devices are deployed and maintained so as to not create a navigational hazard or to

cause upstream flooding or other adverse impacts to water resources to the maximum extent practicable.

(c) Placement and use of temporary devices not listed above, including air bubbler curtains, designed and used exclusively to contain, collect and prevent oil contaminants from entering coastal inlets and passes, water control structures, intake structures, canals, rivers and streams, provided such devices are deployed so as to not create a navigational hazard or to cause upstream flooding or other adverse impacts to water resources to the greatest extent practicable.

(d) **Along shorelines <u>other than sandy beaches</u>**, installation and maintenance of hay bales, temporary sandbags or other similar materials to prevent contamination, provided such installation can be conducted, and such materials can be maintained and removed, in a manner that does not result in permanent dredging, filling or loss of wetland or submerged aquatic resources. To the maximum extent practicable, all hay bales, sandbags or other similar materials shall be deployed so as to minimize lying on or shading wetland and submerged aquatic vegetation and to minimize adverse affects to aquatic and wetland dependant fish and wildlife. Such structures and materials shall be removed once the threat of contamination has abated. This does not authorize the construction of seawalls, bulkheads, rock revetments or other forms of retaining walls.

(e) Installation and maintenance of in-water signage or buoys warning boaters of such hazards as areas where booms and skimmers have been deployed and where heavy contamination exists. Such signage shall, to the extent practicable, be

consistent with FWC standards and must adequately warn mariners of the existing hazards. Buoys shall be consistent with USCG marking for navigational hazards.

2. Activities Requiring Field Authorizations or Emergency Permits

(a) Wetlands and Other Surface Waters, Excluding Sandy Beaches.

Field authorizations under Part IV of Chapter 373, F.S., and applicable rules adopted thereunder, may be issued to BP, their contractors, and governmental entities following notice to the Department and a field inspection by the Department as needed for the following activities in, on or over wetlands or other surface waters, but excluding activities on sandy beaches:

(1) Construction, use, and removal of temporary emergency response access roads and staging areas. Such roads and staging areas shall be sited in uplands and shall use existing improved or previously cleared access points to the maximum extent practicable. If this cannot be done, construction and alteration must minimize work in wetlands or other surface waters and adverse impacts to aquatic and wetland dependant fish and wildlife to the maximum extent practicable. Wetlands and other surface waters shall not be dredged to obtain any fill material to construct any access roads or staging areas. Once the contamination has been abated, all areas disturbed to construct and use these areas shall be restored to former contours and shall be stabilized to prevent erosion, sedimentation, and turbid runoff. Fill material used to create these areas shall be removed to an upland location where it will not adversely affect surface water flows and in a manner that does not cause flooding of adjacent lands. Any wetlands or other surface waters that were disturbed to establish these

areas shall be re-vegetated in a manner that will facilitate restoration to preexisting conditions.

(2) Oil spill response plans developed by governmental entities for activities to take place in wetlands or other surface waters. These plans will be reviewed and approved by the Department on a case-by-case basis through issuance of a field authorization. Such plans may include both activities detailed in this Order and other appropriate response actions to protect or remediate impacts to wetlands or other surface waters that may be or that become affected by the oil spill.

Field authorizations for the above activities must be requested by providing a notice to the appropriate Department District Office containing a description of the work requested, the location of the work, and the name, address, and telephone number of the applicant who may be contacted concerning the work. Field authorizations may not be issued unless requested on or before the expiration date of this Order. Field authorizations may include specific conditions for the construction, operation, and maintenance of the authorized activities. Field authorizations issued under this Order remain in effect for the duration specified in the authorization, but may be extended through written modification by the Department. Failure to comply with the conditions of a field authorization permit may result in enforcement actions by the Department.

These procedures also are supplemental to, and do not replace, the ability to perform temporary emergency measures within the geographic limits of the Northwest Florida Water Management District using the Class A and Class B Emergency Provisions of Rule 62-312.090, F.A.C.

(b) <u>Activities on and Adjacent to the Sandy Beach Shoreline</u>

This section applies to activities conducted pursuant to Chapter 161, F.S., and the applicable rules adopted thereunder, seaward of the Coastal Construction Control Line ("CCCL") as established by Rule 62B-26, F.A.C. Certain activities may additionally take place seaward of the Mean High Water shoreline. Emergency Permits for such activities shall be issued by the Department's Bureau of Beaches and Coastal Systems ("Bureau").

The Bureau may issue emergency permits to governmental entities and BP and their contractors for the activities listed below:

(1) Protection of Coastal Dune Lakes. Upon threat of contamination, lowering the water levels of coastal fresh water dune lakes that have a prior, documented connection between the lake and the Gulf of Mexico to manageable levels, and closing the coastal dune lake outlets to prevent contamination may be authorized. Beach-quality sand, defined in Paragraph 62B-41.007(2)(j), F.A.C., or other temporary measures (such as absorbent booms) shall be used to close such outlets until the threat of contamination has been abated. Applicants are encouraged to use the sand excavated to lower lake levels in order to close the outlets. However, beach quality sand obtained from upland sources may be used upon approval by the Department. All such construction shall be limited to daylight hours after completion of a marine turtle nesting survey.

(2) Construction of Emergency Sand Dikes. To limit the lateral extent of oil contamination, the use of beach-quality sand from upland sand sources to construct a sand dike on the existing beach berm may be authorized. Such berms shall be at an

appropriate contour elevation to limit the landward extent of oil incursion. Such efforts shall not result in damage to existing dunes or dune vegetation. All such construction shall be limited to daylight hours after completion of a marine turtle nesting survey. This does not authorize the construction of seawalls, bulkheads, rock revetments or other forms of retaining walls.

(3) Beach Scraping/Blading. Manipulation of existing non-vegetated sand that resides on the existing beach face landward of mean high water in order to protect sand resources may be authorized. All such construction shall be limited to daylight hours after completion of a marine turtle nesting survey.

(4) Emergency Beach Access and Staging Areas. Creation of emergency beach access and staging areas in order to place emergency response equipment on the beach may be authorized. Applicants are encouraged to use existing beach access points and to avoid designated critical habitat for beach mice. Response/Construction equipment and supplies shall be stored landward of the beach/dune system during the night. Once the contamination has been abated, access and staging areas shall be restored to preexisting conditions. All such construction shall be limited to daylight hours after completion of a marine turtle nesting survey.

(5) Oil spill response plans developed by governmental entities for activities to take place along Florida's sandy beaches may be reviewed and approved by the Department on a case-by-case basis through issuance of an emergency permit. Such plans may include both activities detailed in this order and other appropriate response actions to protect or remediate impacts to the beach/dune system that may be or that become affected by the oil spill.

3. Authorization to Use State-Owned Submerged Lands

The activities authorized above that are located in, on, or over state-owned submerged lands are hereby granted a Letter of Consent under subparagraph 18-21.005(1)(c)14.,F.A.C., provided:

(a) The activities are conducted in accordance with the terms, conditions, and limitations of this Order;

(b) Activities authorized under this Order must be conducted in conformance with the general conditions of subsection 18-21.004(7), F.A.C.

4. General Conditions

(a) Applicable environmental resource, surface water management, dredge and fill, stormwater, and CCCL or joint coastal permits under Chapters 161 and Part IV of Chapter 373, F.S., and applicable state-owned submerged lands authorizations shall be required for other activities not authorized in this Order that do not otherwise qualify as an exempt activity under statute or rule.

(b) Nothing in this Order authorizes the taking, attempted taking, killing, pursuing, harassing, harming, molesting, capturing, possessing, or transporting of any species (or the nest or eggs of any species) listed under Rule 68A-27, F.A.C or under the Federal Endangered Species Act, nor does this order relieve anyone from complying with any other statute, rule, or order of the FWC.

(c) Nothing herein shall be construed to infringe upon private property rights of owners of non-state owned submerged lands.

(d) Activities, materials and devices authorized under this Order must be removed and disposed of as soon as practicable after the structures, devices, or activities:

(1) Have lost their effectiveness in collecting and retaining oil, or otherwise are no longer functioning as intended;

(2) Are no longer needed to absorb, collect, or contain oil after the threat of contamination has subsided, or;

(3) Have fallen into disrepair, have become hazardous, or are adversely affecting, or have the potential to adversely affect, the environment, navigation, or the property of others; or otherwise have the potential to be a continuing source of pollution.

(e) The nature, timing, and sequence of preventative measures authorized under this Order shall be conducted in such a manner as to provide protection to, and so as to not disturb, native salt-tolerant vegetation and listed species and their habitat, including threatened or endangered marine turtles, endangered manatees, endangered beach mice, endangered plant communities, and migratory shorebirds to the greatest extent practicable. Such activities shall minimize to the greatest extent practicable entanglement hazards for marine turtles and must avoid dune habitat known to be occupied by beach mice, marked marine turtle nests, and nesting shorebirds.

C. GENERAL PROVISIONS

1. General Limitations

The Department issues this Emergency Final Order solely to address the emergency created by the Spill. This Order shall not be construed to authorize any activity within the jurisdiction of the Department except in accordance with the express terms of this Order. Under no circumstances shall anything contained in this Order be construed to authorize the repair, replacement, or reconstruction of any type of unauthorized or illegal

structure, habitable or otherwise. This Order does not convey any property rights or any rights or privileges other than those specified in this Order.

2. Suspension of Statutes and Rules

(a) Within the Emergency Area, the requirements and effects of statutes and rules which conflict with the provisions of this Order are suspended to the extent necessary to implement this Order.

(b) To the extent that any requirement to obtain a permit, consent of use, or other authorization is waived by this Order, it should also be construed that the procedural requirements for obtaining such permit, consent of use or other authorization, including requirements for fees and publication of notices, are suspended for the duration of this order.

(c) Field authorizations and emergency permits will be evaluated in accordance with the non-procedural requirements, standards, and criteria of the applicable rules of the Department and the Board of Trustees.

3. Interagency Coordination

The Department shall coordinate with the FWC on protected and imperiled species issues during the review of field authorizations and emergency permits.

4. Other Authorizations Required

This Order only provides relief from the specific regulatory and proprietary requirements addressed herein for the duration of the Order, and does not provide relief from the requirements of other federal, state, water management districts, and local agencies. This Order therefore does not negate the need to obtain any other required permits or authorizations, nor from the need to comply with all the

requirements of those agencies. This Order does not provide relief from any of the requirements of the Florida Statutes regarding registered professionals.

Activities subject to Federal consistency review that are emergency actions necessary for the repair of immediate, demonstrable threats to public health or safety are consistent with the Florida Coastal Management Program if conducted in strict conformance with this Order.

5. Expiration Date

This Emergency Final Order shall take effect immediately upon execution by the Secretary of the Department, and shall expire on June 29, 2010, unless modified or extended by further order.

6. Violation of Conditions of Emergency Final Order

Failure to comply with any condition set forth in this Order shall constitute a violation of a Department Final Order under Chapters 161, 253, 258, 373, 376, and 403, F.S., and enforcement proceedings may be brought in any appropriate administrative or judicial forum.

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NOTICE OF RIGHTS

Pursuant to Section 120.569(2)(n) of the Florida Statutes, any party adversely affected by this Order has the right to seek an injunction of this Order or any authorization issued hereunder in circuit court or judicial review of it under Section 120.68 of the Florida Statutes. Judicial review must be sought by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within thirty days after this Order is filed with the Clerk of the Department.

DONE AND ORDERED on this 12th day of May, 2010, in Tallahassee, Florida.

FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION

Michael W. Sole, Secretary
3900 Commonwealth Blvd
Tallahassee, FL 32399-3000

FILED on this date, pursuant to
§120.52 Florida Statutes, with the
designated Department Clerk,
receipt of which is hereby acknowledged.

CLERK

DATE: 05/12/2010

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Appendices

Appendix 12

Emergency Order 1st Amended

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STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In re:

EMERGENCY AUTHORIZATION FOR PROACTIVE MEASURES, RESTORATION, AND CERTAIN OTHER MEASURES MADE NECESSARY BY THE DEEPWATER HORIZON OIL SPILL

OGC NO. 10-1610

FIRST AMENDED EMERGENCY FINAL ORDER

Under Sections 120.569(2)(n) and 252.36 of the Florida Statutes ("F.S."), and upon consideration of the State of Florida Executive Order Nos. 10-99, 10-100 10-106, and the following findings of fact, the State of Florida Department of Environmental Protection ("Department") enters this Emergency Final Order ("Order"), including Findings of Fact and Conclusions of Law, in response to the imminent or immediate danger to the public health, safety, and welfare of the citizens of the State of Florida resulting from the Deepwater Horizon Oil Spill that commenced on April 20, 2010 ("the Spill"). British Petroleum ("BP") has been determined to be a responsible party for the Spill.

SPECIAL CONSIDERATIONS

1. Governmental entities seeking reimbursement of any activities authorized in this order must do so consistent with, and as specified in, Florida's Financial Plan for Response to the Deepwater Horizon Oil Spill.

2. Governmental entities performing any activities authorized in this order shall conduct those activities in a manner consistent with the National Contingency Plan and/or the Area Contingency Plan under the National Response System.

3. Where more than one authorization under this Order is required for a proposed activity, the Department will conduct joint inspections by staff from applicable offices of the Department to the maximum extent practical.

FINDINGS OF FACT

1. On the 20th day of April 2010, an explosion on the mobile drilling platform Deepwater Horizon occurred in the Gulf of Mexico, approximately 130 miles southeast of New Orleans, Louisiana. The rig ultimately sank on April 22, 2010; on April 24, 2010, the United States Coast Guard ("USCG") estimated that the damaged well was releasing approximately 42,000 gallons of crude oil per day. On April 28, 2010, the USCG increased this estimate to approximately 200,000 gallons per day; refinements of this estimate are ongoing. All efforts to contain the discharge have failed and may not succeed for an extended period of time. The Spill has the potential to cause widespread damage along Florida's shoreline and coastal estuaries within the following counties: Escambia, Santa Rosa, Okaloosa, Walton, Bay, Gulf, Franklin, Wakulla, Jefferson, Taylor, Dixie, Levy, Citrus, Hernando, Pasco, Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, Collier, Monroe, Miami-Dade, Broward and Palm Beach. These counties shall constitute the specific area covered by this Emergency Final Order. This area shall herein be referred to as the "Emergency Area."

2. By State of Florida Executive Order Nos. 10-99, 10-100, and 10-106, the Governor declared that a state of emergency exists throughout Escambia, Santa Rosa, Okaloosa, Walton, Bay, Gulf, Franklin, Wakulla, Jefferson, Taylor, Dixie, Levy, Citrus, Hernando, Pasco, Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, Collier,

Monroe, Miami-Dade, Broward and Palm Beach counties, based upon the serious threat to the public health, safety and welfare posed by the Spill.

3. The Department finds that the Spill has created a state of emergency threatening the public health, safety, welfare, and property throughout the Emergency Area. As a result of the emergency, immediate action is necessary to prevent, contain or reduce damage to natural resources and property that may occur as a result of the Spill.

4. The Department finds that an emergency order is required to address the need for immediate action because the normal procedures for obtaining the necessary authorizations would not result in timely action to address the emergency.

5. The Department finds that immediate, strict compliance with the provisions of the statutes, rules, or orders noted within this Order would prevent, hinder, or delay necessary action in coping with the emergency, and that the actions authorized under this order are narrowly tailored to address the immediate need for action and are procedurally fair under the circumstances.

CONCLUSIONS OF LAW

1. Based on the findings recited above, it is hereby concluded that the emergency caused by the Spill continues to pose an immediate danger to the public health, safety, or welfare and requires an immediate order of the Department.

2. Under State of Florida Executive Order Nos. 10-99, 10-100, and 10-106, and Sections 120.569(2)(n) and 252.36, F.S., the Secretary of the Department is authorized to issue this Emergency Final Order.

3. Suspension of statutes and rules as noted within this Order is required so as not to prevent, hinder, or delay necessary action in coping with the emergency.

THEREFORE, WITHIN THE EMERGENCY AREA, IT IS ORDERED:

A. SOLID WASTE MANAGEMENT

Field authorizations may be issued prior to or following a site inspection by Department personnel for staging areas to be used for temporary storage or processing of Spill-generated debris. Such authorizations are required for all facilities that will be managing oil spill debris, including staging areas where waste is brought to the site for storage and transfer, sites where decontamination activities are being conducted, and sites where waste is being processed. No such authorization is needed under this section for sites where equipment or empty containers are being stored prior to or after use, or sites where oil spill debris is initially containerized near the cleanup area. Additional authorizations may be required by the Department's Division of Air Resource Management, as well as the Department's Coastal Construction Control Line, Joint Coastal, and Submerged Lands and Environmental Resource Permitting programs.

Field authorizations may be requested by providing a notice to the local office of the Department containing a description of the staging area design and operation, the location of the staging area, and the name, address, and telephone number of the site manager. Field authorizations also may be issued by Department staff prior to receiving written notice. Written or electronic records of all field authorizations shall be created and maintained by Department staff. Field authorizations may include specific conditions for the operation and closure of the staging area, and may include a required closure date that extends beyond the expiration date of this Order.

Staging areas shall be sited to avoid wetlands, beach and dune habitat, and other surface waters to the greatest extent possible; such areas that are used or

affected must be fully restored upon cessation of use of the area. Persons wishing to locate staging areas on or near the beach and dune system shall utilize existing disturbed areas to the maximum extent practicable and shall first consult with the Florida Fish and Wildlife Conservation Commission ("FWC") and the Department's Bureau of Beaches and Coastal Systems. Staging areas must cease operation, and all Spill-generated debris must be removed from the site, by the expiration date of this Order, unless a different closing date or closure conditions are specified in the field authorization. Failure to comply with the conditions of the field authorization, or failure to adequately close the site by the required closure date, may result in enforcement actions by the Department. Field authorizations issued prior to the effective date of this Order remain in effect but may be modified by the Department to include conditions and closure dates as specified herein.

B. WATERS, WETLANDS, BEACHES & COASTAL SYSTEMS, & SUBMERGED LANDS

1. No Notice Required

The following activities are authorized to be undertaken pursuant to Chapters 161, 253, 258, and Part IV of Chapter 373, F.S., and the applicable rules adopted thereunder, by BP and its contractors and by governmental entities to contain and prevent the spread of oil and oil contaminants, and to clean-up oil and oil contaminants:

(a) Placement of temporary containment booms and sorbent materials. To the maximum extent practicable, all booms and sorbent materials shall be deployed and maintained so as to minimize lying on or shading wetlands and submerged aquatic vegetation, so as to not create a navigational hazard, and so as to minimize

entanglement risk or other adverse impacts to aquatic and wetland dependant fish and wildlife.

(b) Placement and use of temporary floating devices designed exclusively to contain or collect oil contaminants at the mouths of water control structures, intake structures, canals, coastal inlets and passes, rivers, and streams, provided such devices are deployed and maintained so as to not create a navigational hazard or to cause upstream flooding or other adverse impacts to water resources to the maximum extent practicable.

(c) Placement and use of temporary devices not listed above, including air bubbler curtains, designed and used exclusively to contain, collect and prevent oil contaminants from entering coastal inlets and passes, water control structures, intake structures, canals, rivers and streams, provided such devices are deployed so as to not create a navigational hazard or to cause upstream flooding or other adverse impacts to water resources to the greatest extent practicable.

(d) **Along shorelines <u>other than sandy beaches</u>**, installation and maintenance of hay bales, temporary sandbags or other similar materials to prevent contamination, provided such installation can be conducted, and such materials can be maintained and removed, in a manner that does not result in permanent dredging, filling or loss of wetland or submerged aquatic resources. To the maximum extent practicable, all hay bales, sandbags or other similar materials shall be deployed so as to minimize lying on or shading wetland and submerged aquatic vegetation and to minimize adverse affects to aquatic and wetland dependant fish and wildlife. Such structures and materials shall be removed once the threat of contamination has abated.

This does not authorize the construction of seawalls, bulkheads, rock revetments or other forms of retaining walls.

(e) Installation and maintenance of in-water signage or buoys warning boaters of such hazards as areas where booms and skimmers have been deployed and where heavy contamination exists. Such signage shall, to the extent practicable, be consistent with FWC standards and must adequately warn mariners of the existing hazards. Buoys shall be consistent with USCG marking for navigational hazards.

(f) Manual removal of stranded oil from sandy beaches. This method consists of removal of stranded oil, including surface oil, tar balls, tar patties, tar mats, and other weathered oil products, using hands, rakes, shovels, buckets, scrapers, sorbents, pitch forks, etc., and placing in containers. No mechanized equipment shall be used except for transportation of collected oil and debris from the beach to the upland staging area. Equipment and vehicle access shall use only the designated beach access points. Driving of equipment along the beach shall be limited to the area seaward of the wrack or debris line to the maximum extent practicable. Equipment should transit between the beach access point and the wrack line using the most direct route to minimize travel over areas of the beach landward of the wrack or debris line. If stranded oil is present in the driving zone seaward of the wrack or debris line, driving of vehicles may occur directly landward of the stranded oil. During marine turtle nesting and shorebird nesting season (February 15-October 31), all activity shall be limited to daylight hours and all equipment and materials shall be removed from the beach at night, unless specific verbal or written approval is given by the Department for nighttime cleaning operations.

(g) Mechanical removal of stranded oil and oiled sediments from sandy beaches within the following counties: Escambia, Santa Rosa, Okaloosa, Walton, Bay, Gulf, Franklin, Wakulla, Jefferson, Taylor . Entities undertaking activities authorized by an Incident Command Division may conduct mechanical removal of stranded oil and oiled sediments from sandy beaches. This method consists of removal of stranded oil and oiled sediments using mechanical equipment such as loaders and graders, as well as trucks, tractors and trailers for transportation of collected oil and oiled sediments. Other specialized equipment may be used for the sifting and removal of tar balls, patties, and mats. Digging of pits/trenches is authorized if subsurface oil may be present. Driving of equipment along the beach shall be limited to the area seaward of the wrack or debris line to the maximum extent practicable. Equipment should transit between the beach access point and the wrack line using the most direct route to minimize travel over areas of the beach landward of the wrack or debris line. If stranded oil is present in the driving zone seaward of the wrack or debris line, driving of vehicles may occur directly landward of the stranded oil. During marine turtle nesting and shorebird nesting season (February 15-October 31), all activity shall be limited to daylight hours and all equipment and materials shall be removed from the beach at night, unless specific verbal or written approval is given by the Department for nighttime cleaning operations.

Mechanical removal of stranded oil and oiled sediments is authorized in accordance with the above description and the following special conditions shown below:

1. A reliable method to measure the volume of beach sediments removed during clean-up operations shall be documented and used by the entity conducting the activity. Upon completion of a section of the shoreline, an explanation of the documented method used and the recorded volume of beach sediments removed during clean-up shall be provided to the Department's Bureau of Beaches and Coastal Systems.

2. The removal of clean sand shall be minimized to the greatest extent practicable.

3. If work occurs during marine turtle and shorebird nesting seasons (February 15 – October 31), it is the responsibility of the entity conducting the activity to ensure compliance with the provisions below. Unless nighttime operations are explicitly approved as required above, all activity shall be limited to daylight hours and commence after completion of a nesting survey. All nest surveys shall be conducted only by persons with prior experience and training in the activities and who is duly authorized to conduct such activities through a valid permit issued by the FWC pursuant to Chapter 60E-1, F.A.C. All equipment and materials shall be removed from the beach at night.

a. Sea Turtles. Activities shall be conducted in compliance with the "Sea Turtle Nest Protection Protocols for Clean-Up Crews on Beaches in Florida, Alabama, Mississippi, and Louisiana," attached hereto as Exhibit A.

b. Shorebirds. Activities shall be conducted in compliance with the "Shorebird and Seabird Protection Protocols for Clean-up Crews on Beaches in Florida Operating Under DEP Emergency Order 10-1610," attached hereto as Exhibit B.

(h) Emergency beach access and upland staging areas. Creation of emergency beach access in order to place emergency response equipment on the beach, as well as creation of staging areas used to store equipment or to containerize oil spill debris, is authorized. Entities conducting the activity are encouraged to use existing beach access points and to avoid designated critical habitat for beach mice. Response/Construction equipment and supplies shall be stored landward of the beach/dune system during the night. Once the contamination has been abated, access and staging areas shall be restored to preexisting conditions. All such construction shall be limited to daylight hours after completion of a marine turtle nesting survey.

2. Activities Requiring Field Authorizations or Emergency Permits

(a) Wetlands and Other Surface Waters, Excluding Sandy Beaches.

Field authorizations under Part IV of Chapter 373, F.S., and applicable rules adopted thereunder, may be issued to BP, its contractors, and governmental entities following notice to the Department and a field inspection by the Department as needed for the following activities in, on or over wetlands or other surface waters, but excluding activities on sandy beaches:

(1) Construction, use, and removal of temporary emergency response access roads and staging areas used to store equipment or to containerize oil spill debris. Such roads and staging areas shall be sited in uplands and shall use existing improved or previously cleared access points to the maximum extent practicable. If this cannot be done, construction and alteration must minimize work in wetlands or other surface waters and adverse impacts to aquatic and wetland dependant fish and wildlife to the maximum extent practicable. Wetlands and other surface waters shall not be dredged

to obtain any fill material to construct any access roads or staging areas. Once the contamination has been abated, all areas disturbed to construct and use these areas shall be restored to former contours and shall be stabilized to prevent erosion, sedimentation, and turbid runoff. Fill material used to create these areas shall be removed to an upland location where it will not adversely affect surface water flows and in a manner that does not cause flooding of adjacent lands. Any wetlands or other surface waters that were disturbed to establish these areas shall be re-vegetated in a manner that will facilitate restoration to preexisting conditions.

(2) Other activities that are part of an oil spill response plan developed by BP, its contractors, or a governmental entity that are designed to protect or remediate impacts to wetlands or other surface waters that may be impacted by the Spill. These activities will be reviewed and approved by the Department on a case-by-case basis through issuance of a field authorization.

(3) Decontamination areas for vessels at in-shore secondary cleaning locations as provided for in the "Sector Mobile, AL Deep Draft Vessel Evaluation and Cleaning Plan" dated May 9, 2010, or as that Plan may be amended.

Field authorizations for the above activities must be requested by providing a notice to the appropriate Department District Office containing a description of the work requested, the location of the work, and the name, address, and telephone number of the applicant who may be contacted concerning the work. Field authorizations may not be issued unless requested on or before the expiration date of this Order. Field authorizations may include specific conditions for the construction, operation, maintenance, and restoration of the authorized activities. Field authorizations issued

under this Order remain in effect for the duration specified in the authorization, but may be extended through written modification by the Department. Failure to comply with the conditions of a field authorization permit may result in enforcement actions by the Department.

These procedures also are supplemental to, and do not replace, the ability to perform temporary emergency measures within the geographic limits of the Northwest Florida Water Management District using the Class A and Class B Emergency Provisions of Rule 62-312.090, F.A.C.

(b) Activities on and Adjacent to the Sandy Beach Shoreline

This section applies to activities conducted pursuant to Chapter 161, F.S., and the applicable rules adopted thereunder, seaward of the Coastal Construction Control Line ("CCCL") as established by Rule 62B-26, F.A.C. Certain activities may additionally take place seaward of the Mean High Water shoreline. Emergency Permits for such activities shall be issued by the Department's Bureau of Beaches and Coastal Systems ("Bureau").

The Bureau may issue emergency permits to governmental entities and to BP and its contractors for the activities listed below:

(1) Protection of coastal dune lakes. Upon threat of contamination, lowering the water levels to manageable levels of coastal fresh water dune lakes that have a prior, documented connection between the lake and the Gulf of Mexico, and closing the coastal dune lake outlets to prevent contamination, may be authorized. Beach-quality sand, defined in Rule 62B-41.007(2)(j), F.A.C., or other temporary measures (such as absorbent booms) shall be used to close such outlets until the threat of contamination

has been abated. Applicants are encouraged to use the sand excavated to lower lake levels in order to close the outlets. However, beach quality sand obtained from upland sources may be used upon approval by the Department. All such construction shall be limited to daylight hours after completion of a marine turtle nesting survey.

(2) Construction of emergency sand dikes. To limit the lateral extent of oil contamination, the use of beach-quality sand from upland sand sources to construct a sand dike on the existing beach berm may be authorized. Such berms shall be at an appropriate contour elevation to limit the landward extent of oil incursion. Such efforts shall not result in damage to existing dunes or dune vegetation. All such construction shall be limited to daylight hours after completion of a marine turtle nesting survey and be done in coordination with FWC to ensure appropriate bird surveys or designation of bird monitors. This does not authorize the construction of seawalls, bulkheads, rock revetments or other forms of retaining walls.

(3) Beach scraping/blading. Manipulation of existing non-vegetated sand that resides on the existing beach face landward of mean high water in order to protect sand resources may be authorized. All such construction shall be limited to daylight hours after completion of a marine turtle nesting survey and be done in coordination with FWC to ensure appropriate bird surveys or designation of bird monitors.

(4) Other activities that are part of an oil spill response plan developed by BP, its contractors, or a governmental entity that are designed to protect or remediate impacts to the beach/dune system that may be impacted by the Spill. These activities will be reviewed and approved by the Department on a case-by-case basis through issuance of an emergency permit.

3. Authorization to Use State-Owned Submerged Lands

The activities authorized above that are located in, on, or over state-owned submerged lands are hereby granted a Letter of Consent under Rule 18-21.005(1)(c)14., F.A.C., provided:

(a) The activities are conducted in accordance with the terms, conditions, and limitations of this Order; and,

(b) Activities authorized under this Order must be conducted in conformance with the general conditions of Rule 18-21.004(7), F.A.C.

4. General Conditions

(a) Applicable environmental resource, surface water management, dredge and fill, stormwater, and CCCL or joint coastal permits under Chapters 161 and Part IV of Chapter 373, F.S., and applicable state-owned submerged lands authorizations shall be required for other activities not authorized in this Order that do not otherwise qualify as an exempt activity under statute or rule.

(b) Nothing in this Order authorizes the taking, attempted taking, killing, pursuing, harassing, harming, molesting, capturing, possessing, or transporting of any species (or the nest or eggs of any species) listed under Rule 68A-27, F.A.C., or under the Federal Endangered Species Act, nor does this order relieve anyone from complying with any other statute, rule, or order of the FWC.

(c) Nothing herein shall be construed to infringe upon private property rights of owners of non-state owned submerged lands.

(d) Materials and devices authorized under this Order must be removed and disposed of in accordance with a Department-approved waste disposal plan as soon as practicable after the structures or devices:

(1) Have lost their effectiveness in collecting and retaining oil, or otherwise are no longer functioning as intended;

(2) Are no longer needed to absorb, collect, or contain oil after the threat of contamination has subsided; or

(3) Have fallen into disrepair, have become hazardous, or are adversely affecting, or have the potential to adversely affect, the environment, navigation, or the property of others; or otherwise have the potential to be a continuing source of pollution.

(e) The nature, timing, and sequence of preventative measures authorized under this Order shall be conducted in such a manner as to provide protection to, and so as to not disturb, native salt-tolerant vegetation and listed species and their habitat, including threatened or endangered marine turtles, endangered manatees, endangered beach mice, endangered plant communities, and migratory shorebirds to the greatest extent practicable. Such activities shall minimize to the greatest extent practicable entanglement hazards for marine turtles and must avoid dune habitat known to be occupied by beach mice, marked marine turtle nests, and nesting shorebirds.

C. GENERAL PROVISIONS

1. General Limitations

The Department issues this Emergency Final Order solely to address the emergency created by the Spill. This Order shall not be construed to authorize any activity within the jurisdiction of the Department except in accordance with the express terms of this Order. Under no circumstances shall anything contained in this Order be construed to authorize the repair, replacement, or reconstruction of any type of unauthorized or illegal structure, habitable or otherwise. This Order does not convey any property rights or any rights or privileges other than those specified in this Order.

2. Suspension of Statutes and Rules

(a) Within the Emergency Area, the requirements and effects of statutes and rules that conflict with the provisions of this Order are suspended to the extent necessary to implement this Order.

(b) To the extent that any requirement to obtain a permit, consent of use, or other authorization is waived by this Order, it should also be construed that the procedural requirements for obtaining such permit, consent of use or other authorization, including requirements for fees and publication of notices, are suspended for the duration of this order.

(c) Field authorizations and emergency permits will be evaluated in accordance with the non-procedural requirements, standards, and criteria of the applicable rules of the Department and the Board of Trustees.

3. Interagency Coordination

The Department shall coordinate with the FWC on protected and imperiled species issues during the review of field authorizations and emergency permits.

4. Other Authorizations Required

This Order only provides relief from the specific regulatory and proprietary requirements addressed herein for the duration of the Order, and does not provide relief from the requirements of other federal, state, water management districts, and local agencies. This Order therefore does not negate the need to obtain any other required permits or authorizations, nor from the need to comply with all the requirements of those agencies. This Order does not provide relief from any of the requirements of the Florida Statutes regarding registered professionals.

Activities subject to Federal consistency review that are emergency actions necessary for the repair of immediate, demonstrable threats to public health or safety are consistent with the Florida Coastal Management Program if conducted in strict conformance with this Order.

5. Stormwater Management

Impervious surfaces that are created or altered to establish any staging areas authorized or permitted under the terms of this Order must be designed, constructed, operated, and maintained in a manner that minimizes offsite discharge of contaminated runoff, and so as to not cause adverse water quantity impacts or flooding to on-site or off-site property and receiving waters. If any impervious surfaces created under this Order must remain for more than six months, the entity operating the staging area must apply to the Department for a permit under Part IV of Chapter 373, F.S., for stormwater (quantity

and quality) review and authorization, which may require further alteration of the system to meet requirements of the applicable Department surface water regulations for the area.

6. Department Inspections

Any person conducting activities authorized by this Order shall allow any duly authorized representative of the Department to enter and inspect the property, premises, or place where such activities are being conducted for the purpose of ascertaining the state of compliance with the terms of this Order and with the rules of the Department. Department representatives shall also be allowed to inspect and copy any records required by this Order or the rules of the Department, to inspect any monitoring equipment or method, to sample for any pollutants or waste, and to obtain any other information necessary to determine compliance with the terms of this Order and the rules of the Department.

7. Violation of Conditions of Emergency Final Order

Failure to comply with any condition set forth in this Order shall constitute a violation of a Department Final Order under Chapters 161, 253, 258, 373, 376, and 403, F.S., and enforcement proceedings may be brought in any appropriate administrative or judicial forum.

8. Expiration Date

This Emergency Final Order shall take effect immediately upon execution by the Secretary of the Department, and shall expire on January 15, 2011, unless modified, revoked, or extended by further order.

NOTICE OF RIGHTS

Pursuant to Section 120.569(2)(n) of the Florida Statutes, any party adversely affected by this Order has the right to seek an injunction of this Order or any authorization issued hereunder in circuit court or judicial review of it under Section 120.68 of the Florida Statutes. Judicial review must be sought by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within thirty days after this Order is filed with the Clerk of the Department.

DONE AND ORDERED on this 10th day of June, 2010, in Tallahassee, Florida.

FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION

Michael W. Sole, Secretary
3900 Commonwealth Blvd
Tallahassee, FL 32399-3000

FILED on this date, pursuant to
§120.52 Florida Statutes, with the
designated Department Clerk,
receipt of which is hereby acknowledged.

CLERK

DATE: June 10, 2010

Exhibit A
Sea Turtle Nest Protection Protocols for Clean-up Crews
on Beaches in Florida, Alabama, Mississippi, and Louisiana

In Florida and Alabama, most sandy beaches have active sea turtle nesting survey and nest protection programs in place. However, some beaches in Florida are not surveyed on a daily basis due to logistical difficulties with access (e.g., Dauphin Island in Mobile County, Alabama; the Marquesas Islands in Monroe County, Florida) or are not currently surveyed at all (e.g., Dog Island in Franklin County, Cape Sable in the Everglades in Monroe County, Florida). No nesting surveys are conducted in Mississippi and Louisiana. Attached is a list of daily surveyed beaches by County and State; please follow the first set of protocols below for these beaches. For beaches that are not surveyed, please follow the second set of protocols.

FOR BEACHES WHERE NESTING SURVEYS ARE CONDUCTED DAILY:

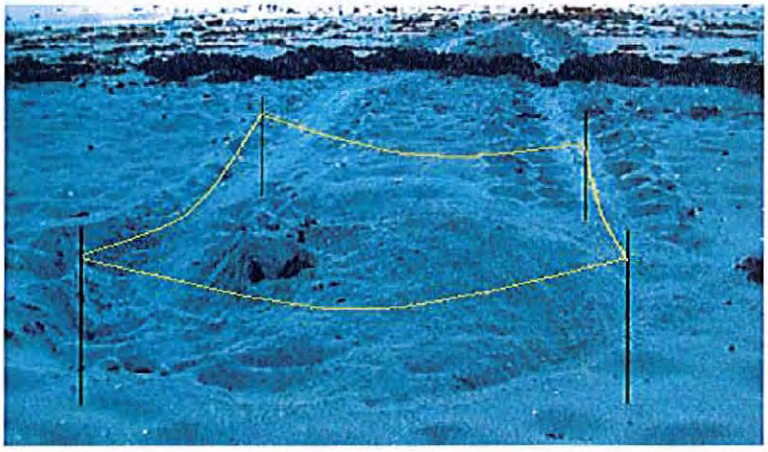
1. Ensure daily sea turtle nesting surveys have been completed and that all nests have been marked by the local sea turtle permit holder with a 10-foot buffer zone before work begins each morning. The clean-up crew leader must contact the appropriate individual identified on the attached list or his/her designee daily to determine if nesting surveys have been completed and clean-up activities can begin.
2. Sea turtles may still be nesting or hatchlings may emerge after sunrise, so it is imperative that clean-up crews watch for nesting and hatchling turtles while they are on the beach and immediately report any turtles sighted to the individual identified on the attached list or his/her designee. Clean-up vehicles should travel slowly to enable a better opportunity to spot turtle crawls and avoid colliding with nesting and hatchling turtles.
3. Look for any marked nests before beginning beach cleaning activities in an area. Nests will be marked with at least eight stakes, four around the nest perimeter and four more around a 10-foot buffer zone (see photo below). Do not remove or destroy any stakes or flagging, even if they are sited up in the dune. These may be back-up stakes that were placed to ensure that future location of the nest is possible should the nest perimeter stakes be lost.

4. Mechanical equipment and hand tools should not be used within the flagged buffer area of a nest.
5. Clean-up crews should gently remove contaminated sand within the flagged area of a nest by hand and replace it with clean, damp sand taken from an area adjacent to the flagged nest area. Removal of sand over a nest should occur only under the direction of the sea turtle permit holder. The surface layer of oiled sand should be removed only to the minimum depth necessary without impacting the top of the nest. If nest flagging was removed to access the nest area, it must be securely replaced after clean-up activities have been completed.
6. All excavations and temporary alteration of beach topography shall be filled, covered, or leveled to the natural beach profile prior to 8:00 p.m. each day.

FOR BEACHES WHERE NESTING SURVEYS ARE NOT CONDUCTED OR ARE NOT CONDUCTED DAILY:

1. Sea turtles may still be nesting or hatchlings may emerge after sunrise, so it is imperative that clean-up crews watch for nesting and hatchling turtles while they are on the beach and immediately report any turtles sighted to the individual identified on the attached list or his/her designee. Clean-up vehicles should travel slowly to enable a better opportunity to spot turtle crawls and avoid colliding with nesting and hatchling turtles.
2. Look for any turtle crawls before beginning beach cleaning activities in an area (see photos below of turtle crawls). [In some cases, there may be marked nests on some partially surveyed beaches (steps 1-5 on the preceding page should be followed for existing nests).]

3. Follow any turtle crawls and look for signs that the turtle dug into the sand. Using stakes and flagging, mark the entire disturbed area created by a turtle digging. Under no circumstances should stakes be driven into the sand within the disturbed area created by the turtle (see photo below of a marked disturbed area – however, please double flag the nest site instead of using a single layer of flagging as shown in the photo).



4. Follow Steps 3-5 on the preceding page.

ATTACHMENT
SURVEYED BEACHES AND SEA TURTLE CONTACTS*

SURVEYED BEACHES	CONTACT NAME	PHONE NUMBER
ALABAMA		
Mobile County		
Dauphin Island	Mike Reynolds	Cell: 251-747-4985 Office: 251-974-2253
Baldwin County		
Fort Morgan Peninsula, including Bon Secour National Wildlife Refuge to West Beach in Gulf Shores	Jackie Isaacs	Cell: 251-752-0654 Office: 251-540-8523
West Beach in Gulf Shores to the Alabama/Florida state line	Mike Reynolds	Cell: 251-747-4985 Office: 251-974-2253
FLORIDA		
Escambia County – all beaches	Robbin Trindell Meghan Koperski (back-up)	Cell: 561-262-1104 Office: 850-617-6055 Cell: 561-339-1001 Office: 561-575-5407 x17
Santa Rosa County – all beaches	Same as above	
Okaloosa County – all beaches	Same as above	
Walton County – all beaches	Same as above	
Bay County – all beaches	Same as above	
Gulf County – all beaches	Same as above	
Franklin County		
St. Vincent NWR (survey frequency varies)	Same as above	
Cape St. George (survey frequency varies)	Same as above	
St. George Island	Same as above	
Alligator Point		
Pinellas County – all beaches	Same as above	
Hillsborough County – all beaches	Same as above	
Manatee County – all beaches	Same as above	
Sarasota County – all beaches	Same as above	
Charlotte County – all beaches	Same as above	
Lee County – all beaches	Same as above	
Collier County – all beaches	Same as above	
Ten Thousand Islands NWR (surveyed 3-7 days/week)	Same as above	
Monroe County – all beaches (survey frequency varies)	Same as above	

*If the beach to be cleaned is not identified on the above list or does not fall within a County where all beaches are surveyed, then clean-up crews should follow the protocols on page 2 **FOR BEACHES WHERE NESTING SURVEYS ARE NOT CONDUCTED OR ARE NOT CONDUCTED DAILY.** If you have any questions about whether a beach is surveyed or not, contact the individuals listed above for assistance.

Exhibit B
Shorebird and Seabird Protection Protocols for Clean-up Crews on Beaches in Florida Operating Under DEP Emergency Order 10-1610

Shorebirds and seabirds (beach-nesting birds) nest on Florida's beaches from February 15 – September 1. Disturbance of nesting birds may result in abandonment of nests or young. Flightless chicks can be very mobile and may forage well outside posted nesting areas. They are extremely difficult to see and are susceptible to being crushed by pedestrians and equipment.

The following measures are designed to reduce the likelihood of incidental take of protected beach-nesting bird species.

Prior to movement of vehicles or heavy equipment onto the beach associated with clean-up, notification to the Florida Fish and Wildlife Conservation Commission (FWC) Regional Species Conservation Biologist (RB) shall be provided. The RB will coordinate efforts to provide qualified FWC staff or other trained Para-professionals to act as Shorebird Monitors and assist with monitoring for beach nesting birds during clean-up. If the RB in the region can not be reached, the RB in an adjacent region should be notified.

Many bird nesting areas are marked with symbolic fencing consisting of roping (twine, string, poly rope) strung between posts (wood, PVC, Carsonite) and clearly marked signs ("No Entry"). DEP Emergency Order 10-1610 does not authorize entry into designated marked beach-nesting areas. If entry is needed, authorization must be given either verbally or in writing by the FWC.

Heavy equipment and vehicles should be kept as far away from these marked areas as practicable. The posting will be erected at a sufficient distance from the nest(s) to ensure that approach does not cause the birds to flush from the nest, but will not prevent the passage of vehicles/equipment necessary to conduct the project. Should project activities require that vehicles/equipment operate (stay longer than the time it takes to transit the area) within a distance that causes birds to leave the nest, the Shorebird Monitor will assist the project manager to reduce the risks of activities resulting in nest or colony abandonment.

The Shorebird Monitor(s) can provide assistance to the operators of equipment in looking for the presence of flightless young within the project area. It is the responsibility of the project manager to ensure that equipment operators coordinate closely with the Shorebird Monitor(s) to take precautions to reduce the risk that flightless young are directly injured by equipment. .

All heavy equipment and vehicles operating in areas of highest probability of beach nesting birds should operate at speed no greater than 6 mph. FWC Regional Biologists or designated Shorebird Monitors can provide guidance regarding the specific locations where slow speed is advised. When in doubt regarding the probability of the presence of beach nesting birds, it is a recommended best management practice that all vehicles and heavy equipment operate at slow speeds. Flightless young are very susceptible to mortality by becoming trapped in tire ruts in the sand. All tire ruts should be smoothed or graded at the completion of the clean-up activity each day.

Regional FWC Contacts for Shorebird Issues

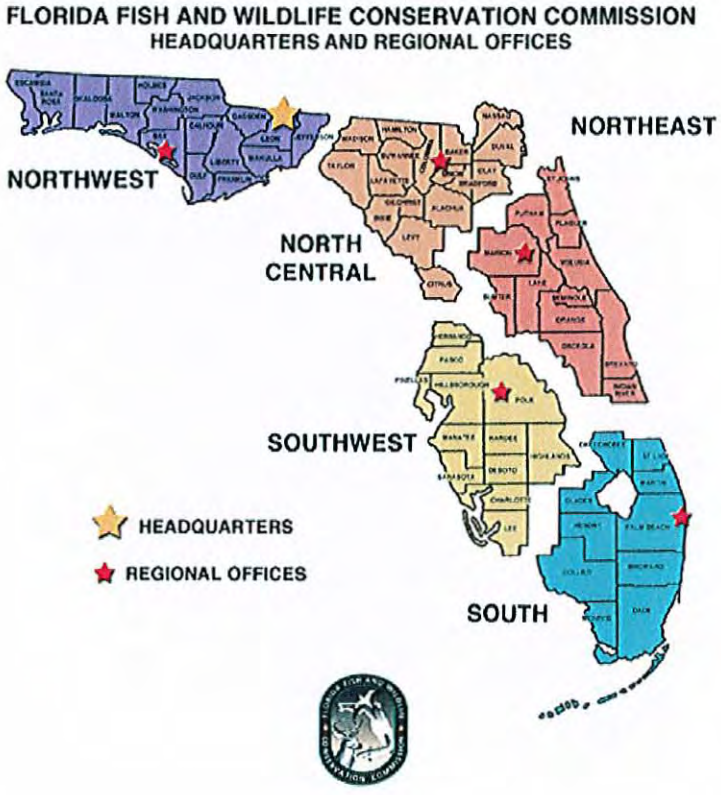
Northwest Region
Dr. John Himes
FL Fish and Wildlife Conservation Commission
3911 Highway 2321
Panama City, FL 32409-1658
(850) 265-3677/Fax (850) 747-5690
Cell # 850-698-4781

North Central Region
Dr. Terry Doonan
FL Fish and Wildlife Conservation Commission
3377 E. US Hwy 90
Lake City, FL 32055
(386) 758-0525/Fax (386) 758-0533
Cell # 386 623-4986

Northeast Region
Mr. Alex Kropp
FL Fish and Wildlife Conservation Commission
1239 S.W. 10th Street
Ocala, FL 34474-2797
(352) 732-1225/Fax (352) 620-7627
Cell # 352-342-0063

Southwest Region
Ms. Nancy Douglass
FL Fish and Wildlife Conservation Commission
3900 Drane Field Road
Lakeland, FL 33811-1299
(863) 648-3205/Fax (863) 701-1248
Cell # 863 581-6903

South Region
Mr. Ricardo Zambrano
FL Fish and Wildlife Conservation Commission
8535 Northlake Boulevard
West Palm Beach, FL 33412
(561) 625-5122/Fax (561) 625-5129
Cell # 561-248-9072



If a Regional Biologist cannot be reached please call:

1 888 404-3922

Appendices

Appendix 13

Emergency Order 2nd Amended

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STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In re:

EMERGENCY AUTHORIZATION FOR PROACTIVE MEASURES, RESTORATION, AND CERTAIN OTHER MEASURES MADE NECESSARY BY THE DEEPWATER HORIZON OIL SPILL

OGC NO. 10-1610

_____/

SECOND AMENDED EMERGENCY FINAL ORDER

Under Sections 120.569(2)(n) and 252.36 of the Florida Statutes ("F.S."), and upon consideration of the State of Florida Executive Order Nos. 10-99, 10-100 10-106, and the following findings of fact, the State of Florida Department of Environmental Protection ("Department") enters this Emergency Final Order ("Order"), including Findings of Fact and Conclusions of Law, in response to the imminent or immediate danger to the public health, safety, and welfare of the citizens of the State of Florida resulting from the Deepwater Horizon Oil Spill that commenced on April 20, 2010 ("the Spill"). British Petroleum ("BP") has been determined to be a responsible party for the Spill.

SPECIAL CONSIDERATIONS

1. Governmental entities seeking reimbursement of any activities authorized in this order must do so consistent with, and as specified in, Florida's Financial Plan for Response to the Deepwater Horizon Oil Spill.

2. Governmental entities performing any activities authorized in this order shall conduct those activities in a manner consistent with the National Contingency Plan and/or the Area Contingency Plan under the National Response System.

3. Where more than one authorization under this Order is required for a proposed activity, the Department will conduct joint inspections by staff from applicable offices of the Department to the maximum extent practical.

FINDINGS OF FACT

1. On the 20th day of April 2010, an explosion on the mobile drilling platform Deepwater Horizon occurred in the Gulf of Mexico, approximately 130 miles southeast of New Orleans, Louisiana. The rig ultimately sank on April 22, 2010; on April 24, 2010, the United States Coast Guard ("USCG") estimated that the damaged well was releasing approximately 42,000 gallons of crude oil per day. On April 28, 2010, the USCG increased this estimate to approximately 200,000 gallons per day; refinements of this estimate are ongoing. All efforts to contain the discharge have failed and may not succeed for an extended period of time. The Spill has the potential to cause widespread damage along Florida's shoreline and coastal estuaries within the following counties: Escambia, Santa Rosa, Okaloosa, Walton, Bay, Gulf, Franklin, Wakulla, Jefferson, Taylor, Dixie, Levy, Citrus, Hernando, Pasco, Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, Collier, Monroe, Miami-Dade, Broward and Palm Beach. These counties shall constitute the specific area covered by this Emergency Final Order. This area shall herein be referred to as the "Emergency Area."

2. By State of Florida Executive Order Nos. 10-99, 10-100, and 10-106, the Governor declared that a state of emergency exists throughout Escambia, Santa Rosa, Okaloosa, Walton, Bay, Gulf, Franklin, Wakulla, Jefferson, Taylor, Dixie, Levy, Citrus, Hernando, Pasco, Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, Collier, Monroe, Miami-Dade, Broward and Palm Beach counties, based upon the serious threat to the public health, safety and welfare posed by the Spill.

3. The Department finds that the Spill has created a state of emergency threatening the public health, safety, welfare, and property throughout the Emergency Area. As a result of the emergency, immediate action is necessary to prevent, contain or reduce damage to natural and cultural resources and property that may occur as a result of the Spill.

4. Oil associated with the Deepwater Horizon incident has now reached the salt waters of the State of Florida. This oil is detrimental to marine resources and endangers the health, safety, and welfare of the people of the State of Florida.

5. In situ burning of discharged oil reduces the detrimental environmental impact of discharged oil on marine resources and on the health, safety, and welfare of the people of the State of Florida.

6. The clean-up burden to the state and exposure to the public may be reduced by implementing in situ burning of oil under appropriate conditions before it reaches shore.

7. The Department finds that an emergency order is required to address the need for immediate action because the normal procedures for obtaining the necessary authorizations would not result in timely action to address the emergency.

8. The Department finds that immediate, strict compliance with the provisions of the statutes, rules, or orders noted within this Order would prevent, hinder, or delay necessary action in coping with the emergency, and that the actions authorized under this order are narrowly tailored to address the immediate need for action and are procedurally fair under the circumstances.

CONCLUSIONS OF LAW

1. Based on the findings recited above, it is hereby concluded that the emergency caused by the Spill continues to pose an immediate danger to the public health, safety, or welfare and requires an immediate order of the Department.

2. Under State of Florida Executive Order Nos. 10-99, 10-100, and 10-106, and Sections 120.569(2)(n) and 252.36, F.S., the Secretary of the Department is authorized to issue this Emergency Final Order.

3. Suspension of statutes and rules as noted within this Order is required so as not to prevent, hinder, or delay necessary action in coping with the emergency.

THEREFORE, WITHIN THE EMERGENCY AREA, IT IS ORDERED:

A. SOLID WASTE MANAGEMENT

Field authorizations may be issued prior to or following a site inspection by Department personnel for staging areas to be used for temporary storage or processing of Spill-generated debris. Such authorizations are required for all facilities that will be managing oil spill debris, including staging areas where waste is brought to the site for storage and transfer, sites where decontamination activities are being conducted, and sites where waste is being processed. No such authorization is needed under this section for sites where equipment or empty containers are being stored prior to or after use, or sites where oil spill debris is initially containerized near the cleanup area. Additional authorizations may be required by the Department's Division of Air Resource Management, as well as the Department's Coastal Construction Control Line, Joint Coastal, and Submerged Lands and Environmental Resource Permitting programs.

Field authorizations may be requested by providing a notice to the local office of the Department containing a description of the staging area design and operation, the location of the staging area, and the name, address, and telephone number of the site manager. Field authorizations also may be issued by Department staff prior to receiving written notice. Written or electronic records of all field authorizations shall be created and maintained by Department staff. Field authorizations may include specific conditions for the operation and closure of the staging area, and may include a required closure date that extends beyond the expiration date of this Order.

Staging areas shall be sited to avoid wetlands, beach and dune habitat, archaeological and historical sites, and other surface waters to the greatest extent possible; such areas that are used or affected must be fully restored upon cessation of use of the area. Persons wishing to locate staging areas on or near the beach and dune system shall utilize existing disturbed areas to the maximum extent practicable and shall first consult with the Florida Fish and Wildlife Conservation Commission ("FWC"), the Department's Bureau of Beaches and Coastal Systems

and the Department of State's Division of Historical Resources. Staging areas must cease operation, and all Spill-generated debris must be removed from the site, by the expiration date of this Order, unless a different closing date or closure conditions are specified in the field authorization. Failure to comply with the conditions of the field authorization, or failure to adequately close the site by the required closure date, may result in enforcement actions by the Department. Field authorizations issued prior to the effective date of this Order remain in effect but may be modified by the Department to include conditions and closure dates as specified herein.

B. WATERS, WETLANDS, BEACHES & COASTAL SYSTEMS, & SUBMERGED LANDS

1. No Notice Required

The following activities are authorized to be undertaken pursuant to Chapters 161, 253, 258, and Part IV of Chapter 373, F.S., and the applicable rules adopted thereunder, by BP and its contractors and by governmental entities to contain and prevent the spread of oil and oil contaminants, and to clean-up oil and oil contaminants:

(a) Placement of temporary containment booms and sorbent materials. To the maximum extent practicable, all booms and sorbent materials shall be deployed and maintained so as to minimize lying on or shading wetlands and submerged aquatic vegetation, so as to not create a navigational hazard, and so as to minimize entanglement risk or other adverse impacts to aquatic and wetland dependant fish and wildlife, and minimize adverse impacts to archaeological and historical sites.

(b) Placement and use of temporary floating devices designed exclusively to contain or collect oil contaminants at the mouths of water control structures, intake structures, canals, coastal inlets and passes, rivers, and streams, provided such devices are deployed and maintained so as to not create a navigational hazard or to cause upstream flooding or other adverse impacts to water resources to the maximum extent practicable.

(c) Placement and use of temporary devices not listed above, including air bubbler curtains, designed and used exclusively to contain, collect and prevent oil contaminants from entering coastal inlets and passes, water control structures, intake structures, canals, rivers and streams, provided such devices are deployed so as to not create a navigational hazard or to cause upstream flooding or other adverse impacts to water resources to the greatest extent practicable, and to minimize impacts to archaeological and historical sites.

(d) **Along shorelines other than sandy beaches**, installation and maintenance of hay bales, temporary sandbags or other similar materials to prevent contamination, provided such installation can be conducted, and such materials can be maintained and removed, in a manner that does not result in permanent dredging, filling or loss of wetland or submerged aquatic resources, or damage to archeological or historical resources. To the maximum extent practicable, all hay bales, sandbags or other similar materials shall be deployed so as to minimize lying on or shading wetland and submerged aquatic vegetation and to minimize adverse affects to aquatic and wetland dependant fish and wildlife. Such structures and materials shall be removed once the threat of contamination has abated. This does not authorize the construction of seawalls, bulkheads, rock revetments or other forms of retaining walls.

(e) Installation and maintenance of in-water signage or buoys warning boaters of such hazards as areas where booms and skimmers have been deployed and where heavy contamination exists. Such signage shall, to the extent practicable, be consistent with FWC standards and must adequately warn mariners of the existing hazards. Buoys shall be consistent with USCG marking for navigational hazards.

(f) Manual removal of stranded oil from sandy beaches. This method consists of removal of stranded oil, including surface oil, tar balls, tar patties, tar mats, and other weathered oil products, using hands, rakes, shovels, buckets, scrapers, sorbents, pitch forks, etc., and placing in containers. No mechanized equipment shall be used except for transportation of

collected oil and debris from the beach to the upland staging area. Equipment and vehicle access shall use only the designated beach access points. Driving of equipment along the beach shall be limited to the area seaward of the wrack or debris line to the maximum extent practicable. Equipment should transit between the beach access point and the wrack line using the most direct route to minimize travel over areas of the beach landward of the wrack or debris line. If stranded oil is present in the driving zone seaward of the wrack or debris line, driving of vehicles may occur directly landward of the stranded oil. During marine turtle nesting and shorebird nesting season (February 15-October 31), all activity shall be limited to daylight hours and all equipment and materials shall be removed from the beach at night, unless specific verbal or written approval is given by the Department for nighttime cleaning operations. All activities shall be conducted in a manner that avoids archeological and historical sites, and is in compliance with the Division of Historical Resources guidelines for archaeological and historical resources, attached hereto as Exhibit C.

(g) Mechanical removal of stranded oil and oiled sediments from sandy beaches within the following counties: Escambia, Santa Rosa, Okaloosa, Walton, Bay, Gulf, Franklin, Wakulla, Jefferson, and Taylor. Entities undertaking activities authorized by an Incident Command Division may conduct mechanical removal of stranded oil and oiled sediments from sandy beaches. This method consists of removal of stranded oil and oiled sediments using mechanical equipment such as loaders and graders, as well as trucks, tractors and trailers for transportation of collected oil and oiled sediments. Other specialized equipment may be used for the sifting and removal of tar balls, patties, and mats. Digging of pits/trenches is authorized if subsurface oil may be present. Driving of equipment along the beach shall be limited to the area seaward of the wrack or debris line to the maximum extent practicable. Equipment should transit between the beach access point and the wrack line using the most direct route to minimize travel over areas of the beach landward of the wrack or debris line. If stranded oil is present in the driving zone seaward of the wrack or debris line, driving of vehicles may occur

directly landward of the stranded oil. During marine turtle nesting and shorebird nesting season (February 15-October 31), all activity shall be limited to daylight hours and all equipment and materials shall be removed from the beach at night, unless specific verbal or written approval is given by the Department for nighttime cleaning operations.

Mechanical removal of stranded oil and oiled sediments is authorized in accordance with the above description and the following special conditions shown below:

1. A reliable method to measure the volume of beach sediments removed during clean-up operations shall be documented and used by the entity conducting the activity. Upon completion of a section of the shoreline, an explanation of the documented method used and the recorded volume of beach sediments removed during clean-up shall be provided to the Department's Bureau of Beaches and Coastal Systems.

2. The removal of clean sand shall be minimized to the greatest extent practicable.

3. If work occurs during marine turtle and shorebird nesting seasons (February 15 – October 31), it is the responsibility of the entity conducting the activity to ensure compliance with the provisions below. Unless nighttime operations are explicitly approved as required above, all activity shall be limited to daylight hours and commence after completion of a nesting survey. All nest surveys shall be conducted only by persons with prior experience and training in the activities and who is duly authorized to conduct such activities through a valid permit issued by the FWC pursuant to Chapter 60E-1, F.A.C. All equipment and materials shall be removed from the beach at night.

a. Sea Turtles. Activities shall be conducted in compliance with the "Sea Turtle Nest Protection Protocols for Clean-Up Crews on Beaches in Florida, Alabama, Mississippi, and Louisiana," attached hereto as Exhibit A.

b. Shorebirds. Activities shall be conducted in compliance with the "Shorebird and Seabird Protection Protocols for Clean-up Crews on Beaches in Florida Operating Under DEP Emergency Order 10-1610," attached hereto as Exhibit B.

4. Activities shall be conducted in a manner that avoids archeological and historical sites, and is in compliance with the Division of Historical Resources guidelines for archaeological and historical resources, attached hereto as Exhibit C.

(h) Emergency beach access and upland staging areas. Creation of emergency beach access in order to place emergency response equipment on the beach, as well as creation of staging areas used to store equipment or to containerize oil spill debris, is authorized. Entities conducting the activity are encouraged to use existing beach access points and to avoid designated critical habitat for beach mice. Archaeological and historical sites must be avoided. Response/Construction equipment and supplies shall be stored landward of the beach/dune system during the night. Once the contamination has been abated, access and staging areas shall be restored to preexisting conditions. All such construction shall be limited to daylight hours after completion of a marine turtle nesting survey.

2. Activities Requiring Field Authorizations or Emergency Permits

a. <u>Wetlands and Other Surface Waters, Excluding Sandy Beaches</u>.

Field authorizations under Part IV of Chapter 373, F.S., and applicable rules adopted thereunder, may be issued to BP, its contractors, and governmental entities following notice to the Department and a field inspection by the Department as needed for the following activities in, on or over wetlands or other surface waters, but excluding activities on sandy beaches:

(1) Construction, use, and removal of temporary emergency response access roads and staging areas used to store equipment or to containerize oil spill debris. Such roads and staging areas shall be sited in uplands and shall use existing improved or previously cleared access points to the maximum extent practicable. If this cannot be done, construction and alteration must minimize work in wetlands or other surface waters and adverse impacts to aquatic and wetland dependant fish and wildlife to the maximum extent practicable. Archaeological and historical sites must be avoided. Wetlands and other surface waters shall not be dredged to obtain any fill material to construct any access roads or staging areas. Once

the contamination has been abated, all areas disturbed to construct and use these areas shall be restored to former contours and shall be stabilized to prevent erosion, sedimentation, and turbid runoff. Fill material used to create these areas shall be removed to an upland location where it will not adversely affect surface water flows and in a manner that does not cause flooding of adjacent lands. Any wetlands or other surface waters that were disturbed to establish these areas shall be re-vegetated in a manner that will facilitate restoration to preexisting conditions.

(2) Other activities that are part of an oil spill response plan developed by BP, its contractors, or a governmental entity that are designed to protect or remediate impacts to wetlands or other surface waters that may be impacted by the Spill. These activities will be reviewed and approved by the Department on a case-by-case basis through issuance of a field authorization.

(3) Decontamination areas for vessels at in-shore secondary cleaning locations as provided for in the "Sector Mobile, AL Deep Draft Vessel Evaluation and Cleaning Plan" dated May 9, 2010, or as that Plan may be amended.

Field authorizations for the above activities must be requested by providing a notice to the appropriate Department District Office containing a description of the work requested, the location of the work, and the name, address, and telephone number of the applicant who may be contacted concerning the work. Field authorizations may not be issued unless requested on or before the expiration date of this Order. Field authorizations may include specific conditions for the construction, operation, maintenance, and restoration of the authorized activities. Field authorizations issued under this Order remain in effect for the duration specified in the authorization, but may be extended through written modification by the Department. Failure to comply with the conditions of a field authorization permit may result in enforcement actions by the Department.

These procedures also are supplemental to, and do not replace, the ability to perform temporary emergency measures within the geographic limits of the Northwest Florida Water Management District using the Class A and Class B Emergency Provisions of Rule 62-312.090, F.A.C.

b. Activities on and Adjacent to the Sandy Beach Shoreline

This section applies to activities conducted pursuant to Chapter 161, F.S., and the applicable rules adopted thereunder, seaward of the Coastal Construction Control Line ("CCCL") as established by Rule 62B-26, F.A.C. Certain activities may additionally take place seaward of the Mean High Water shoreline. Emergency Permits for such activities shall be issued by the Department's Bureau of Beaches and Coastal Systems ("Bureau").

The Bureau may issue emergency permits to governmental entities and to BP and its contractors for the activities listed below:

(1) Protection of coastal dune lakes. Upon threat of contamination, lowering the water levels to manageable levels of coastal fresh water dune lakes that have a prior, documented connection between the lake and the Gulf of Mexico, and closing the coastal dune lake outlets to prevent contamination, may be authorized. Beach-quality sand, defined in Rule 62B-41.007(2)(j), F.A.C., or other temporary measures (such as absorbent booms) shall be used to close such outlets until the threat of contamination has been abated. Applicants are encouraged to use the sand excavated to lower lake levels in order to close the outlets. However, beach quality sand obtained from upland sources may be used upon approval by the Department. All such construction shall be limited to daylight hours after completion of a marine turtle nesting survey.

(2) Construction of emergency sand dikes. To limit the lateral extent of oil contamination, the use of beach-quality sand from upland sand sources to construct a sand dike on the existing beach berm may be authorized. Such berms shall be at an appropriate contour elevation to limit the landward extent of oil incursion. Such efforts shall not result in damage to

existing dunes or dune vegetation or archaeological or historical sites. All such construction shall be limited to daylight hours after completion of a marine turtle nesting survey and be done in coordination with FWC to ensure appropriate bird surveys or designation of bird monitors. This does not authorize the construction of seawalls, bulkheads, rock revetments or other forms of retaining walls.

(3) Beach scraping/blading. Manipulation of existing non-vegetated sand that resides on the existing beach face landward of mean high water in order to protect sand resources may be authorized. All such construction shall be limited to daylight hours after completion of a marine turtle nesting survey and be done in coordination with FWC to ensure appropriate bird surveys or designation of bird monitors. Activities shall be conducted in a manner that avoids archeological and historical sites, and is in compliance with the Division of Historical Resources guidelines for archaeological and historical resources, attached hereto as Exhibit C.

(4) Other activities that are part of an oil spill response plan developed by BP, its contractors, or a governmental entity that are designed to protect or remediate impacts to the beach/dune system that may be impacted by the Spill. These activities will be reviewed and approved by the Department on a case-by-case basis through issuance of an emergency permit.

3. Authorization to Use State-Owned Submerged Lands

The activities authorized above that are located in, on, or over state-owned submerged lands are hereby granted a Letter of Consent under Rule 18-21.005(1)(c)14., F.A.C., provided:

(a) The activities are conducted in accordance with the terms, conditions, and limitations of this Order; and,

(b) Activities authorized under this Order must be conducted in conformance with the general conditions of Rule 18-21.004(7), F.A.C.

(c) Archaeological and historical sites are avoided.

4. General Conditions

(a) Applicable environmental resource, surface water management, dredge and fill, stormwater, and CCCL or joint coastal permits under Chapters 161 and Part IV of Chapter 373, F.S., and applicable state-owned submerged lands authorizations shall be required for other activities not authorized in this Order that do not otherwise qualify as an exempt activity under statute or rule.

(b) Nothing in this Order authorizes the taking, attempted taking, killing, pursuing, harassing, harming, molesting, capturing, possessing, or transporting of any species (or the nest or eggs of any species) listed under Rule 68A-27, F.A.C., or under the Federal Endangered Species Act, nor does this order relieve anyone from complying with any other statute, rule, or order of the FWC.

(c) Nothing herein shall be construed to infringe upon private property rights of owners of non-state owned submerged lands.

(d) Materials and devices authorized under this Order must be removed and disposed of in accordance with a Department-approved waste disposal plan as soon as practicable after the structures or devices:

(1) Have lost their effectiveness in collecting and retaining oil, or otherwise are no longer functioning as intended;

(2) Are no longer needed to absorb, collect, or contain oil after the threat of contamination has subsided; or

(3) Have fallen into disrepair, have become hazardous, or are adversely affecting, or have the potential to adversely affect, the environment, navigation, or the property of others; or otherwise have the potential to be a continuing source of pollution.

(e) The nature, timing, and sequence of preventative measures authorized under this Order shall be conducted in such a manner as to provide protection to, and so as to not disturb, native salt-tolerant vegetation and listed species and their habitat, including threatened

or endangered marine turtles, endangered manatees, endangered beach mice, endangered plant communities, and migratory shorebirds to the greatest extent practicable. Such activities shall minimize to the greatest extent practicable entanglement hazards for marine turtles and must avoid dune habitat known to be occupied by beach mice, marked marine turtle nests, and nesting shorebirds. All activities shall be conducted in a manner that avoids archeological and historical sites, and is in compliance with the Division of Historical Resources guidelines for archaeological and historical resources, attached hereto as Exhibit C.

C. AIR

1. In situ burning of oil in marine waters of the State associated with the Deepwater Horizon incident is authorized within the Emergency Area. All such in situ burning shall be conducted in accordance with the MC-252 Nearshore In Situ Burn Operational Plan.

2. Any solid waste resulting from the in situ burn shall be collected and shall be managed and disposed of in accordance with the BP MC252 Incident Waste Management and Disposal Plan and the Florida statutes and rules regulating the management and disposal of solid waste.

3. All persons conducting in situ burning of oil within the marine waters of the State shall create and maintain a record of the date, time, location and duration of each in situ burn, and shall provide the Department with a copy of the record upon request by the Department.

D. GENERAL PROVISIONS

1. <u>General Limitations</u>

The Department issues this Emergency Final Order solely to address the emergency created by the Spill. This Order shall not be construed to authorize any activity within the jurisdiction of the Department except in accordance with the express terms of this Order. Under no circumstances shall anything contained in this Order be construed to authorize the repair, replacement, or reconstruction of any type of unauthorized or illegal structure, habitable or

otherwise. This Order does not convey any property rights or any rights or privileges other than those specified in this Order.

2. Suspension of Statutes and Rules

(a) Within the Emergency Area, the requirements and effects of statutes and rules that conflict with the provisions of this Order are suspended to the extent necessary to implement this Order.

(b) To the extent that any requirement to obtain a permit, consent of use, or other authorization is waived by this Order, it should also be construed that the procedural requirements for obtaining such permit, consent of use or other authorization, including requirements for fees and publication of notices, are suspended for the duration of this order.

(c) Field authorizations and emergency permits will be evaluated in accordance with the non-procedural requirements, standards, and criteria of the applicable rules of the Department and the Board of Trustees.

3. Interagency Coordination

The Department shall coordinate with the FWC on protected and imperiled species issues and the Division of Historical Resources regarding protection of archeological and historical sites during the review of field authorizations and emergency permits.

4. Other Authorizations Required

This Order only provides relief from the specific regulatory and proprietary requirements addressed herein for the duration of the Order, and does not provide relief from the requirements of other federal, state, water management districts, and local agencies. This Order therefore does not negate the need to obtain any other required permits or authorizations, nor from the need to comply with all the requirements of those agencies. This Order does not provide relief from any of the requirements of the Florida Statutes regarding registered professionals.

Activities subject to Federal consistency review that are emergency actions necessary for the repair of immediate, demonstrable threats to public health or safety are consistent with the Florida Coastal Management Program if conducted in strict conformance with this Order.

5. Stormwater Management

Impervious surfaces that are created or altered to establish any staging areas authorized or permitted under the terms of this Order must be designed, constructed, operated, and maintained in a manner that minimizes offsite discharge of contaminated runoff, and so as to not cause adverse water quantity impacts or flooding to on-site or off-site property and receiving waters. If any impervious surfaces created under this Order must remain for more than six months, the entity operating the staging area must apply to the Department for a permit under Part IV of Chapter 373, F.S., for stormwater (quantity and quality) review and authorization, which may require further alteration of the system to meet requirements of the applicable Department surface water regulations for the area.

6. Department Inspections

Any person conducting activities authorized by this Order shall allow any duly authorized representative of the Department to enter and inspect the property, premises, or place where such activities are being conducted for the purpose of ascertaining the state of compliance with the terms of this Order and with the rules of the Department. Department representatives shall also be allowed to inspect and copy any records required by this Order or the rules of the Department, to inspect any monitoring equipment or method, to sample for any pollutants or waste, and to obtain any other information necessary to determine compliance with the terms of this Order and the rules of the Department.

7. Violation of Conditions of Emergency Final Order

Failure to comply with any condition set forth in this Order shall constitute a violation of a Department Final Order under Chapters 161, 253, 258, 373, 376, and 403, F.S., and enforcement proceedings may be brought in any appropriate administrative or judicial forum.

8. **Expiration Date**

This Emergency Final Order shall take effect immediately upon execution by the Secretary of the Department, and shall expire on January 15, 2011, unless modified, revoked, or extended by further order.

NOTICE OF RIGHTS

Pursuant to Section 120.569(2)(n) of the Florida Statutes, any party adversely affected by this Order has the right to seek an injunction of this Order or any authorization issued hereunder in circuit court or judicial review of it under Section 120.68 of the Florida Statutes. Judicial review must be sought by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within thirty days after this Order is filed with the Clerk of the Department.

DONE AND ORDERED on this 18 day of JUNE, 2010, in Tallahassee, Florida.

FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION

Michael W. Sole, Secretary
3900 Commonwealth Blvd
Tallahassee, FL 32399-3000

FILED ON THIS DATE PURSUANT TO § 120.52, FLORIDA STATUTES,
WITH THE DESIGNATED DEPARTMENT CLERK, RECEIPT OF WHICH
IS HEREBY ACKNOWLEDGED.

(DEPUTY) CLERK

06/18/2010
DATE

Exhibit A
Sea Turtle Nest Protection Protocols for Clean-up Crews
on Beaches in Florida, Alabama, Mississippi, and Louisiana

In Florida and Alabama, most sandy beaches have active sea turtle nesting survey and nest protection programs in place. However, some beaches in Florida are not surveyed on a daily basis due to logistical difficulties with access (e.g., Dauphin Island in Mobile County, Alabama; the Marquesas Islands in Monroe County, Florida) or are not currently surveyed at all (e.g., Dog Island in Franklin County, Cape Sable in the Everglades in Monroe County, Florida). No nesting surveys are conducted in Mississippi and Louisiana. Attached is a list of daily surveyed beaches by County and State; please follow the first set of protocols below for these beaches. For beaches that are not surveyed, please follow the second set of protocols.

FOR BEACHES WHERE NESTING SURVEYS ARE CONDUCTED DAILY:

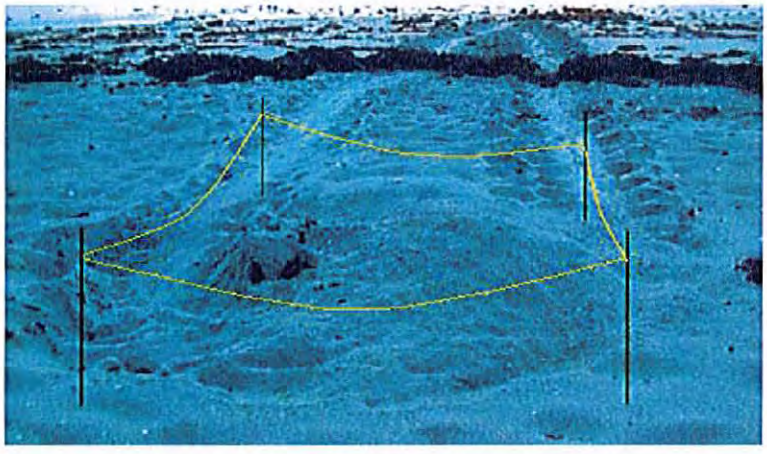
1. Ensure daily sea turtle nesting surveys have been completed and that all nests have been marked by the local sea turtle permit holder with a 10-foot buffer zone before work begins each morning. The clean-up crew leader must contact the appropriate individual identified on the attached list or his/her designee daily to determine if nesting surveys have been completed and clean-up activities can begin.
2. Sea turtles may still be nesting or hatchlings may emerge after sunrise, so it is imperative that clean-up crews watch for nesting and hatchling turtles while they are on the beach and immediately report any turtles sighted to the individual identified on the attached list or his/her designee. Clean-up vehicles should travel slowly to enable a better opportunity to spot turtle crawls and avoid colliding with nesting and hatchling turtles.
3. Look for any marked nests before beginning beach cleaning activities in an area. Nests will be marked with at least eight stakes, four around the nest perimeter and four more around a 10-foot buffer zone (see photo below). Do not remove or destroy any stakes or flagging, even if they are sited up in the dune. These may be back-up stakes that were placed to ensure that future location of the nest is possible should the nest perimeter stakes be lost.

4. Mechanical equipment and hand tools should not be used within the flagged buffer area of a nest.
5. Clean-up crews should gently remove contaminated sand within the flagged area of a nest by hand and replace it with clean, damp sand taken from an area adjacent to the flagged nest area. Removal of sand over a nest should occur only under the direction of the sea turtle permit holder. The surface layer of oiled sand should be removed only to the minimum depth necessary without impacting the top of the nest. If nest flagging was removed to access the nest area, it must be securely replaced after clean-up activities have been completed.
6. All excavations and temporary alteration of beach topography shall be filled, covered, or leveled to the natural beach profile prior to 8:00 p.m. each day.

FOR BEACHES WHERE NESTING SURVEYS ARE NOT CONDUCTED OR ARE NOT CONDUCTED DAILY:

1. Sea turtles may still be nesting or hatchlings may emerge after sunrise, so it is imperative that clean-up crews watch for nesting and hatchling turtles while they are on the beach and immediately report any turtles sighted to the individual identified on the attached list or his/her designee. Clean-up vehicles should travel slowly to enable a better opportunity to spot turtle crawls and avoid colliding with nesting and hatchling turtles.
2. Look for any turtle crawls before beginning beach cleaning activities in an area (see photos below of turtle crawls). [In some cases, there may be marked nests on some partially surveyed beaches (steps 1-5 on the preceding page should be followed for existing nests).]

3. Follow any turtle crawls and look for signs that the turtle dug into the sand. Using stakes and flagging, mark the entire disturbed area created by a turtle digging. Under no circumstances should stakes be driven into the sand within the disturbed area created by the turtle (see photo below of a marked disturbed area – however, please double flag the nest site instead of using a single layer of flagging as shown in the photo).



4. Follow Steps 3-5 on the preceding page.

ATTACHMENT
SURVEYED BEACHES AND SEA TURTLE CONTACTS*

SURVEYED BEACHES	CONTACT NAME	PHONE NUMBER
ALABAMA		
Mobile County		
Dauphin Island	Mike Reynolds	Cell: 251-747-4985 Office: 251-974-2253
Baldwin County		
Fort Morgan Peninsula, including Bon Secour National Wildlife Refuge to West Beach in Gulf Shores	Jackie Isaacs	Cell: 251-752-0654 Office: 251-540-8523
West Beach in Gulf Shores to the Alabama/Florida state line	Mike Reynolds	Cell: 251-747-4985 Office: 251-974-2253
FLORIDA		
Escambia County – all beaches	Robbin Trindell Meghan Koperski (back-up)	Cell: 561-262-1104 Office: 850-617-6055 Cell: 561-339-1001 Office: 561-575-5407 x17
Santa Rosa County – all beaches	Same as above	
Okaloosa County – all beaches	Same as above	
Walton County – all beaches	Same as above	
Bay County -- all beaches	Same as above	
Gulf County – all beaches	Same as above	
Franklin County		
St. Vincent NWR (survey frequency varies)	Same as above	
Cape St. George (survey frequency varies)	Same as above	
St. George Island	Same as above	
Alligator Point		
Pinellas County – all beaches	Same as above	
Hillsborough County – all beaches	Same as above	
Manatee County – all beaches	Same as above	
Sarasota County – all beaches	Same as above	
Charlotte County – all beaches	Same as above	
Lee County – all beaches	Same as above	
Collier County – all beaches	Same as above	
Ten Thousand Islands NWR (surveyed 3-7 days/week)	Same as above	
Monroe County – all beaches (survey frequency varies)	Same as above	

*If the beach to be cleaned is not identified on the above list or does not fall within a County where all beaches are surveyed, then clean-up crews should follow the protocols on page 2 **FOR BEACHES WHERE NESTING SURVEYS ARE NOT CONDUCTED OR ARE NOT CONDUCTED DAILY.** If you have any questions about whether a beach is surveyed or not, contact the individuals listed above for assistance.

Exhibit B
Shorebird and Seabird Protection Protocols for Clean-up Crews on Beaches in Florida Operating Under DEP Emergency Final Order, OGC Case No. 10-1610

Shorebirds and seabirds (beach-nesting birds) nest on Florida's beaches from February 15 – September 1. Disturbance of nesting birds may result in abandonment of nests or young. Flightless chicks can be very mobile and may forage well outside posted nesting areas. They are extremely difficult to see and are susceptible to being crushed by pedestrians and equipment.

The following measures are designed to reduce the likelihood of incidental take of protected beach-nesting bird species.

Prior to movement of vehicles or heavy equipment onto the beach associated with clean-up, notification to the Florida Fish and Wildlife Conservation Commission (FWC) Regional Species Conservation Biologist (RB) shall be provided. The RB will coordinate efforts to provide qualified FWC staff or other trained Para-professionals to act as Shorebird Monitors and assist with monitoring for beach nesting birds during clean-up. If the RB in the region can not be reached, the RB in an adjacent region should be notified.

Many bird nesting areas are marked with symbolic fencing consisting of roping (twine, string, poly rope) strung between posts (wood, PVC, Carsonite) and clearly marked signs ("No Entry"). The DEP Emergency Final Order, OGC Case No. 10-1610 does not authorize entry into designated marked beach-nesting areas. If entry is needed, authorization must be given either verbally or in writing by the FWC.

Heavy equipment and vehicles should be kept as far away from these marked areas as practicable. The posting will be erected at a sufficient distance from the nest(s) to ensure that approach does not cause the birds to flush from the nest, but will not prevent the passage of vehicles/equipment necessary to conduct the project. Should project activities require that vehicles/equipment operate (stay longer than the time it takes to transit the area) within a distance that causes birds to leave the nest, the Shorebird Monitor will assist the project manager to reduce the risks of activities resulting in nest or colony abandonment.

The Shorebird Monitor(s) can provide assistance to the operators of equipment in looking for the presence of flightless young within the project area. It is the responsibility of the project manager to ensure that equipment operators coordinate closely with the Shorebird Monitor(s) to take precautions to reduce the risk that flightless young are directly injured by equipment. .

All heavy equipment and vehicles operating in areas of highest probability of beach nesting birds should operate at speed no greater than 6 mph. FWC Regional Biologists or designated Shorebird Monitors can provide guidance regarding the specific locations where slow speed is advised. When in doubt regarding the probability of the presence of beach nesting birds, it is a recommended best management practice that all vehicles and heavy equipment operate at slow speeds. Flightless young are very susceptible to mortality by becoming trapped in tire ruts in the sand. All tire ruts should be smoothed or graded at the completion of the clean-up activity each day.

Regional FWC Contacts for Shorebird Issues

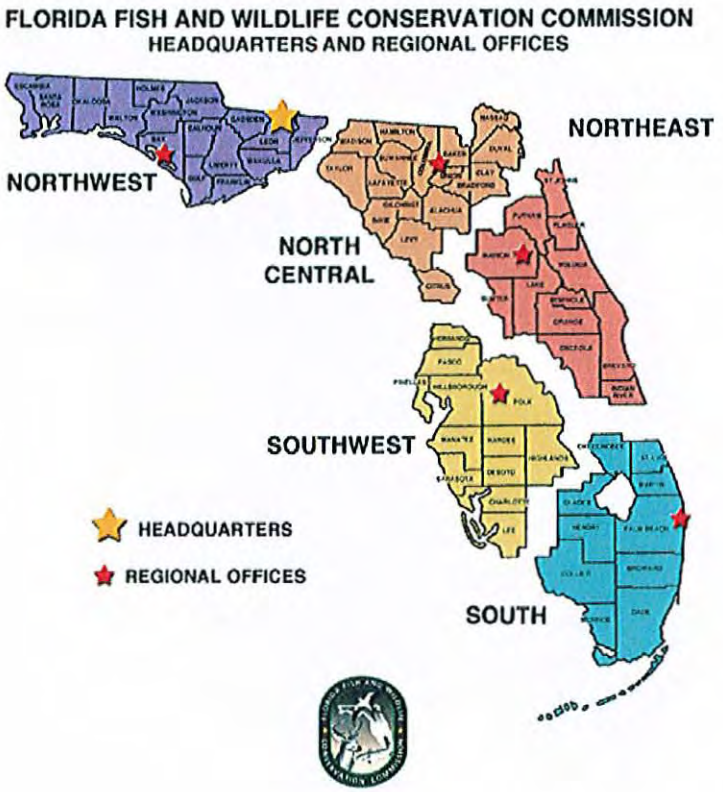
Northwest Region
Dr. John Himes
FL Fish and Wildlife Conservation Commission
3911 Highway 2321
Panama City, FL 32409-1658
(850) 265-3677/Fax (850) 747-5690
Cell # 850-698-4781

North Central Region
Dr. Terry Doonan
FL Fish and Wildlife Conservation Commission
3377 E. US Hwy 90
Lake City, FL 32055
(386) 758-0525/Fax (386) 758-0533
Cell # 386 623-4986

Northeast Region
Mr. Alex Kropp
FL Fish and Wildlife Conservation Commission
1239 S.W. 10th Street
Ocala, FL 34474-2797
(352) 732-1225/Fax (352) 620-7627
Cell # 352-342-0063

Southwest Region
Ms. Nancy Douglass
FL Fish and Wildlife Conservation Commission
3900 Drane Field Road
Lakeland, FL 33811-1299
(863) 648-3205/Fax (863) 701-1248
Cell # 863 581-6903

South Region
Mr. Ricardo Zambrano
FL Fish and Wildlife Conservation Commission
8535 Northlake Boulevard
West Palm Beach, FL 33412
(561) 625-5122/Fax (561) 625-5129
Cell # 561-248-9072



If a Regional Biologist cannot be reached please call:

1 888 404-3922

Florida Shoreline Cleanup & Assessment

ARCHAEOLOGICAL SITE PROTECTION

Artifact Identification Guide

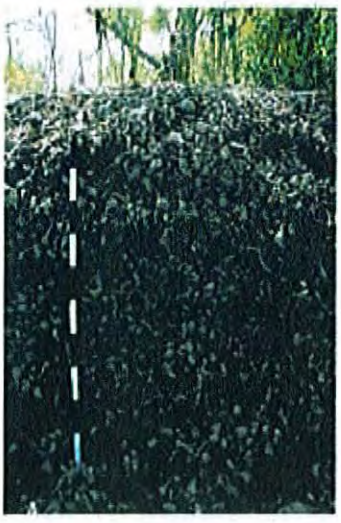
1. HISTORIC POTTERY & GLASS

2. HISTORIC METAL(S)

3. WOODEN VESSELS & STRUCTURES

4. AMERICAN INDIAN DUGOUT CANOES

5. SHELL MIDDEN



6. AMERICAN INDIAN STONE TOOLS

7. AMERICAN INDIAN POTTERY

8. AMERICAN INDIAN BONE & SHELL TOOLS

Archaeological sites and artifacts are owned by the State of Florida. Discovery of objects such as those illustrated here should be reported to the Division of Historical Resources at 850 245 6530. Discovery of human bones should be reported to local law enforcement immediately. LEAVE IT AND REPORT IT!

Florida Shoreline Cleanup Assessment

ARCHAEOLOGICAL SITE PROTECTION

LEAVE IT AND REPORT IT!

Archaeological sites and artifacts found on state owned, state-controlled or submerged bottom lands are protected by law under Chapter 267.061, Florida Statutes; removal is not permitted.

Report the discovery of any archaeological material to the Division of Historical Resources at (850) 245 6530 immediately.

Human remains are protected by law under Chapter 872.05, Florida Statutes; removal is not permitted. Discovery of human bones should be reported to local law enforcement immediately.

Sites may include shipwreck , dugout canoes, or middens made of small shell, such as shown here:

ARTIFACT IDENTIFICATION GUIDE

1. Historic pottery and glass objects are characteristic of Florida's early European settlers beginning in the sixteenth century. Shown here are seventeenth century Spanish pottery fragments and late eighteenth to early nineteenth century glass bottles.

2. Historic metal objects also are characteristic of early Florida settlements and include various ship, weapon, and industry-related parts and fragments. Shown here are pieces associated with an eighteenth century flintlock musket.

3. Wooden vessels and structures are typically found along the coastline and commonly include shipwrecks, houses, bridges, docks, and fish weirs. Wooden objects such as these deteriorate rapidly once exposed and should never be removed from a wet environment.

4. American Indian dugout canoes can be found along Florida's coastal waterways. Wooden objects such as canoes, paddles, or carvings, deteriorate rapidly and should never be removed from a wet environment.

5. Shell middens, such as those shown here, are thick deposits of marine shell, animal bone, and soil associated with living surfaces and disposal of food refuse. Sometimes used for burials, shell middens are rich with cultural material, including organic objects, such as wood and fiber, that do not survive once removed from these settings.

6. American Indian stone tools include a wide range of chipped and ground stone objects, such as arrowheads, knives, scrapers, or drills, and are representative of human activity that extends back to Florida's earliest peoples around 10-12,000 years ago.

7. American Indian pottery objects are made with fired clay and include jars, bowls, platters, and dishes. Made in a variety of sizes with a variety of impressed and incised surface decorations, these are usually found in fragments and most commonly date between 2,500 and 500 years ago.

8. American Indian shell tools include a wide range of objects, such as hammers, cutting tools, dippers, net sinkers, anvils, gorgets, beads, and pendants; bone artifacts include arrow points, fish hooks, awls, hair pins, beads, and various carvings.

Appendices

Appendix 14

The Basic Structure of the National Response System and Planning

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OVERVIEW OF THE OIL POLLUTION ACT OF 1990

The nation's overall oil spill strategy, and the attention that has been devoted to the issue of oil spills, have changed significantly since the time of the Exxon Valdez response. The most important change has been the development and implementation of the Oil Pollution Act of 1990, 33 U.S.C. §2701 (OPA 90). Although the major concepts in OPA 90 evolved over the course of decades, the Exxon Valdez incident clearly was a strong force motivating Congress to revamp oil spill prevention, preparedness, and response responsibilities.

Implementation of OPA 90 provisions by the Coast Guard, EPA, and other Federal agencies address many of the preparedness shortcomings identified by the Reports to the President.This fact is partly attributable to the influence of the 1989 report during the Congressional development of the statute. This section briefly summarizes the key provisions of OPA 90, in order to provide a context for discussing the implementation of the recommendations from the 1990 report.

OPA 90 was enacted to expand oil spill prevention, preparedness, and response capabilities of the Federal Government and industry. OPA provisions most relevant to this report are:
Enhancement of contingency planning, training exercises, and prevention at all levels in both government and the private sector.

Other provisions include:
Strengthening encouragement of the use of alternative cleanup measures; and
Authorization of multi-agency research and development and identification of the need for coordinated research and development.

Contingency Planning

Section 4202 of OPA strengthened planning and prevention activities by:
Providing for the establishment of Federally-led, locally-developed oil spill contingency plans, Area Contingency Plans (ACPs), involving Federal, state, and local agencies for all areas of the U.S.; Mandating the development of response plans for individual tank vessels and certain facilities that handle, store, or transport oil and clarifying that private industry has primary responsibility for cleaning up spills; Requiring private and government planning to include the development of worst-case discharge scenarios and plans that address both actual discharges and substantial threats of discharges; Requiring training and drills, including both government and private responders, to ensure plans are adequate and can be carried out; and
Establishing requirements for spill removal equipment and periodic inspections of this equipment.

OPA 90 also mandated the creation of completely new Federal planning and response entities. These include Area Committees responsible for preparing contingency plans (this authority was delegated to the EPA Administrator and the Commandant of the Coast Guard), a Coast Guard National Strike Force Coordination Center (NSFCC), and Coast Guard district response groups.

OPA 90 also required changes to the NCP. First issued in 1968 and periodically modified since then, the NCP was revised on September 15, 1994, to address OPA requirements. In terms of contingency planning, these revisions included coordination of Federal, state, and local public and private roles; greater attention to fish and wildlife and their habitat; and planning for use of nonmechanical means of oil spill response.
More specifically, the NCP required the development of ACPs to "provide for a well-coordinated response that is integrated and compatible, to the greatest extent possible, with all appropriate contingency plans of state, local, and non-Federal entities" (40 CFR 300.210(c)(2)). The NCP also charges RRTs with providing guidance to Area Committees to ensure consistency among the areas in each region and consistency of an ACP with the Regional Contingency Plan (RCP) and the NCP (40 CFR 300.115(a)(2)).

Under OPA 90, owners or operators of certain facilities and vessels are required to prepare response plans. These plans primarily verify that the facility or vessel has the personnel. resources, and procedures to prevent and respond to oil spills. Although facilities have been required to prepare response plans since 1973,

OPA 90 requires far more extensive plans for a worst case discharge and includes more types of facilities than were Bayoured in the past, e.g., pipelines and mobile facilities.

NATIONAL RESPONSE SYSTEM

The NRS refers to the organizational structure detailed by the NCP for response to an oil spill or hazardous substance release. This system includes responsibilities for Federal agencies and response managers, state and local governments, and the responsible party.

PROGRESS:

While much has been accomplished to increase awareness of oil spills, the reality is that oil spill response commands the attention of the public, and the media, only during a large scale event. Other national priorities usually hold a higher place on the national agenda until we are in the midst of a major spill. The ability to sustain public awareness of oil spills and their impact continues to be a challenge.

A great deal has been accomplished since the *Exxon Valdez* incident in increasing both public and private accountability regarding oil spills. OPA 90 has caused industry and all levels of government to take more responsibility and to make more long-term and consistent commitments. For example, oil spill response capabilities and preparedness have been placed "higher on the national agenda," at least for the past few years, as evidenced by the increased investment of resources at both the government and private levels.

The creation of both profit and non-profit response organizations are examples of the increased awareness by all parties of the commitment to improve response capabilities and preparedness. Specific progress has been made in the following areas.

Preparedness and Planning

Oil spill contingency planning requirements were significantly strengthened by OPA 90. Section 4202 of OPA 90 required the Federal government to revise the NCP, and to create a new planning entity, Area Committees (codified at 40 CFR Part 300). OPA 90 directs the Area Committees to develop extensive ACPs. Many states have passed their own legislation similar to OPA 90 indicating their long-term commitment to improving response capabilities.

In addition to improving governmental contingency planning, OPA 90 strengthens the requirements for industry oil spill contingency planning as well. Section 4202 of OPA 90 required the development of detailed facility and vessel response plans and resources to respond to a worst case discharge. The response plan requirement increases the responsibility that industry, as part of the response community, must take for spills planning.

Industry Accountability

OPA 90 increased the commitment that industry must make to be prepared for oil spill response. In particular, Section 1016 established a financial responsibility requirement for vessels and offshore facilities to ensure that they have the necessary resources available to liability in case of a major spill. Under this Section, vessel owners and operators must obtain Certificates of Financial Responsibility (COFR) from the Coast Guard before being allowed to operate in U.S. ports.

This COFR document demonstrates adequate forms of financial responsibility as established by law. It ensures that in incidents involving vessels, Responsible Parties (RPs) are able to be identified and thereby compensate the damaged parties to the full extent of the law for expenses involved with the incident.

Exercise Requirements

Section 4202 of OPA 90 required periodic drills to evaluate the preparedness of the response community. Various Federal agencies, states, and industry have been working together to develop the PREP, which establishes a rigorous and regular exercise program to continually evaluate the preparedness of the oil spill response community.

Response Funding

OPA 90 retains the concept that the polluters should pay for all the costs of spill response, and it expands the funds available to government response managers in cases where the liable party is unidentifiable or unable to pay. Specifically, Section 1012 of OPA 90 established the Oil Spill Liability Trust Fund (OSLTF) to pay for response activities not Bayoured or not paid in a timely fashion by the spiller. This has created greater continuity and ensures that all spills will receive the appropriate response, regardless of the financial situation of the responsible party.

Each of these improvements discussed above, as well as other changes brought about by OPA 90, collectively help to raise and maintain the awareness in government and industry of the problem of oil spills. In addition, they help to develop and maintain expertise in the rapid and effective response to these spills.

PROGRESS

Retain the basic structure and concepts of the National Response System The NRS, as revised after enactment of OPA 90, retains most of the principles of the previous NRS. The most important of these principles include:

The importance of multi-tiered, coordinated, contingency planning, which is required at the facility or vessel, Area, Regional, and National levels;

The requirement that the polluter pay for and take responsibility for cleaning-up the spill; and

A structure that allows the Federal government to direct and fund response efforts, should the RP be unable to do so.

One critical change in the NRS is that the OSC always directs spill response, regardless of whether the RP or is paying for removal. This is an improvement over the previous system, when a spill had to be "Federalized" (i.e., paid for by Federal funds) for an OSC to direct the response.

Multi-Tiered Planning

OPA 90 required detailed response planning at the site level, by individual facilities and vessels; and required contingency plans by Area Committees and by the RRTs. These levels of planning provide a multi-tiered, comprehensive approach to oil spill response and preparedness. Two critical components of this multi-tiered, planning strategy are the ACPs, prepared by the Area Committees, and the response plans prepared by facilities and vessels. These are described in detail below.

Area Contingency Plans (ACPs)

Section 4202 of OPA 90 called for the formation of Area Committees and the development of ACPs. The Area Committees, as mandated by the NCP, are required to be chaired by a predesignated OSC for the Area.

The revised NCP delegates the ability to designate an OSC for each area to the Coast Guard (for Areas in the coastal zone) and EPA (for Areas in the inland zone). The specific boundaries between the coastal and inland zones have been determined by EPA and Coast Guard agreements, and identified in Federal Regional Contingency Plans (RCPs).

Area Committees for coastal areas have been operating since 1991. Inland Area Committees have been operating since April 1992. The Area Committees are "community" planning bodies comprised of Federal, state, and local government agency representatives with responsibility for oil spill and hazardous substance release contingency planning and response.

Industry representatives and other private groups may participate in but not be official members of the Area Committees.

The Area Committees are charged with developing ACPs for spill response within the Area. The ACPs are intended to provide information that will assist the response community of that area in spill response, and particularly to help coordinate state and local plans and facility or vessel response plans. Further, the ACP serves as a vehicle to coordinate with local planning efforts under other statutes, including Section 112 (r) of the 1990 Clean Air Act and the Emergency Planning and Community Right-To-Know Act. The Area Committees achieve these objectives through several activities including:

Collecting and maintaining an extensive amount of enviromnental information;

Identifying and prioritizing environmentally sensitive and economically important areas, and establishing strategies for protecting these areas;

Maintaining response equipment in the Areas and response strategies for various spill scenarios, including a worst case discharge;

Coordinating planning among Federal, state and local government representatives in an area- who will do what in the event of an accident; and

Identifying where in an area accidents are likely to occur, what needs to be protected in the event of an accident, and how that protection will occur.

Vessel and Facility Response Plans

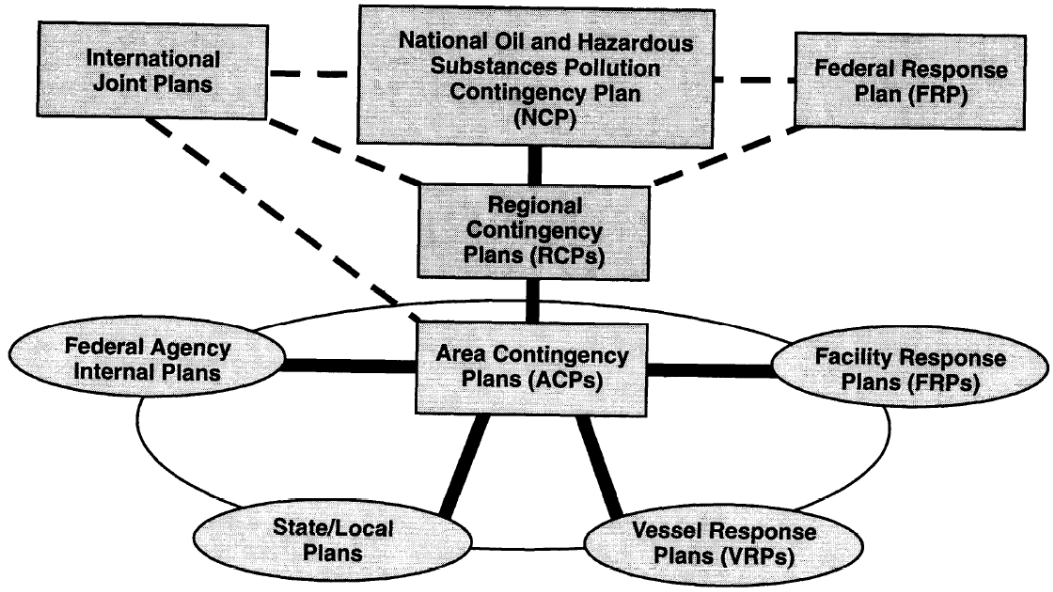
Section 4202 of OPA 90 requires the development of vessel and facility response plans to ensure that vessels and facilities involved in the transportation, transfer, handling, and storage of oil and hazardous substances are prepared to respond to spills. In developing the response plans, owners and operators are required to identify the worst case discharge that might occur, what personnel and equipment resources would be available for response to such spills, who would be responsible for managing and carrying out response activities, and how preparedness for response would be developed and maintained. Vessel and facility response plans are also to be consistent with the ACPs so that the entire response planning effort is integrated, especially at the local level.

Polluter Responsibility

As stated in the 1990 report, one of the basic concepts of the NRS that should be retained is that the polluter is responsible for the cleanup of oil spills and hazardous substance releases, with the OSC directing or monitoring the removal actions as appropriate. OPA 90 reaffirmed this basic concept by placing greater responsibility on owners and operators of vessels and facilities involved in transporting, transferring, handling or storing oil or hazardous substances.

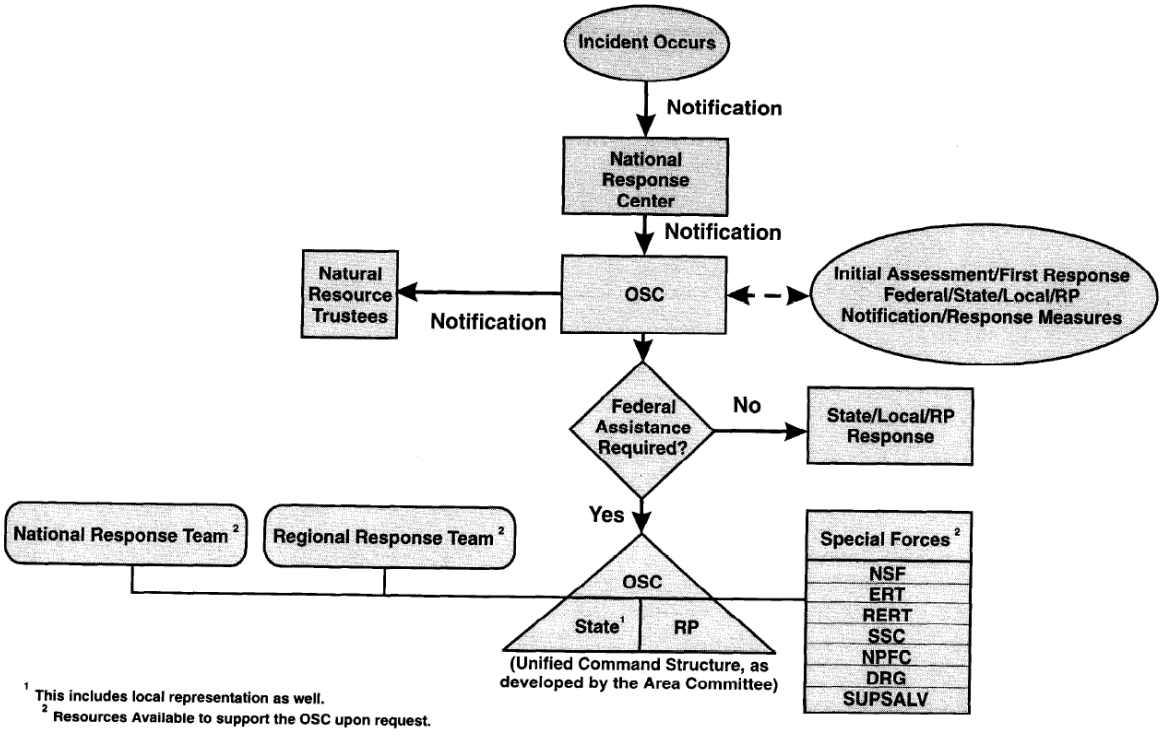
Various requirements - including the identification of Qualified Individuals (QIs) and Spill Management Teams (SMTs), the necessity for contracts with Oil Spill Removal Organizations (OSROs), and changes to the COFR regulations - were among measures aimed at ensuring that owners and operators conducted oil transport, storage and treatment in a more responsible manner. Further, it sought to guarantee that these groups were prepared to respond to and clean up spills that occurred.

Relationship of Plans



Source: Federal Register, Sep. 15, 1994 Vol. 59, No. 178: 47442 (NCP Final Rule)

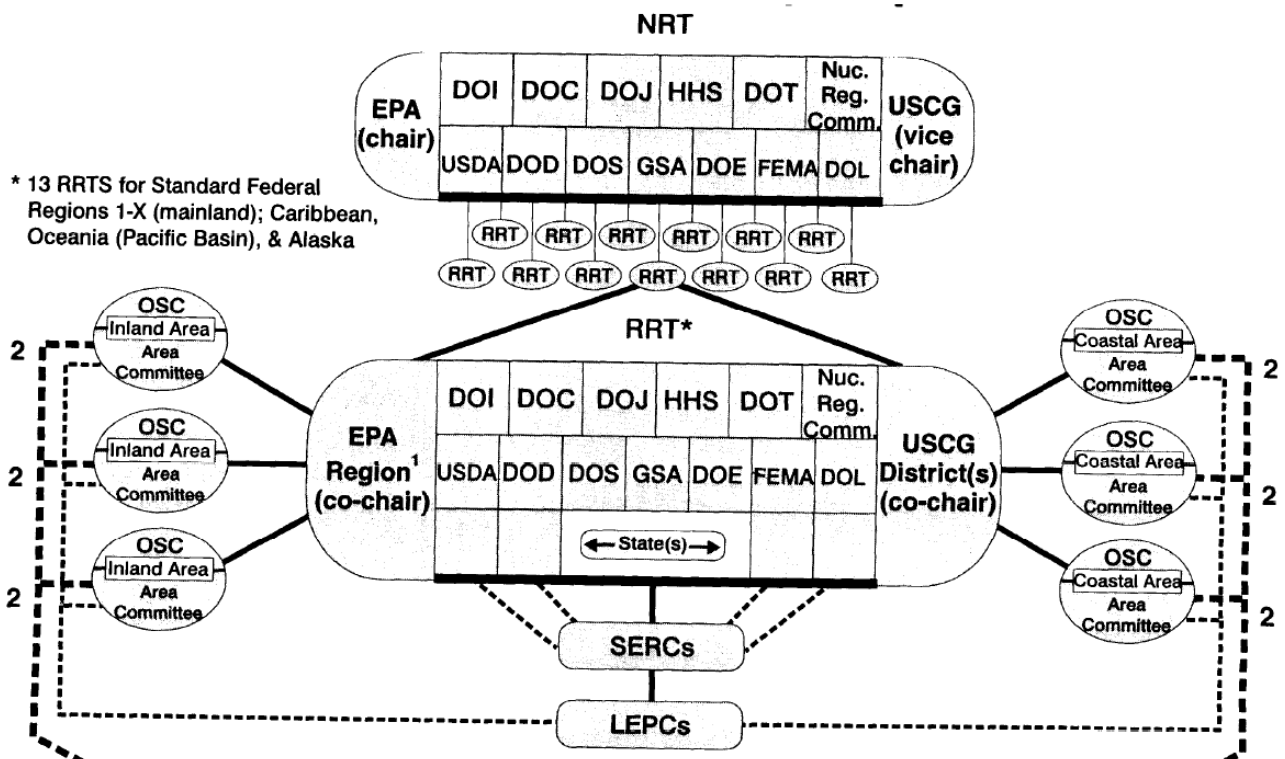
National Response System Concepts: Planning



[1] This includes local representation as well.
[2] Resources Available to support the OSC upon request.

Source: Federal Register, Sep. 15, 1994, Vol. 59, No. 178, p. 47425 (NCP Final Rule)

National Response System Concepts: Response



Sources of Input and Guidance to Area Committees	
Government	Non-Government
Strike Teams NPFC ERT RERT DRG DRAT SSC PIAT SUPSALV	Facility and vessel owners/operators[2] Shipping company representatives Cleanup contractors Emergency planning and response officials Marine pilot associations Members of academia Environmental advocacy groups Response organizations/officers Citizens

[1] RRT serves as the Area Committee for inland areas not covered by a separate Area Committee, unless a separate Area Committee is designated by the Regional Administrator.

[2] Federal laws require facility owner/operators to prepare a response plan.

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Appendices

Appendix 15

Oil Properties and Chemicals

General Oil Properties

Crude oil is the liquid component of petroleum, which also exists as petroleum gases such as propane and butane, and in a number of solid forms such as asphalt and bitumen. Any of these states can coexist, depending on the history of local geochemical processes. Crude oil is a mixture of complex organic and inorganic compounds, whose composition can vary greatly from one oil field to the next, within the same field, and even at different times and depths within the same drill hole.

Crude oil contains somewhere between 50 to 98 percent hydrocarbons (those compounds consisting of only hydrogen and carbon atoms). The non-hydrocarbon fraction is made up mostly of organic compounds that contain nitrogen, sulfur, oxygen, and heavy metals such as nickel and vanadium. We mention these non-hydrocarbon impurities for three reasons.

First, because they are often used as descriptors of oil composition, such as "sour" as applied to crude oil having a high sulfur content. For example, Kuwait crude is considered "sour" because it has a sulfur content almost ten times that of South Louisiana crude, which is "sweet."

Second, it is now believed that the non-hydrocarbon fraction of oil is an important ingredient in emulsification, in which large quantities of water droplets can be incorporated into spilled oil to form emulsions composed mostly of very small water droplets. Under certain chemical and turbulent energy conditions, this phenomenon can result in the formation of so-called "chocolate mousse", a very viscous fluid having significantly different physical properties than those of the parent oil.

Third, the non-hydrocarbon fraction is generally more soluble and often more toxic than the hydrocarbon fraction. This fact is particularly important for freshwater spills, where dilution capacity might be restricted and dispersion into the water column could affect drinking and industrial water supplies. Also, in some cases, toxicity to aquatic organisms is believed to be relatively greater in fresh water than in salt water due to decreased capacity to maintain osmotic balance.

Classes of Petroleum

The hydrocarbon component of petroleum is a complex mixture of organic compounds which, for simplicity, can be placed into three general classes, according to their molecular structures. These three classes, which have a number of sub-classes, provide a working description of oils. The classes are:

Paraffins. These are also known as *alkanes* (not to be confused with *alkenes*). Paraffins have all carbon atoms arranged in open chains, either straight or branched.

Waxes . The high molecular-weight paraffinic components of oil which are in crystal form when the oil is below its pour point.

Asphaltenes. Asphaltenes are non-hydrocarbons and are defined in terms of their solubilities, rather than their compositions. By definition, asphaltenes are soluble in aromatic solvents and insoluble in alkane solvents. Hence, the physical behavior of oils depends on, among other things, the ratio of the concentrations of aromatics and alkanes.

Resins. Resins are non-hydrocarbons, consisting of high-molecular weight, polar compounds containing oxygen, nitrogen, and sulfur.

These compounds are considered to be key ingredients in the emulsification process, since they provide the necessary surfactants and colloidal solid particles at the oil- water interface (Bobra 1990; Fingas et al. 1995),

They exist in gaseous, liquid, and solid or semi-solid form, such as petroleum jelly, depending on how many carbon atoms they possess (Figure 2-1). Paraffinic hydrocarbons are slightly less dense than other hydrocarbons with equal carbon atoms.

Naphthenes . These are also known as *alicyclic* compounds, and often have the carbon atoms arranged in one or more rings (hence the suffix *-cyclic*). Naphthenes resist weathering and are slightly denser than paraffins at the same boiling temperature.

Aromatics. The classical six-carbon benzene ring is the basic building block of aromatic hydrocarbons. Aromatic compounds are then composed of various combinations of linked and fused benzene rings, which are often linked to paraffinic chains. Generally, the amounts of aromatics in petroleum are relatively small compared to paraffins and naphthenes. This is fortunate since aromatics are generally considered to include compounds which can be toxic, carcinogenic, or both.

Density, Specific Gravity, and °API Gravity

The density (or equivalently, specific gravity or degrees API gravity), viscosity, pour point, and distillation temperatures are the most important physical properties of petroleum. The density of a material is defined as its mass per unit volume. For, example the density of sea water is approximately 1,025 kg/m^3, depending on its temperature and salinity; the density of fresh water is about 1,000 kg/m^3, depending on its temperature. Specific gravity is a commonly used, non-dimensional description of density. Specific gravity is defined as the ratio of the mass of a given material to the mass of fresh water, for the same volume and at the same temperature. For example, the maximum density of fresh water is exactly 1,000 kg/m^3 at 4°C. So, the specific gravity of a substance, such as oil, is exactly the same as its density relative to the density of fresh water at 4°C. Also, oil becomes slightly more dense as its temperature decreases, and vice versa.

The U.S. petroleum industry has customarily used the so-called °API (Degrees API Gravity), an arbitrarily chosen function named after the American Petroleum Institute (API) that is inversely proportional to the true specific gravity and given by The specific gravity of most crude and refined oils lies between 0.78 and 1.00 (Clark and Brown 1979). This can also be seen in Figure 2-2, which shows a frequency distribution of specific gravity of the roughly 1,000 oils contained in the ADIOS™ oil library (NOAA 1994). Therefore, the °API gravity, as defined above, places most oils within a convenient range of 10 - 50 °API.

Emulsification

As mentioned earlier, many oils form long-lived emulsions when water droplets are incorporated into oil. This “chocolate mousse” can contain as much as 80 % water and can be extremely stable with respect to water removal. Studies by Bobra (1990) and others have shown that emulsification occurs in oils with relatively high asphaltenecontents. Moreover, many laboratory experiments and casual observations attest to the fact that high-energy environments enhance emulsification. However, the understanding of the chemical and physical processes leading to this phenomenon is still so poor that, in most cases, mathematical models cannot reliably predict emulsion formation. Nonetheless, most oil-weathering models include an algorithm for mousse

formation that may be invoked, depending on the user's confidence in the algorithm or his/her ability to use it, to calculate an answer judged to be reasonable.

Assuming that an oil can form an emulsion chemically, it has been shown that the emulsification rate is proportional to the intensity of the water turbulence. Also, it appears that emulsification, once started, proceeds quite rapidly. Mackay et al. (1980) have proposed a simple first- order rate law for mousse formation. This and similar formulations have been discussed by Payne 1985.

Not only do emulsification and evaporation change the physical properties of the material in a slick, and thus, perhaps, the type of response necessary, but they also increase the volume of the material to be dealt with in the response, as in the case of the *Exxon Valdez* spill (NOAA 1992)

Appendices

Appendix 16

Pre-Impact Planning Recommendations

May 5, 2010

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(Draft) of the City's Response Plan

Prepared for the City of Gulf Breeze
By
Ecological Consulting Services. Inc
May 2010

RECOMMENDATION NO. 1

Oil spill response should have a high place on the reflecting public awareness and concern about oil spills.

- Further analyze the resource needs of preparedness.

- Federal, state and local governments, and private industry must make long-term commitments to improving response capabilities, and not reduce attention during periods between major incidents.
- Preparedness for catastrophic spills should be developed in a way that is practical and can be sustained over time. (CITY PREPAREDNESS PLAN 2010 DOCUMENTED)

It is important to continually ensure that public and private attention to the problem of oil spills does not lug.

Accordingly, the City of Gulf Breeze (City) should regularly review public and private contingency planning, exercising ,funding, and other indicators of the level of attention being devoted to the problem of oil spills by the County.

Address worker and public safety and health more thoroughly in contingency plans.

- *Better planning is needed to address human health problems associated with oil spills, and to resolve issues such as the application of Department of Labor regulations to a major oil spill response.*

- *Spill response teams need better access to socioeconomic features of areas in the predictedpath of a spill. Teams also need access to expert knowledge concerning the best cleanup strategies, particularly for airborne effects of the spill and protecting drinking water.*

Funding

Procedures for preauthorization of such methods, and other procedures to ensure rapid decision-making,should be developed.

Find adequate methods of funding oil spill response *Who pays and is reimbursement allowed.*

Does all funding need to be approved prior what is the government protocol?

Who is the point of contact for the funding source for government agencies?

It would be ideal to place a small claim to the BP claims DEPT to get the paperwork going and understand the paperwork process before large items are needed for reimbursement.

What is the reliability of the preparedness funding an equally reliable and stable source of preparedness funding, for example, for participation in Area Committee meetings and exercises. This is necessary to sustain a long-term commitment to preparedness.

.

Contractors- Efficient means of channeling funds to agencies whose services are requested by the responder, for non-Federalized spills need to be developed.

Streamline contracting procedures.

• Contracting procedures, and existing contracts, should be periodically reviewed to ensure that they are sufficiently flexible and are capable of supporting a variety of emergency response scenarios.

RECOMMENDATION NO. 2

Retain the basic structure and concepts of the National Response System (NRS).
The 1990 report mentioned specific deficiencies in the NRS, which include issues such as:
The lack of a system to address catastrophic spills;
Coordinate efficient media and public relations at the City level

The lack of communication among the response structure and political officials at both the state and Federal levels during a response with a high level of public interest.

This includes the lack of procedures for how top officials should be brought into the response coordination process during a major spill.

RECOMMENDATION NO. 3

- Large quantities of oil spill response equipment should be amassed in central locations. Stockpile larger amounts of state-of-the-art oil spill equipment. – *Perhaps the City Compound off Coronado*

- logistical arrangements for moving equipment from its storage location to where it is required during a response.- *County and City should be able to partner with Equipment since the spill area is on the shoreline and the County areas address the water and nearby shoreline.*
- Equipment stockpiles in local port areas should also be increased, to help local areas begin adequate responses to oil spills before arrival of the equipment from central areas.
- Create ways of fostering the mobilization of resources in central stockpiles to local areas, such as computerized inventories- *email correspondence of ¼ low stock*

Safety and Training

RECOMMENDATION No. 4

- Industry, and Federal, state, and local governments must share responsibility to expand the numbers of trained response personnel. *City encourages Citizen training by asking officials to conduct a training at the City Hall or Recreation Center*

- A core group of trained personnel should be maintained, with other trained and experienced personnel held in reserve, to form a team that could be instantly mobilized in the event of a spill.
- coordinate efforts to encourage the development of cadres of trained personnel, and resolve difficult issues such as liability and training of volunteers.

Because it is difficult to train unidentified volunteers in advance of a spill response, some type of training program that is expedient as well as comprehensive needs to be developed for implementation on scene during a spill. The training of responders is a very broad and important issue. The focus of this recommendation is the need to increase and maintain the number and professionalism of responders.

RECOMMENDATIONS
Inquire into Federal Training Programs
Several Federal agencies provide training classes for public and private response personnel. These include EPA's ERT based in Edison, New Jersey; the Coast Guard OSC Crisis Management Course, as well as many other EPA, Coast Guard and other agency classes.
The ERT periodically conducts a 40-hour Inland Oil Spills Training Course for OSCs and other response personnel. The course includes classroom instruction and problem-solving; hands-on-training; and demonstrations on oil spill prevention, clean-up, treatment and monitoring.
The Coast Guard developed the OSC Crisis Management Course to train OSCs, as well as state and responsible party response managers for spill response. The course is currently held semiannually, in March and September,

at the Coast Guard's Reserve Training Center in Yorktown, Virginia. The course consists of a combination of instructional seminars and role playing sessions designed to provide the class participants with the latest information and hands-on training to better prepare OSCs for their role as spill response managers.
The Coast Guard established the DRATs in each district to provide a team of trained personnel dedicated to planning and response efforts for oil and hazardous substance spill.

These include Federal training programs offered to pubic and private responders, Federal training requirements for responder training, Federal training guidelines for government and private responders, and the establishment of Federal training resources.

RECOMMENDATION NO. 5
Industry should bear primary responsibility for cleaning up oil spills. (BP)

- regional response centers staffed with trained personnel and containing stockpiles of equipment.
- Provide response capabilities on inland waters and revitalize the network of private oil spill responses

RECOMMENDATION NO. 6
The City should coordinate their activities in a manner that provides the area with the most efficient and effective oil spill prevention and response system. Minimizing duplicative requirements, leveraging resources, and eliminating barriers to marine transportation due to differing Federal and state requirements.

Ensuring a sound national marine environmental protection policy through joint preparedness, prevention, response, and law enforcement efforts- *Can the City coordinate with DEP since both are on the border of shoreline and mean high water*

Pensacola Beach Police and Gulf Breeze City Police – Perhaps Navarre Police can stay on the same wavelength of enforcement

RECOMMENDATION NO. 7

- Contracting agencies should encourage contractors to increase the depth of their capabilities and the quality of equipment they can make available in the event of a spill.

  The City should work with resource agencies to include the exercise of wildlife protection strategies

  RECOMMENDATION NO. 9
  Internal Communication
  Establish close liaison with Government offices. Point of Contact for County and for the City
- City should consider assigning a representative to the County and meetings during a major spill.

Disposal Issues

RECOMMENDATION NO.8

A cooperative effort should be encouraged among states, local residents, responders, the responsible party, and other parties to provide solutions to the disposal issues- *Is the County set up for oil material retrieval* ? *Does the City call before delivery? If so, you is the point of contact.*

Seek a national consensus concerning the use of dispersants, other chemicals, biological techniques, and in-situ burning for response to oil spills. *Local landfill or another area?*

Locations in and circumstances under which specific countermeasures may be used should be clarified.

Realistic risk assessments of the circumstances under which chemical dispersants will and will not work should be completed.

Realistic, active consideration of bioremediation, in situ burning, and viscoelastic agents should bepromoted.

Use of measures on a trial basis during actual spills should be considered.

PROGRESS disposal of oily waste.The RRTs should provide the forum for this discussion.

RECOMMENDATION NO. 9

Make contingency plan exercises a higher priority.

- Oil spill contingency plans at all levels of government and industry should be realistically, regular, and thoroughly exercised. Interregional conferences, and other mechanisms to disseminate lessons learned from exercises, should be promoted.

- The Federal government, including the Department of Transportation, should continue to coordinate with other agencies to improve response and cleanup capabilities with regard to pipeline spills.

RECOMMENDATION NO. 10

Strengthen research and development.

• Increased governmental and private research is needed, particularty with regard to finding ways to respond to spills in poor operating conditions and evaluating the effectiveness of emerging response technologies.

RECOMMENDATION NO. 11

Improve operational communications capabilities.

• Communications capabilities should be assessed, upgraded, and standardized where possible. Networks should be established to provide responders and other parties with timely and relevant information about a spill, as well as technical, statistical and historical data regarding the area of the spill. –*Website information and perhaps*

another hotline – I would recommend a $6 a month VOIP voicemail with 800 numbers. The voicemail comes to an email for proper documentation and also a forum or blogs of spill sites and wildlife oil contaminant and dead animals.

Oil Spill Information- thanks to a member

Oil Spill Update- Visit http://www.deepwaterhorizonresponse.com/go/site/2931/
Latest Press Release number and password

Local
http://escambiadisasterresponse.com/
http://www.santarosa.fl.gov/

Federal
http://incidentnews.gov/incident/8220

RECOMMENDATION NO. 12
Communicate more effectively with the public.
• Centralized information centers should be established which would provide coordinated, accurate, and timely information. Activities should also include greater emphasis on media and public relations.

Get the public involved
Grid off sections of beach and assign them numbers to alert the public on the website what areas need to be patrolled.
Monitoring
Homeowners; inform them it would be a good idea to a take a before picture(set your date on the camera) of the property they believe will be impact.
Monitoring such as damage assessment and success criteria is important and all help from the residents are needed for these efforts.
Pre monitoring and pictures will show the area as it is beautiful and clean and free of PAH and other harmful chemicals. If there is a spill then documentation has been obtained. There may be a time where proof is needed of resources before to achieve any type of reimbursement from the responsible company.
What to monitor- Seagrass, any boom breaking away, any oil balls or residue, live or dead wildlife. Call the responsible Agency hotline first and then follow up with the City's hotline.
Wildlife-where do the dead birds and animals get shipped too?

Wildlife and Environmentally Sensitive areas
Know where to dispose of deadanimals
Drinking water could be affected if the spill gets into the watershed
Health-
Damage assessment how can other

References: Update of Implementation of Recommendations from the NRT Following theExxon Valdez Oil Spill, US National Response Team (NRT) , 1991

Heather Reed

From: William.N.Deluca@uscg.mil on behalf of DeLuca, William <William.N.Deluca@uscg.mil>
Sent: Friday, June 25, 2010 1:11 PM
To: jtemperilli@wittassociates.com; Summers, Calvin LT
Cc: Kettner, Brenden CDR; Chedsey, Robert PSC; Saunders, Kenneth MECS; heather_reed@juno.com
Subject: FW: Prediction of oil transport

Importance: High

John and LT Summers, Heather Reed is an environmental consultant and marine technician hired by Gulf Breeze. She has successfully been predicting oil locations in the Bay for some time now. Gulf Breeze has been skimming, but their boat is being repaired and they require support from anybody that has recovery vessel assets.

She can tell you where the oil will likely be and when it will be there. If we can pre-stage recovery assets, we may be able to prevent landfall.

Ms. Reed's phone number is: 850-346-2073 email: hreed@ecoconsultingservices.com heather_reed@juno.com

Recommend working with her to coordinate UC and Escambia Co assets to capture any oil that makes it through the pass.

Please share this with any vessel task force leaders that can direct assets to the scene.

v/r,
LCDR Bill DeLuca
Ph: 251-583-2815

From: Heather Reed
Sent: Fri 6/25/2010 3:52 AM
To: William.N.Deluca@uscg.mil
Subject: Prediction of oil transport

Hi Lt c Deluca,
Not trying to step on anyones toes but this is breaking my heart seeing that noone is using basic physics and oceanography on this spill. Please send this to whomever you think can take action. If Escambia fails, then Santa Rosa suffers. This is killing me. The City has been first responder three times and have skimmed oil everytime on these calculations.. Our boats are on the blink with Coastwatchers (they are trying to get volunteer boats) and we need help fromALL Counties.. Please.. Based on my oceanography and marine tech degree and experience
.Saturday 4am peaking at 6 am. If it's coming through the pass, this is the time and the strongest influx. The current at it's highest at 2.5 knots. Sunday is 2.4 knot beginning at 5am ending at 7 am. If there is Southerly winds then increase the speed of transport. I hope they are ready in the mornings because the next four days have high current speeds. Ebb is 4-5pm saturday and the oil will follow the convergence layers in the bay. Ebb locations of convergence layers are the best time to track for overwash cleanup. DON'T USE THE TIDE CHARTs it will be too late. Q this is basic Oceanography and data processing I used as a marine technician.
They need to boom with the currents in the pass not against like they are trying to do. This means longshore currents. I don't understand why they don't see this. The currents don't follow their boom plan at

September 3, 2010

Community Policing Award

The Gulf Breeze Police were notified today that we

Acknowledgments

City Council

Beverly Zimmern, Mayor

Edwin Eddy, City Manager

Dana Morris

Joseph Henderson

J.B Schluter

Richard C Fulford

Matt Dannheisser, City Attorney

City Staff

David Szymanski, Assistant City Manager

Steve Milford, Special Projects and Financial Officer

Craig Carmichael, Community Services Projects and Gulf Breeze Fire Chief

Ron Pulley, Department of Parks and Recreation Director

Vernon Prather, Public Service Director

Mina Lanzetta, Public Services

Thomas Lambert, GIS

Leslie Gomez, Deputy City Clerk

Marita Rose, City Clerk

City Fire Department Staff

Danny Hall

Brett Barfield

Jeremiah Hatcher

Brandon Stevens

Joey Segars

Katie Holder

Harrison Rhodes

William Spearing

Gulf Breeze Police Department

Peter Paulding, Police Chief and Coastwatchers Director

Deputy Chief Robert Randle

Lieutenant Rick Hawthorne

Sergeant Sharon Armstrong

Jake Conner

Jackie Foster

Dedra Thomas

Ric Rumanski, City Police Dispatch

William Hollingsworth, City Police Dispatch

Mat Nanny, City Police Dispatch

Lissa Melton, City Police Dispatch

Brooke Brown, City Police Dispatch

Steve Larcher, City Police Dispatch

Mark Burke, City Police Dispatch

Chris Gray, City Police Dispatch

Mitch Stevens, City Police Dispatch

Jake Conner

Gulf Breeze Recreation Center

Steve May

Ryan Ottensmeyer

Lindsey Hawthorne

Coast Watchers

Bill Clark

Bob Ozburn

Malcolm Whitman

John Brown

Joe Wuest

Andy Berghorn

Bob Ackley

John McDaniel

Andrew Wuest

Alan Little

Marco White

Tom Neumann

Mat Duben

Steve Echsner

Jim Sturdevant

Pam Clark

Bob Fritsche

Pat Neumann

Paula Brown

Kara Brown

Amy Little

Barb Logan

Margarete Mayer

Steve Day

Ray Palmer

Carolyn Palmer

Sharon Berghorn

AJ Sutton

Peter Rand

Joyce Rand

Ruth Paulding

Mandy Clark