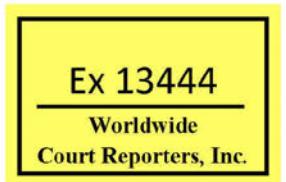


**IN RE OIL SPILL BY THE OIL RIG “DEEPWATER HORIZON”
IN THE GULF OF MEXICO, ON APRIL 20, 2010**

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF LOUISIANA
MDL NO. 2179, SECTION J
JUDGE BARBIER; MAGISTRATE JUDGE SHUSHAN**

EXPERT REPORT OF DR. DAMIAN SHEA

AUGUST 15, 2014



CONFIDENTIAL PURSUANT TO PTO 13

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I. INTRODUCTION

The *Deepwater Horizon* oil spill was a significant environmental event from many perspectives. However, from the perspective of evaluating the potential environmental impact of oil and dispersants, the incident was not entirely new or novel. This is because oil and oil-related chemicals continuously enter our environment every day from both natural and human sources. As a result, we have a very well developed scientific and regulatory framework in which to understand the potential impact from this spill. I have relied upon this scientific and regulatory framework to describe the impact of the *Deepwater Horizon* oil spill on the Gulf of Mexico.

Of course, as we all know from pictures and reports in 2010, oil released from the *Deepwater Horizon* spill impacted the environment and some animals in certain areas. However, it is my opinion that any scientific, objective discussion of the environmental harm caused -- or not caused -- by the *Deepwater Horizon* oil spill must rely upon the actual environmental data collected in the aftermath of the accident. This is exactly what I have set out to do in this report.

In total, I have reviewed data from nearly 18,000 water samples, over 8,000 sediment samples, and over 900 laboratory toxicity tests collected or undertaken as part of the environmental investigations following the *Deepwater Horizon* oil spill. Based upon this review, I have reached the following opinions to a reasonable degree of scientific certainty:

A massive quantity of high-quality environmental data was collected to help understand the environmental impact of the *Deepwater Horizon* oil spill in the northern Gulf of Mexico. This data collection – completed by governmental agencies, BP, and academics – represents the largest environmental investigation of an oil spill ever undertaken.

To help understand the environmental impact of the oil spill, almost 18,000 water samples and over 8,000 sediment samples were collected in federal and state waters and analyzed for oil-related chemicals and/or dispersants. Measurements of the toxicity of the oil and dispersants were conducted in over 900 separate toxicity tests.

All of the water and sediment samples and data relied upon in forming my opinions were collected under well-designed quality assurance (QA) plans, following strict chain-of-custody and other quality assurance/quality control (QA/QC) procedures.

As demonstrated by these data, and using conservative assumptions, there was no harmful exposure to oil-related chemicals or dispersants in the vast majority of the area investigated. The few areas where there was potentially harmful exposure to chemicals were limited in space and time, mostly in the area very close to the wellhead during the summer of 2010. For example:

Water: Less than 2% of the nearly 18,000 water samples showed concentrations of oil-related chemicals that exceeded the U.S. Environmental Protection Agency's (EPA) water toxicity benchmarks. The relatively few samples that exceeded these benchmarks were largely limited to the area very close in distance to the wellhead and the time period of the release. Over 8,000 water samples were collected for dispersant chemicals and only 16 of those (0.3%) exceeded the EPA or other appropriate benchmarks.

Sediment: Fewer than 2% of sediment samples collected in the areas investigated exceeded EPA sediment toxicity benchmarks. As with the water data, the relatively few samples that exceeded these benchmarks were largely limited to the area very close in distance to the wellhead.

Toxicity Tests: In addition to comparing water and sediment results to EPA benchmarks, I have reviewed over 900 laboratory toxicity tests undertaken as part of the *Deepwater Horizon* environmental investigation. These laboratory tests confirm that any potentially harmful effects of the oil spill were largely limited to exposures that occurred during the release of oil and close in distance to the wellhead.

The results above are not at all surprising given the location of the spill, the environmental conditions in the Gulf of Mexico, and the expected and actual behavior of oil in the environment. Much of the oil released from the Macondo wellhead was rendered harmless very quickly through biodegradation, evaporation, dilution, weathering, and other processes. For example:

For eons, the bottom of the Gulf has released oil through natural seeps. The oil from these seeps sustains great populations of oil-consuming bacteria in a hydrocarbon-rich ecological system. During the spill, these bacteria quickly consumed oil and oil constituents, just as they have naturally for thousands of years. This process, called biodegradation, naturally and safely removed Macondo oil from the environment.

At every step of the oil's pathway through the water, oil was dissolving and dissipating via dilution. Oil is composed of many chemicals, some slightly soluble in water (meaning that they can dissolve) and others very insoluble (meaning that they do not dissolve easily). Most of the soluble chemicals dissolved and dissipated along the path from the wellhead to the surface, leaving only the least-soluble chemicals to form the slick.

Once at the surface, the droplets coalesced into slicks, evaporated, biodegraded, photo-degraded, dispersed, and were subject to response actions.

II. EXPERT'S QUALIFICATIONS

I am a Professor of Environmental Toxicology at North Carolina State University (NCSU). I received my Ph.D. in Environmental Chemistry from the University of Maryland in 1985 and was awarded a National Research Council Post-Doctoral Fellowship at the National Institute of Standards and Technology (1985-1987). In 1987, I was awarded an American Association for the Advancement of Science Environmental Science and Engineering Fellowship to work at the EPA, where I helped to develop the basis for sediment quality guidelines and revisions to national water quality criteria for toxic chemicals. This early work has helped form the basis for much of the EPA benchmark methodology now used to assess adverse effects of oil-related chemicals to aquatic life (including sediment-dwelling organisms).

While working as an environmental consultant at Battelle (1989-1993), I led several projects investigating the fate and effects of the *Exxon Valdez* oil spill and served as lead scientist and program manager for numerous chemical contamination issues in coastal environments. In 1993,

I returned to academia joining the faculty at NCSU and developed a research program on the sources, fate, and effects of chemicals with a focus on the aquatic environment. From 2001 to 2006, I served as Head of the Department of Environmental and Molecular Toxicology and from 2006 to 2011 as Head of the Department of Biology. I also currently serve as University Director of the U.S. Department of the Interior Southeast Climate Science Center and the Howard Hughes Medical Institute Undergraduate Science Education Program, both at NCSU.

I have a broad background and over 30 years experience in environmental/analytical chemistry and applied toxicology with primary research interests in the detection, sources, behavior, and effects of chemicals in the aquatic environment. By combining my experience in chemistry, toxicology, and risk assessment, my ultimate goal is to improve our ability to assess chemical exposure and thereby improve human and ecological risk assessments. I have published over 70 peer-reviewed publications, over 100 technical reports, several book chapters, and over 200 abstracts of scientific presentations – almost all related to the detection, fate, effects, and risks associated with chemicals in the environment.¹ I have served as the scientific lead and manager of numerous environmental research and contamination investigations, many of which focused on the fate and effects of oil-related chemicals.

I have developed and implemented procedures to collect and analyze environmental samples for trace levels of chemicals, supervised the sample collection, laboratory analysis, and/or data interpretation of over 100,000 water, sediment, and biota samples, and developed models of the fate and bioaccumulation of contaminants in the environment. I also have operated and been responsible for an EPA-certified Good Laboratory Practices laboratory that utilizes the most stringent QA procedures for chemical testing.

I have served on numerous expert panels, including being selected by the U.S. Bureau of Ocean Energy Management to be the environmental chemistry and toxicology expert for offshore oil exploration in the Arctic and by the EPA to chair the bioaccumulation subcommittee reviewing EPA's revisions to National Water Quality Criteria.

I have been retained by BP Exploration and Production for the purpose of providing expert witness testimony on the environmental impact of oil- and dispersant-related chemicals in offshore waters and sediments of the Gulf of Mexico following the *Deepwater Horizon* incident. This scope of my report is limited to the chemistry and toxicity of water, sediment, dispersants, and oil in federal and state waters, excluding the shoreline areas.

I am being compensated for my work in this case at a rate of \$500 per hour for time spent providing testimony and \$350 per hour for all other work. Compensation for my work in this matter is not dependent on the outcome. I have not testified as an expert at trial or in a deposition during the previous four years.

¹ All publications I have authored in the past 10 years are listed in Appendix B.

III. SUMMARY OF METHODS

Data Sources

Water and sediment chemistry data were obtained from the Gulf Science Data website.² The Gulf Science Data website contains the largest collection of validated, publicly available water and sediment chemistry data related to the spill. Most of these data were collected by federal and state agencies (including through cooperative studies that were directed by the government). The collection also includes data collected by BP.³

Toxicity testing data were obtained from validated toxicity studies provided by BP⁴ and from “completed definitive” toxicity studies provided by the United States through the firm of Stratus Consulting.⁵

Quality Assurance Review

The chemistry data were reviewed to ensure that all data meet the QA standards established by the federal government for assessing environmental impact.⁶ Prior to posting on the Gulf Science Data website, chemistry data were validated in accordance with the EPA guidelines for data review,^{7,8} and field sample attributes (for example, coordinates, depth, and collection date) were verified in order to accurately place samples in space and time. Data validation of analytical chemistry data was performed to assess the data’s completeness, correctness, and compliance with applicable analytical method requirements. Data verification reviews were performed to ensure completeness and correctness of each sample’s associated latitude, longitude, depth, and sample collection date.

² <http://gulfsciencedata.bp.com>. A list of Gulf Science Data datasets that were relied upon in forming my opinions is provided in Appendix D.

³ BP Exploration and Production Inc. was the entity named as the Responsible Party under the Oil Pollution Act (OPA). For ease of reference, I refer to “BP” throughout this report.

⁴ A complete list of the BP toxicity studies included in my analysis is provided in Appendix H.

⁵ A complete list of the government toxicity studies included in my analysis is provided in Appendix H.

⁶ See Appendix E for details on the quality assurance review.

⁷ U.S. EPA. 2002. Guidance on Environmental Data Verification and Data Validation, (EPA QA/G-8) EPA/240-R-02/004. U.S. Environmental Protection Agency, Office of Environmental Information. Washington, DC, available at <http://www.epa.gov/QUALITY/qs-docs/g8-final.pdf>.

⁸ U.S. EPA. 2008. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-08/01. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. Washington, DC.

As discussed in more detail below, to the extent possible given the information available, the toxicity data were similarly reviewed to ensure that all data meet the QA standards established by the federal government for assessing environmental impact.

Interpretation of Water and Sediment Chemistry Data

Field samples collected from the water during and after the spill provide the best possible information regarding concentrations of chemicals that aquatic organisms were potentially exposed to and what harm, if any, they encountered. These samples provide timely, accurate information regarding actual conditions in the environment during and after the spill. Therefore, these measurements form the primary basis of my opinions.

As part of the environmental investigation of this oil spill, the chemicals of most concern are the following:

- (1) Polycyclic Aromatic Hydrocarbons (PAHs);
- (2) Benzene, Toluene, Ethylbenzene, and Xylenes (referred to as BTEX); and
- (3) Dispersant constituents

Of the oil-related chemicals, PAHs and BTEX are the best indicator of potential toxicity of spilled oil to aquatic life. For these chemicals, the EPA has developed a benchmark chemical concentration defined by the EPA as "...a chemical concentration specific to either water or sediment, above which there is the possibility of harm or risk to the humans or animals in the environment."^{9,10} These EPA benchmarks have undergone rigorous development and review over the past 15 years, and I use them as prescribed by the EPA¹¹ in my analysis.

Following the guidelines set by the EPA,¹² I have compared measured chemical concentrations in the Gulf of Mexico to these EPA benchmarks in order to determine potential environmental harm caused by the *Deepwater Horizon* oil spill.¹³ This method (comparing chemistry results to EPA benchmarks) is the same basic method relied upon by the Operational Science Advisory Team (OSAT), a team chartered by the *Deepwater Horizon* Federal On-Scene Coordinator to

⁹ U.S. EPA. Water Quality Benchmarks for Aquatic Life, available at <http://www.epa.gov/bpspill/water-benchmarks.html#gen2>.

¹⁰ My analysis compares water and sediment chemistry data to EPA toxicity benchmarks for aquatic life. Any possibility of harm or risk to humans is beyond the scope of this report.

¹¹ U.S. EPA. Water Quality Benchmarks for Aquatic Life, available at <http://www.epa.gov/bpspill/water-benchmarks.html#gen2>.

¹² U.S. EPA. 2010. Explanation of PAH benchmark calculations using EPA PAH ESB approach, available at <http://www.epa.gov/bpspill/water/explanation-of-pah-benchmark-calculations-20100622.pdf>.

¹³ See Appendix F for a more detailed discussion of interpreting chemistry data.

determine the presence or absence of subsurface oil and dispersants amenable to removal actions.¹⁴

Oil Chemicals and Toxic Units (TUs). For PAHs and BTEX, the benchmarking procedure requires the calculation of **Toxic Units (TU)**.¹⁵ TUs are benchmarks developed by the EPA to assess the toxicity of complicated mixtures of chemicals like oil. Each of the chemicals in oil has a different toxicity, and each chemical individually may add to the potential toxicity of the water or sediment sample in which it is found. The sum of all of these toxicities is added into a single TU value, representing the total toxicity of that chemical mixture in the sample of interest. Thus, all else being equal, any two samples with the same TU should have the same toxicity, even though they might have a different collection of chemicals.

Following EPA protocols, any sample with a $TU \geq 1.0$ may potentially be harmful to sensitive aquatic organisms, while samples where $TU < 1.0$ are considered safe¹⁶ for aquatic life. This TU method applies to both water and sediment, although they are calculated in slightly different ways.¹⁷

The scientific basis supporting use of the TU approach is rigorous and robust. Many hundreds of toxicity tests were performed over several decades to create the toxicity database needed to apply this approach. These underlying tests were performed on many different species at various life stages and under a wide range of conditions to represent what occurs in the real world. Due to these robust underpinnings, the TU benchmark approach is widely accepted by both the scientific and regulatory community. This EPA TU approach has been used previously by the EPA, the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Geological Survey (USGS) to assess toxicity of PAHs and BTEX to aquatic life resulting from the *Deepwater Horizon* oil spill.^{18,19,20}

¹⁴ Operational Science Advisory Team Gulf Coast Incident Management Team: Summary Report for Sub-Sea and Sub-Surface Oil and Dispersant Detection (July 8, 2011), 35 pp and Appendices (OSAT-1).

¹⁵ The EPA TU approach applies only to EPA toxicity benchmarks for aquatic life; it does not apply to human health.

¹⁶ For purposes of this report, I refer to a concentration as “safe” if it is less than the benchmark value because no adverse health effects are expected as a result of exposure. It is important to note that an exceedance of a benchmark (or $TU > 1$) does not necessarily mean that adverse effects will occur.

¹⁷ See Appendix F for an explanation of the EPA benchmark approach and TU.

¹⁸ U.S. EPA. Water Quality Benchmarks for Aquatic Life, available at <http://www.epa.gov/bpspill/water-benchmarks.html#gen2>.

¹⁹ Bejarano, A.C., Levine, E., and Mearns, A.J. 2013. Effectiveness and potential ecological effects of offshore surface dispersant use during the Deepwater Horizon oil spill: a retrospective analysis of monitoring data. Environmental Monitoring and Assessment 185:10281-10295.

²⁰ Nowell, L.H., Ludtke, A.S., Mueller, D.K., and Scott, J.C. 2011. In: U.S. Geological Survey (Ed.), Organic Contaminants, Trace and Major Elements, and Nutrients in Water and Sediment Sampled in Response to the Deepwater Horizon Oil Spill. U.S. Department of the Interior, Reston, Virginia, p. 128. Open-File Report 2011-1271.

Dispersants. EPA protocols for dispersants are somewhat different. For dispersants, the EPA simply uses benchmark values from toxicity testing of each chemical.²¹ The dispersant benchmarks are expressed in terms of the specific dispersant chemical; they are not added together like the PAH chemicals or the BTEX chemicals. Additional dispersant toxicity data were used to augment this analysis.²²

Acute and Chronic Benchmarks. For both oil and dispersants, I used two kinds of benchmarks:

- (1) EPA *acute* benchmarks for short-term toxicity; and
- (2) EPA *chronic* benchmarks for longer-term toxicity.

Acute benchmarks are related to the chemical concentration above which there is the possibility of harm after exposure to the chemical for a short amount of time. Thus, a chemical concentration that exceeds an acute benchmark has the potential to cause lethal effects to aquatic organisms exposed for a short amount of time. *Chronic* benchmarks are related to the chemical concentration above which there is the possibility of harm only after exposure to the chemical for a prolonged amount of time. Thus, a chemical concentration that exceeds a chronic benchmark has the potential to cause both lethal and sub-lethal effects to aquatic organisms exposed for a prolonged amount of time.

I have evaluated each water sample for both its *acute* and *chronic* toxicity. For example, a particular area might not be acutely toxic (acute TU<1), but it still might be toxic over the long term (chronic TU>1). Thus, in that example, it is safe for a fish to spend three consecutive days or less in an area with this concentration of oil. If the same fish spent a week or more in an area with this concentration of oil, however, the exposure is potentially harmful.²³

Interpretation of Toxicity Testing Data

The extensive field sampling performed during and after the spill provide sufficient information to understand the potential exposure from the oil spill, and the EPA benchmarks are well designed to determine the potential harm associated with these exposures. However, to ensure that these EPA benchmarks capture the potential harm from the spill, I have also reviewed over 900 laboratory toxicity tests conducted by BP and the federal government as part of the *Deepwater Horizon* environmental investigation.

²¹ The EPA summarized toxicity information for dispersant chemicals at U.S. EPA, Methods for Detecting Dispersants in Water, available at <http://www.epa.gov/bpspill/dispersant-methods.html>.

²² The EPA published toxicity data for numerous dispersants including the Corexit 9500A that was used in this spill (Judson, R.S., et al. 2010. Analysis of Eight Oil Spill Dispersants Using Rapid, In Vitro Tests for Endocrine and Other Biological Activity. Environmental Science & Technology 44:5979-5985.).

²³ See Appendix F for explanation of the EPA benchmark approach and TU.

There are two broad categories of toxicity testing that were performed to help understand the potential impact of the oil spill:

- (1) Toxicity testing on water and sediment samples from the Gulf of Mexico that organisms were actually exposed to.
- (2) Toxicity testing using a “surrogate,” or laboratory generated exposures that attempt to represent actual exposures that occurred in the Gulf of Mexico.

When conducting site-specific toxicity tests, it is generally preferable to test toxicity on actual field samples rather than surrogate samples prepared in the laboratory because they represent actual exposure conditions. However, both types of testing were performed, and I have reviewed and used both in my analysis. The toxicity testing data were interpreted using standard methods.^{24,25}

A Conservative Estimate of Impact

My conclusions set forth in this report are conservative. That is, in my opinion, my analysis *overestimates* the actual exposure and potential harm caused by the *Deepwater Horizon* oil spill in a significant way. This is true for several reasons, including the following:

- (1) **Positive Sampling Bias:** The majority of sampling by the government during and after the spill was targeted specifically to areas where oil was thought to be present.²⁶ Accordingly, as a percentage, the actual exposure in the northern Gulf of Mexico to oil-related chemicals was far less than the data indicate. So, for example, I show below that only 2% or less of the water in the areas investigated had concentrations potentially harmful to aquatic life. In actuality, because of the government’s sampling bias when collecting water data, the actual exposure in the environment was likely substantially less. For purposes of this opinion, I have not attempted to quantify the extent to which the government’s sampling bias has resulted in an overestimation of the exposure in the area of concern.
- (2) **Conservative Benchmarks:** The EPA benchmarks described above were designed by the government to conservatively approximate the concentrations at which exposure to chemicals might result in potentially harmful impacts to aquatic life. NOAA scientists have applied this EPA benchmark method to assess ecological effects of the

²⁴ Rand, G., et al. (Eds.). 1995. Fundamentals of Aquatic Toxicology: Effects, Environmental Fate and Risk Assessment, 2nd Edition. New York, N.Y., 1125 pp. ISBN: 978-1560320913.

²⁵ Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. Fifth Edition. October 2002. EPA-821-R-02-012, 208 pp. + Appendices.

²⁵ The government’s sampling bias is discussed in more detail below in Section V.A.

²⁶ The government’s sampling bias is discussed in more detail below in Section V.A.

Deepwater Horizon oil spill.²⁷ These scientists characterized the method as conservative and “developed using acute toxicity data generated under exposures conditions longer (days) than those expected during an oil spill (minutes to hours.”

- (3) Non-Exclusion of Background Concentrations: Huge volumes of oil seep naturally into the Gulf of Mexico each year.²⁸ Many of these natural seeps are in close proximity to the wellhead. It is likely, therefore, that some percentage of the oil-related chemicals measured in the water and sediment during and after the spill were the result of naturally occurring oil, not the *Deepwater Horizon* spill. For purposes of this opinion, I have not attempted to quantify systematically the extent to which exceedances of EPA benchmark concentrations are attributable to naturally occurring, non-spill-related oil.

Similarly, dispersant related chemicals are ubiquitous in our environment. For example, these chemicals are very widely used in household and commercial cleaning products and many other consumer products. The ubiquitous presence of dispersant related chemicals can result in false positives or “blank contamination” when testing. For purposes of this opinion, I have not quantified the extent to which background concentrations or blank contamination contribute to elevated levels of dispersant related chemicals in the chemistry data.

IV. AN UNPRECEDENTED ENVIRONMENTAL INVESTIGATION

A massive quantity of high-quality environmental data was collected to help understand the environmental impact of the *Deepwater Horizon* oil spill. This data collection – completed by governmental agencies, BP, and academics – represents the largest environmental investigation of an oil spill ever undertaken.

During and following the *Deepwater Horizon* incident, there was an unprecedented effort to monitor potentially harmful chemicals in the environment so to direct response activities and to properly understand the potential for environmental harm.^{29,30} These efforts focused on (1) oil-

²⁷ Bejarano, A.C., Levine, E., and Mearns, A.J. 2013. Effectiveness and potential ecological effects of offshore surface dispersant use during the Deepwater Horizon oil spill: a retrospective analysis of monitoring data. Environmental Monitoring and Assessment 185:10281-10295.

²⁸ Smith, A.S., Flemings, P.B., and Fulton, P.M. 2014. Hydrocarbon flux from natural deepwater Gulf of Mexico vents. Earth and Planetary Science Letters 395:241-253. See, also, discussion in section VII.F below.

²⁹ Dep. of Dr. Amy Merten, at 114:3-116:19, 178:17-181:15, 221:16-229:3, 235:23-238:11(describing response efforts to document and measure oil-related chemicals and contaminant levels in sediment).

³⁰ Dep. of Dr. Jane Lubchenco at 63:3-8, 64:22-23 (describing the response effort as “aggressive, science-based and adaptive” and that the “federal response to the disaster was a herculean one”); id. at 111:16-23 (“The decision to use dispersants required a robust assessment of the net environmental benefits and monitoring activities of the wellhead, in the benthos [sic], water columns . . . water surface and along the shoreline[.]”).

and dispersant-related chemicals in the water, (2) oil-related chemicals in the sediment, and (3) toxicity testing of water and sediment samples containing oil and/or dispersant.

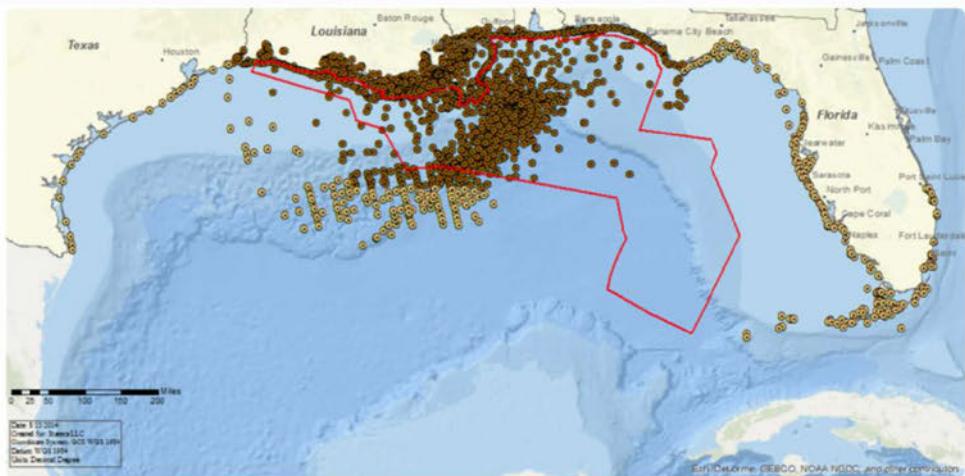
A. Water and Sediment

To help understand the environmental impact of the oil spill, almost 18,000 water samples and over 8,000 sediment samples were collected in federal and state waters and analyzed for oil-related chemicals and/or dispersants. Measurements of the toxicity of oil and dispersants were conducted in over 900 separate toxicity tests.

All of the water and sediment data analyzed in this report are publicly available on the Gulf Science Data website. These data are from samples collected from over 100 environmental studies in the Gulf of Mexico from May 2010 through July 2012 at over 10,000 sampling stations.

1. These studies can be grouped into three categories: (1) Federal and/or state directed efforts including studies undertaken during the oil spill response, or natural resource damages assessment (NRDA) effort; (2) BP independent studies; and (3) academic studies. A full list of these studies is provided in Appendix C.
2. Maps showing the locations of the water and sediment sampling locations are provided in Figures 1 and 2. Figure 1 shows the larger view of sampling throughout the Gulf of Mexico for water and sediment. Figure 2 shows a closer view of the water sampling at the surface (0-200 meters) and at depth (900-1300 meters) – these are the two depth regions where oil was found most frequently, as discussed below.
3. Although additional water and sediment chemistry studies have been performed, particularly from academic sources, most of those raw data are not available and documentation was not available to ensure the level of quality assurance, chain-of custody, and rigorous validation equivalent to the data on the Gulf Science Data website. Therefore, these other data were not used in my analysis. Some of these other data are referred to later to provide additional context to the primary dataset.

Water Sampling Locations for PAHs (May 2010 – July 2012)



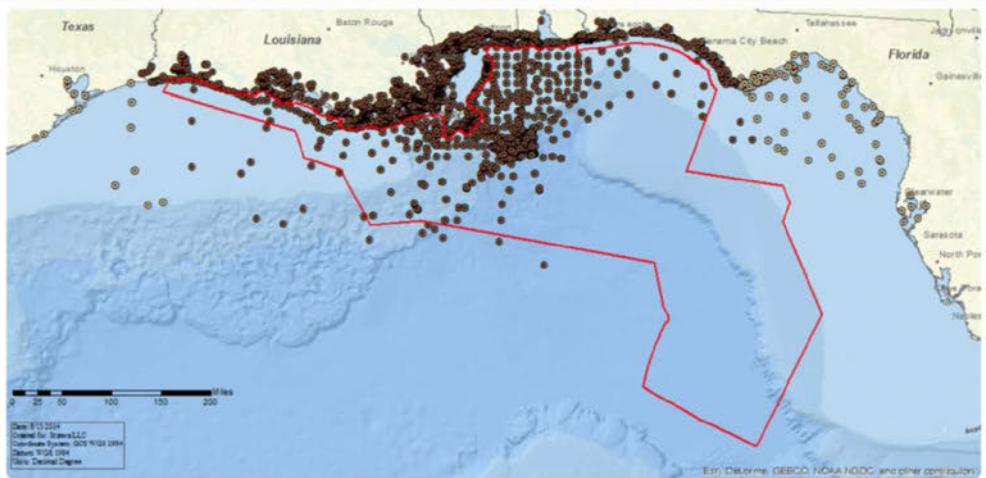
- + Deepwater Horizon Location
- NOAA Fishery Closure Boundary effective July 12, 2010

Water Sampling Sites

- Within Area of Concern
- Outside Area of Concern



Sediment Sampling Locations for PAHs (May 2010 – July 2012)



- + Deepwater Horizon Location
- NOAA Fishery Closure Boundary effective July 12, 2010

Sediment Sampling Sites

- Within Area of Concern
- Outside Area of Concern



Figure 1. The data analyzed in this report came from sampling locations for water (top map) and sediment (bottom map) concentrated near the wellhead but also distributed throughout the northern Gulf of Mexico both within and beyond the maximum NOAA fishery closure area (shown in red boundary) and including all areas where oil was observed.

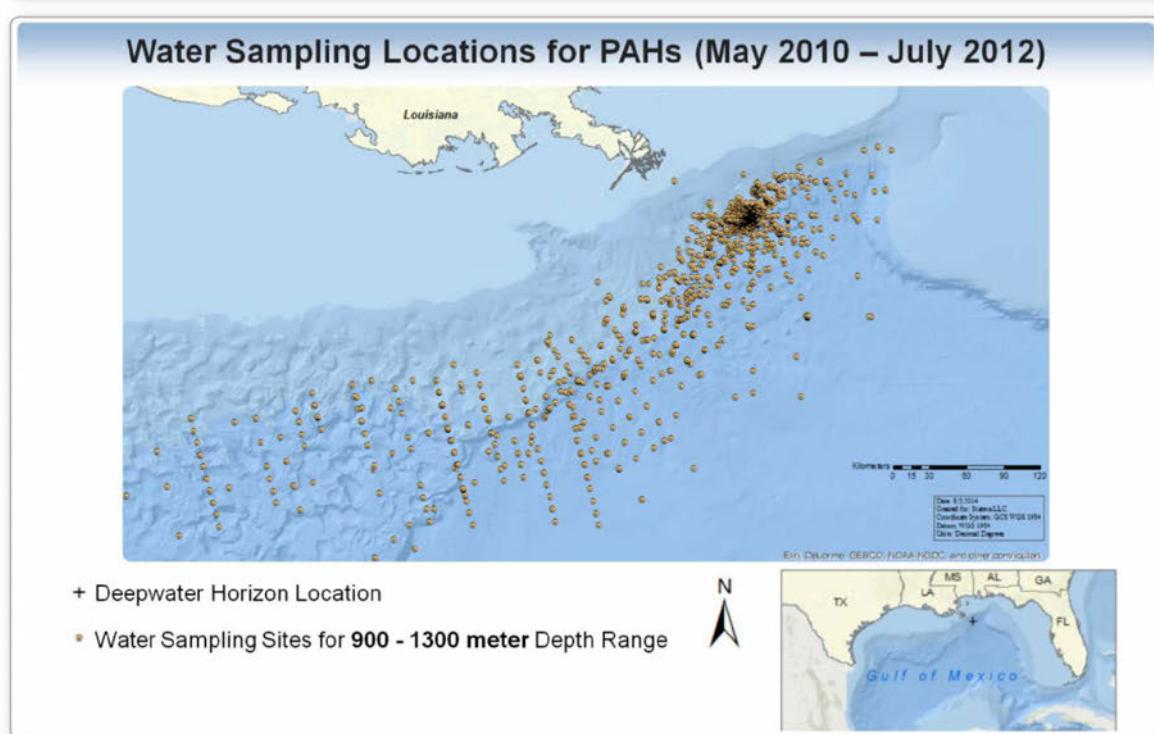
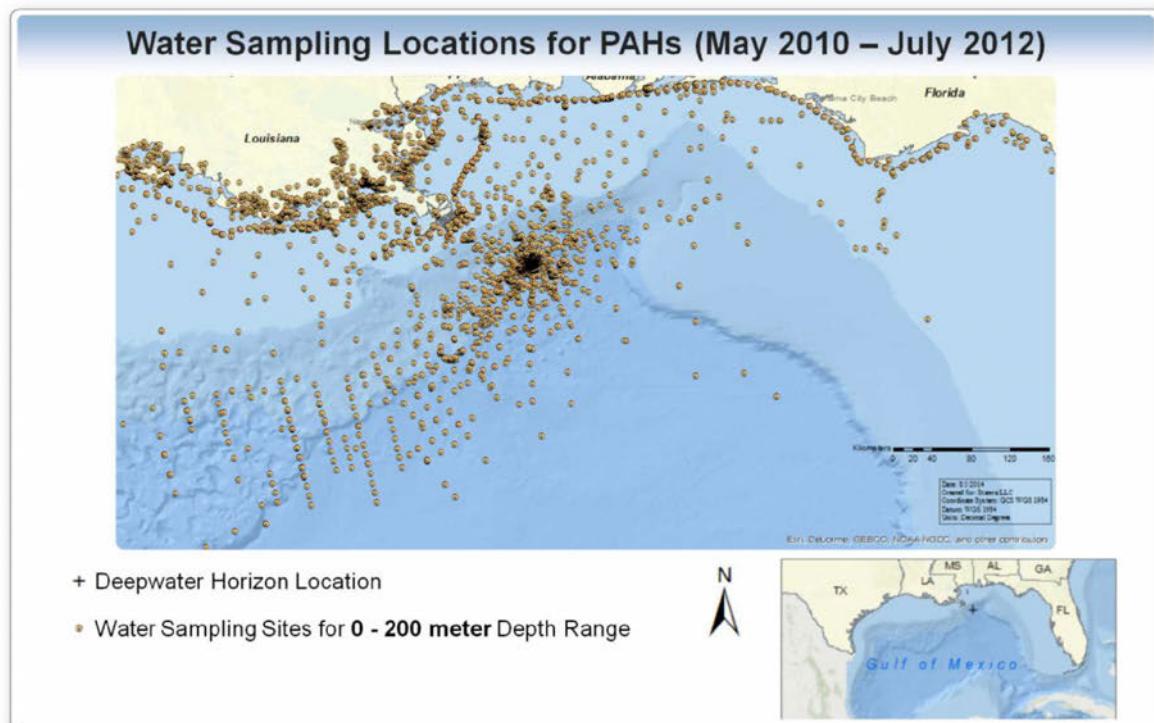


Figure 2. As discussed below, oil-related chemicals were found more frequently at the surface of the water (top 200 meters) and deeper at about 900-1300 meters. These maps show a closer view of those water sampling stations that were targeted to find this oil.

4. One very important feature of the water sampling should be recognized – much of the water sampling was conducted during the spill response or environmental investigations with the purpose of locating actionable oil in the water column. The majority of sampling was, therefore, targeted specifically to areas where oil was thought to be present, and we expect a consequent bias in the data toward finding oil-related chemicals.^{31,32,33}
5. This sampling bias – searching for the highest chemical exposures possible – provides an overestimate of potential environmental impact. Indeed, the United States itself (NOAA) has called this sampling method a “worst case” scenario.³⁴ In order to provide a conservative estimate of impact (*i.e.*, overestimate any potential exposure), and given the otherwise very high quality of these data, I have used these data without any modification or censoring. Accordingly, the exposure described in this report likely substantially overestimates the actual chemical exposure in the northern Gulf of Mexico caused by the *Deepwater Horizon* oil spill.

³¹ U.S. EPA Region 6 Quality Assurance Sampling Plan, p 3-5, “Sampling locations for fluorometer measurements and laboratory analyses will be prioritized to target locations likely to have oil and/or dispersant contamination.”

³² Dep. of Dr. Amy Merten at 214:9-13 (“the majority of the water column cruises that were collecting water samples, yes, were trying to find areas where there was oil.”).

³³ An example from one typical sampling plan is taken from: NOAA/BP-ENTRIX NRDA Cooperative Deep Tow Cruise 1, November 2010 Arctic-HOS Davis 4 Cruise Plan. Study Reference No. 140, p. 1: “Full-depth water column profiling with CTD and other instrumentation will be conducted at locations along and adjacent to the deep-tow transect lines where deep-tow instrumentation indicates presence of subsurface hydrocarbons. Adaptive water bottle sampling will be performed at these sample stations in and surrounding fluorescence peaks or DO sags. As warranted, near bottom water samples may also be collected in areas where indications of sedimented oil or floe are noted during bottom surveys with a Remotely Operated Vehicle (ROV).”

³⁴ Bejarano, A.C., Levine, E., and Mearns, A.J. 2013. Effectiveness and potential ecological effects of offshore surface dispersant use during the Deepwater Horizon oil spill: a retrospective analysis of monitoring data. Environmental Monitoring and Assessment 185:10281-10295.

Water Chemistry Data Analyzed

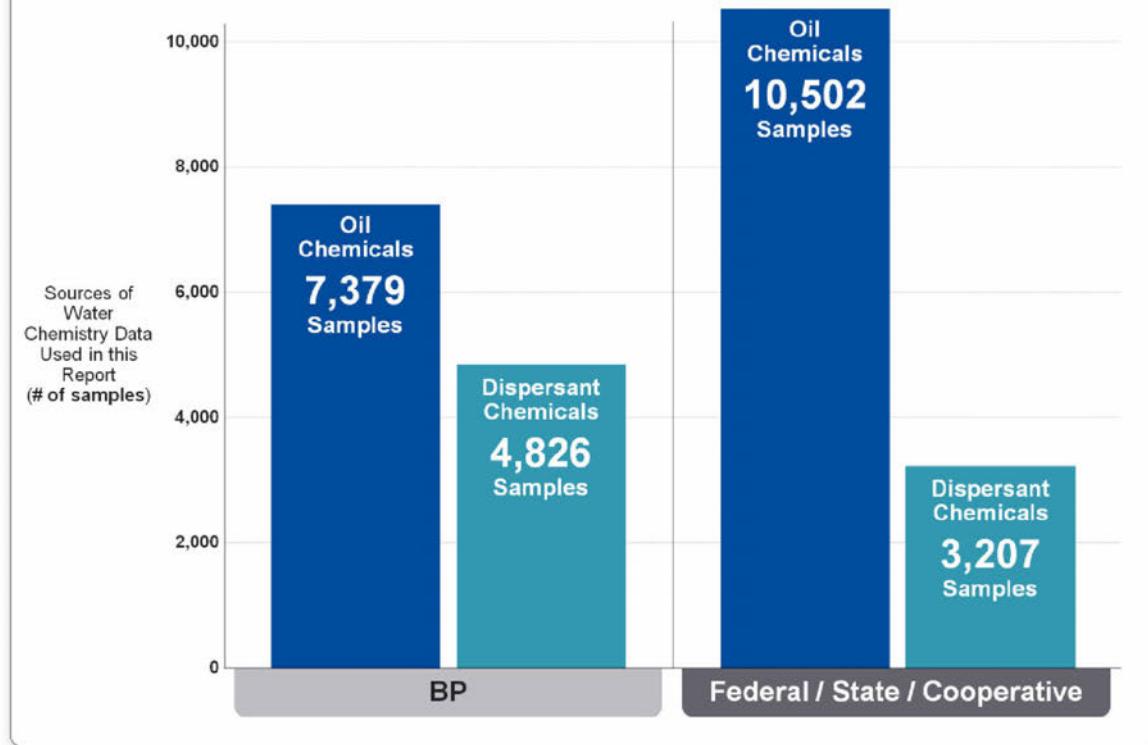


Figure 3. The water chemistry data utilized in this report come mostly from federal and state government agency studies (including cooperative studies directed by those agencies). The graph shows the number of samples from each source that was used in this report, relying upon the Gulf Science Data website for a count of the individual samples. In most cases, these samples were subsequently analyzed for more than one class of chemicals.

6. The majority of the chemistry data for water was collected by federal and state agencies (including through cooperative studies that are directed by the government). Somewhat fewer data were collected independently by BP (Figure 3). With the exception of the sampling bias in government studies as mentioned above, all of these samples met the stringent criteria established by EPA for conducting ecological risk assessments.
7. A similar review of sediment chemistry data (all oil-related chemicals) shows that about 79% of the samples were collected through federal/state and/or cooperative studies, and 18% of the samples were collected through BP independent studies. Data from a single academic study was included as it has been verified and is publicly available on the Gulf Science Data website. An additional 4,030 sediment samples were analyzed for dispersant chemicals.

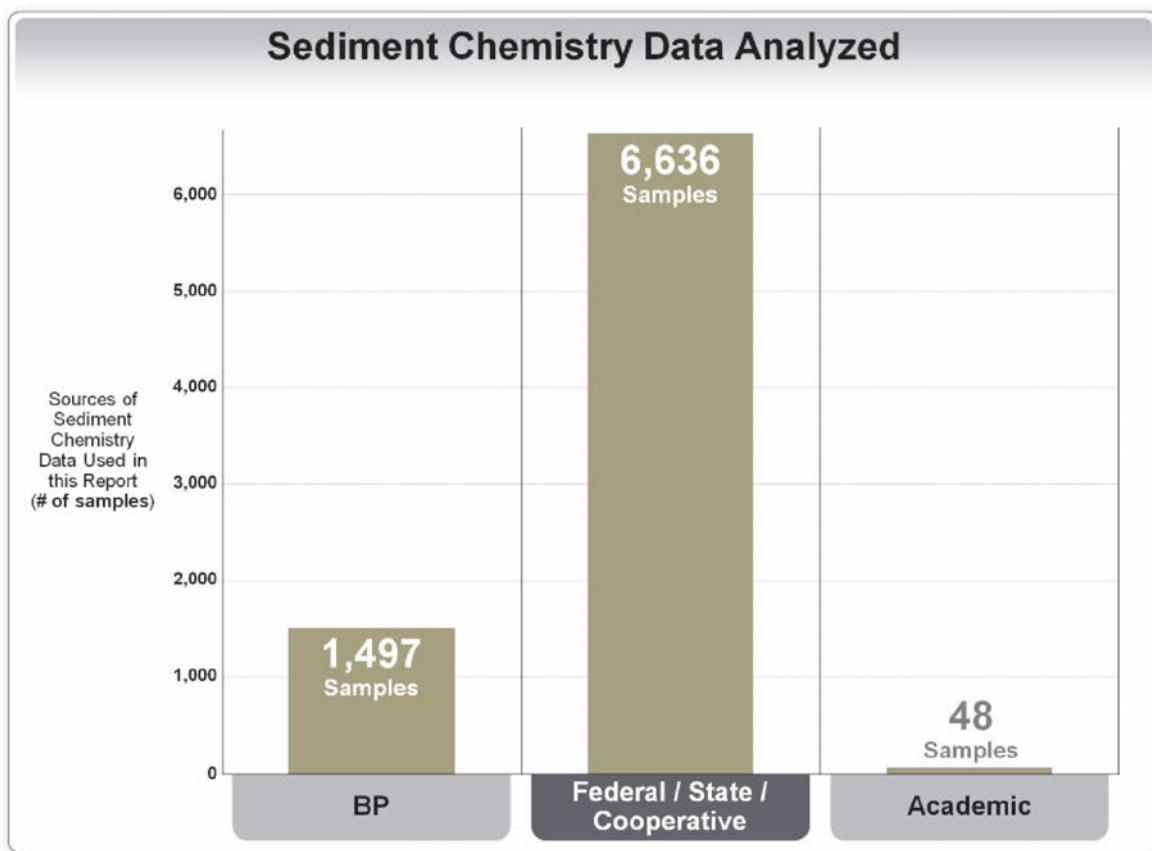


Figure 4. The sediment chemistry data utilized in this report come mostly from federal and state government agencies (including cooperative studies directed by those agencies). The graph shows the number of samples from each source that was used in this report.

B. Toxicity Testing

Measurements of the toxicity of the oil and dispersants were conducted in over 900 separate toxicity tests.

1. Toxicity testing data were obtained from validated toxicity studies provided by BP³⁵ and from “completed definitive” toxicity studies provided by the federal government through Stratus Consulting.³⁶ All of the validated studies followed appropriate chain-of-custody

³⁵ A complete list of the BP toxicity tests included in my analysis is provided in Appendix H.

³⁶ With respect to the government’s toxicity tests provided as part of discovery in this matter, I have reviewed those toxicity tests that were identified as “completed definitive,” the complete list of which is set forth in Appendix H. For purposes of this report, I have assumed that these “completed definitive” toxicity tests have undergone appropriate QA/QC and validation procedures by the United States’ contractors. I continue to review the information and underlying data provided by the government and reserve my right to change my decision to include these data in my report. In any event, should the government’s toxicity studies discussed below later prove to be unreliable, my opinions set forth herein would remain unchanged because the government toxicity tests merely confirm results demonstrated by other data, the reliability of which I have confirmed.

and quality assurance plans and for the most part constitute a very high quality and useful data set.

2. Toxicity testing was conducted on both field-collected samples and laboratory generated samples, the latter with the intent to recreate conditions that might have existed in the Gulf of Mexico.
3. The toxicity studies that utilized laboratory-generated oil exposures relied on the development in the lab of something called a water-accommodated fraction (WAF), described more fully below. The use of a WAF for toxicity testing is designed to simulate the highest possible exposure to oil-related chemicals. This is a conservative approach because even the largest dilutions performed in the laboratory were not nearly as dilute as were the waters in the Gulf of Mexico where oil was subject to high levels of rapid biodegradation, mixing, and dilution with clean waters. Nonetheless, the toxicity testing results are an important and standard means of validating the benchmark analysis.
4. A summary of the toxicity test data included in my analysis is provided in Table 1. A list of all the toxicity tests included in my analysis is provided in Appendix H.

BP	Federal Government
Algae	
Marine algae	
Invertebrates	
Amphipod crustacean	Amphipod crustacean
Blue crab	Blue crab
Eastern oyster	Eastern oyster
Mysid shrimp	Fiddler crab (2 species)
Marine copepod	Grass shrimp
Pacific oyster	White shrimp
Sand dollar	
Mussel	
Sea urchin	
Kumamoto oyster	
Fish	
Spotted sea trout	Spotted sea trout
Sheepshead minnow	Sheepshead minnow
Inland silverside	Inland silverside
Southern flounder	Southern flounder
Red drum	Red drum
Cobia	Gulf killifish
Florida pompano	Mahi-mahi
Red porgy	Yellowfin tuna

Table 1. Summary of Toxicity Testing Studies Included in this Report³⁷

C. Quality Assurance

All of the samples and data relied upon to form my opinions were collected under strict chain-of-custody procedures, following well-designed quality assurance plans.

1. It is very important to recognize the need for the highest quality data to understand potential environmental impact and determine the degree of harm in this case. As stated by NOAA regarding the *Deepwater Horizon* oil spill: “Quality Assurance (QA) is

³⁷ A full list of the toxicity studies included in my analysis is provided in Appendix H.

essential for the collection and analysis of data in a manner that is scientifically acceptable and legally defensible.”³⁸

2. To ensure that only high quality data form the basis of my opinion, I have critically reviewed the chemistry and toxicity data according to the quality assurance guidelines published by the EPA.³⁹
3. The data used to help form my opinions are of very high quality and meet the quality assurance standards established by the federal government for assessing environmental impact.⁴⁰

V. AREA OF POTENTIAL HARM LIMITED IN SPACE AND TIME

As demonstrated by the massive quantity of high-quality environmental data, and using conservative assumptions, there was no harmful exposure to oil-related chemicals or dispersants in the vast majority of the area investigated. The few areas where there was *potentially* harmful exposure to chemicals from the oil spill were limited in space and time, mostly in the area very close to the wellhead during the summer of 2010.

A. Limited Potential Harm in Gulf Waters

Less than 2% of the nearly 18,000 water samples showed concentrations of oil-related chemicals that exceeded the EPA’s water toxicity benchmarks. The few samples that exceeded these benchmarks were largely limited to the area very close in distance to the wellhead and the time period of the release. Over 8,000 water samples were collected and analyzed for dispersant chemicals, and only 16 of those (0.3%) exceeded the EPA or other appropriate benchmarks.

1. The PAHs are considered one of the best indicators of potential toxicity of spilled oil to aquatic life.⁴¹

³⁸ NOAA, Type of Preassessment Information Available, Appendix G, available at http://www.darrp.noaa.gov/library/pdf/PPD_AP-G.PDF.

³⁹ See Appendix E for details on the QA review and EPA QA guidelines.

⁴⁰ See Appendix E for details on the QA review and EPA QA guidelines.

⁴¹ Neff, J.M. and Stubblefield, W.A. 1995. Chemical and toxicological evaluation of water quality following the Exxon Valdez oil spill. In Wells, P.G., Butler, J.N. and Hughes, J.S. (eds.) Exxon Valdez oil spill: fate and effects in Alaskan waters. ASTM Special Technical Publication No. 1219. American Society of Testing and Materials, Philadelphia, pp. 141-177; OSAT-1 at 12 (“PAHs are among the most toxic and persistent components of crude oil.”); NOAA Office of Response and Restoration, Emergency Response Division, Deepwater Horizon Oil: Characteristics and Concerns (May 15, 2010), available at http://sero.nmfs.noaa.gov/deepwater_horizon/documents/pdfs/fact_sheets/oil_characteristics.pdf; Hudson, P., Khan, C., Saravanabhan ,G., Clarke, L., Shaw, B., Nabeta, K., Helferty, A., Brown, S., Wang, Z., Hollebone, B., Lee, K., and Short, J. 2008. What Compounds in Crude Oil Cause Chronic Toxicity to

2. Of the 17,881 water samples collected for PAHs, 98% were found to be safe for aquatic life (Figure 5).⁴² Even when focusing on only those samples collected within the areas of primary concern (NOAA fishery closure areas and those areas known or suspected to have been impacted by the spill), still approximately 98% of the over 17,000 samples were safe for aquatic life. And this is despite the fact that most of the water sampling targeted locations where PAH concentrations and toxicity would be highest.
3. This overall lack of oil-related chemicals and toxicity in the water is consistent with earlier investigations by the federal government. For example, OSAT found that fewer than 1% of water samples collected after August 3, 2010 exceeded EPA's Aquatic Life benchmarks for PAHs.⁴³
4. OSAT also performed a chemical "fingerprint" analysis on individual samples and found that none of the water sample exceedances collected after August 3, 2010 were consistent with MC252 oil.⁴⁴ I performed a similar fingerprinting analysis and found about one half of the samples exceeding the EPA benchmark were either not MC252 or too uncertain to determine. However, in keeping with my conservative approach to overestimating exposure, I have not censored the data to exclude the samples that do not match MC252 oil.

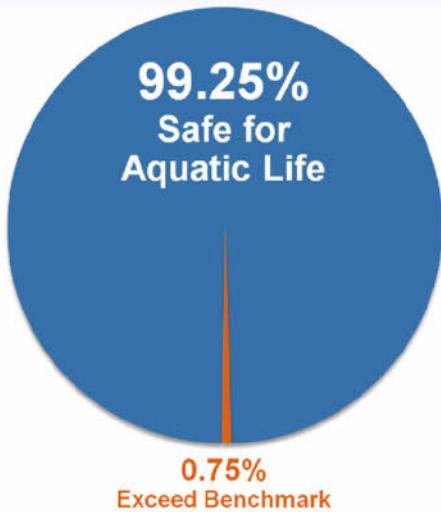
Larval Fish? Oil Spill Response: A Global Perspective. NATO Science for Peace and Security Series C: Environmental Security, pp 193-194.

⁴² As discussed in more detail in Appendix F, the PAH and BTEX chemicals elicit toxicity in the same way and thus the total toxicity of a sample caused by these oil-related chemicals should add their contributions together. As shown in detail below, the concentrations of BTEX were very low, even in very close proximity to the wellhead. When both the BTEX and PAH concentrations measured at a particular location are considered together, the overall total toxicity of the sample does not change – the same number of samples had a TU ≥ 1 . So, for simplicity, I have kept the analysis of PAH and BTEX separate.

⁴³ OSAT-1 at 2. *See also* Appendix J, discussing consistency of the chemistry data with the findings of the Joint Analysis Group (JAG).

⁴⁴ OSAT-1, Appendix C: Ecotoxicity Addendum.

Water: EPA Acute Benchmark for PAHs



Samples	17,881
Safe	17,746
Exceed	135

Water: EPA Chronic Benchmark for PAHs



Samples	17,881
Safe	17,532
Exceed	349

Figure 5. Only about 2% of all samples collected exceeded EPA toxicity benchmarks for PAHs. More samples exceeded the chronic benchmark because it requires a somewhat lower concentration of PAHs to cause chronic toxicity compared to acute toxicity.

5. Figure 6 uses the same data as the Figure 5 Pie Chart but shows the results across the month in which the samples were collected. It shows that the small number of instances where a sample exceeded the EPA benchmark for PAHs occurred mostly during the time of oil release, and then quickly disappeared in fall 2010. Notably, the chemical fingerprint of the 20 samples collected in 2011 and 2012 that exceeded the EPA benchmarks for PAHs did not match MC252 oil.

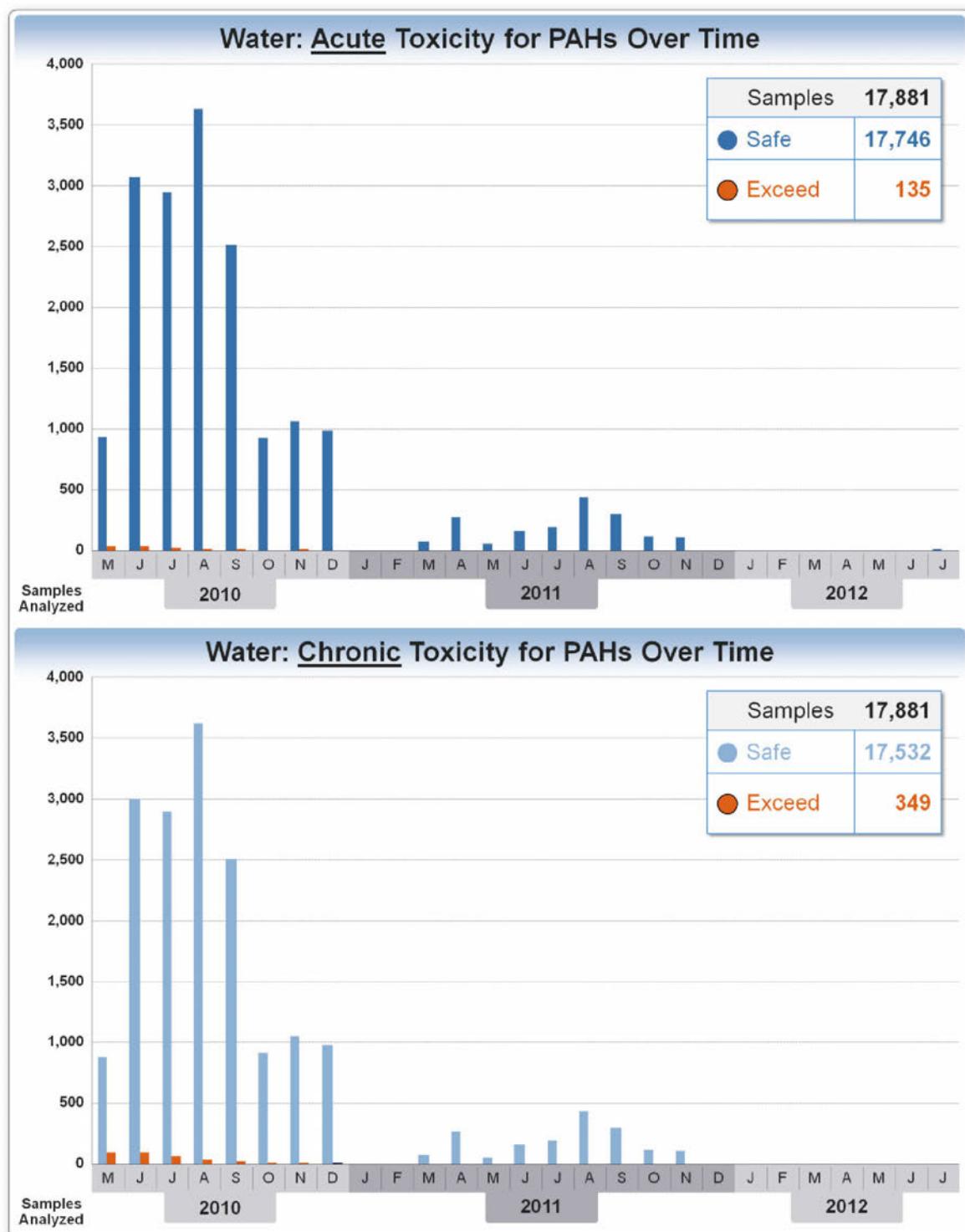


Figure 6. Comparison of the 17,881 individual water samples to the EPA benchmarks for PAHs is summarized based on the month in which the sample was collected. The vast majority of samples were collected at locations expected to have the highest amount of oil. Notably, the 20 samples collected in 2011 and 2012 that exceeded either the EPA acute toxicity or chronic toxicity benchmarks did not match the chemical fingerprint of MC252 oil.

6. Figure 7 uses the same data as the Figure 5 Pie Chart but shows the results based on distance from the wellhead. It shows that the samples that exceeded EPA benchmarks for PAHs were primarily located near the wellhead and that the instances of exceedances decreased with distance from the wellhead. Notably, the chemical fingerprint of the majority of samples collected from distances beyond 100 kilometers from the wellhead that exceeded the EPA benchmarks for PAHs did not match MC252 oil.

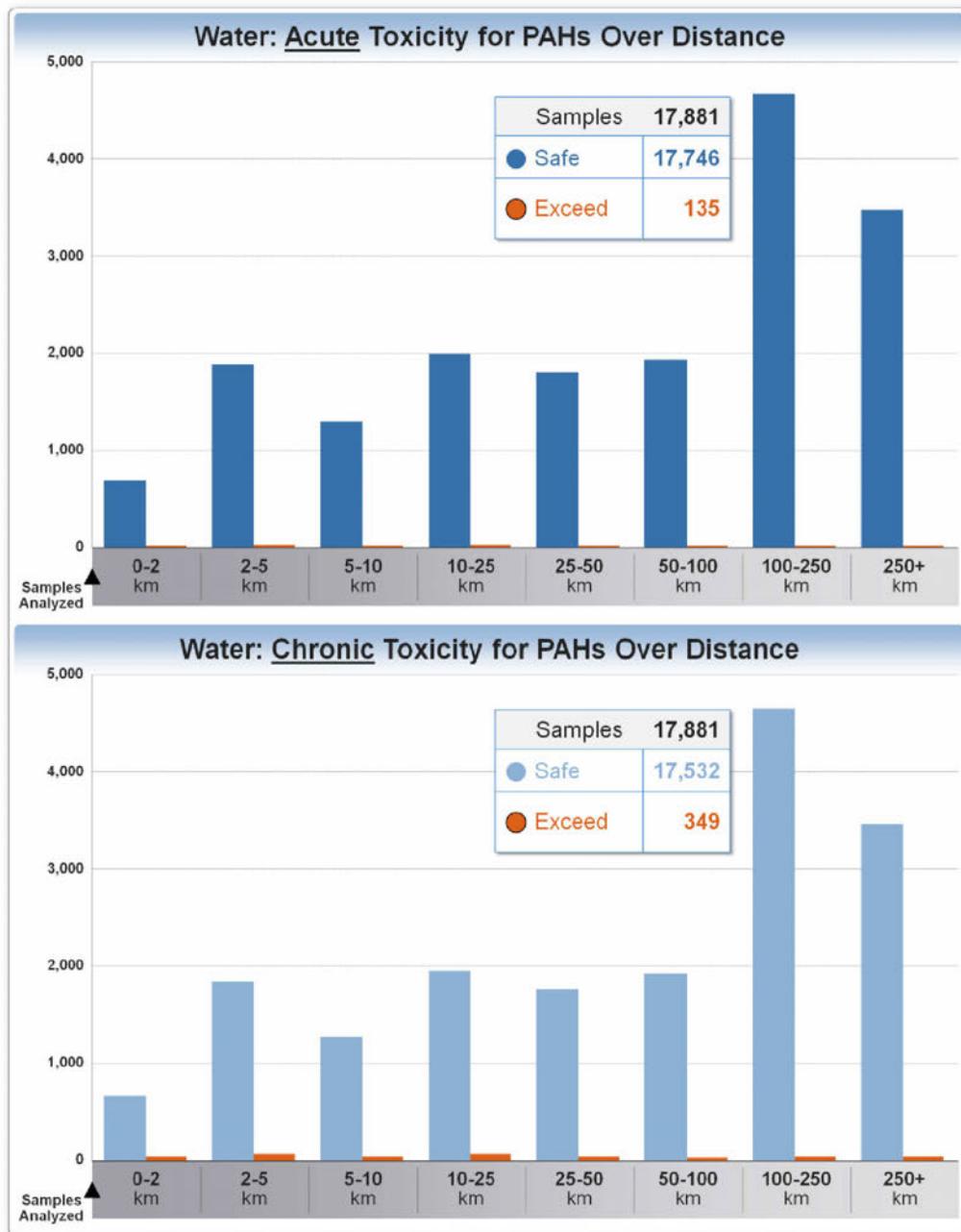


Figure 7. The potential toxicity from PAHs of the 17,881 individual water samples summarized in the Figure 5 Pie Chart is shown here for the distance from the wellhead. These are the same data in Figure 6, but shown by distance rather than by date.

7. Figure 8 uses the same data from the Figure 5 Pie Chart but shows the results based on the water depth at which the sample was collected. Although it is not easy to see because of the overwhelming number of safe samples in blue, the water depth with the highest number of exceedances of EPA benchmarks for PAHs (shown in orange at the top of the blue bars) is the surface 0-200 meters,⁴⁵ followed by the 900-1300 meter depth, with a vanishingly small number of exceedances at all other depths.
8. Particular attention should be given to the 900-1300 meter depth because this is the region that was widely reported to contain a deep-water oil plume or cloud. A massive effort targeted sampling in these areas, yet only a very small number and percentage of samples in this region exceeded EPA benchmarks for PAHs (Figure 8).

⁴⁵The majority of the exceedances were located in the top 1 meter.

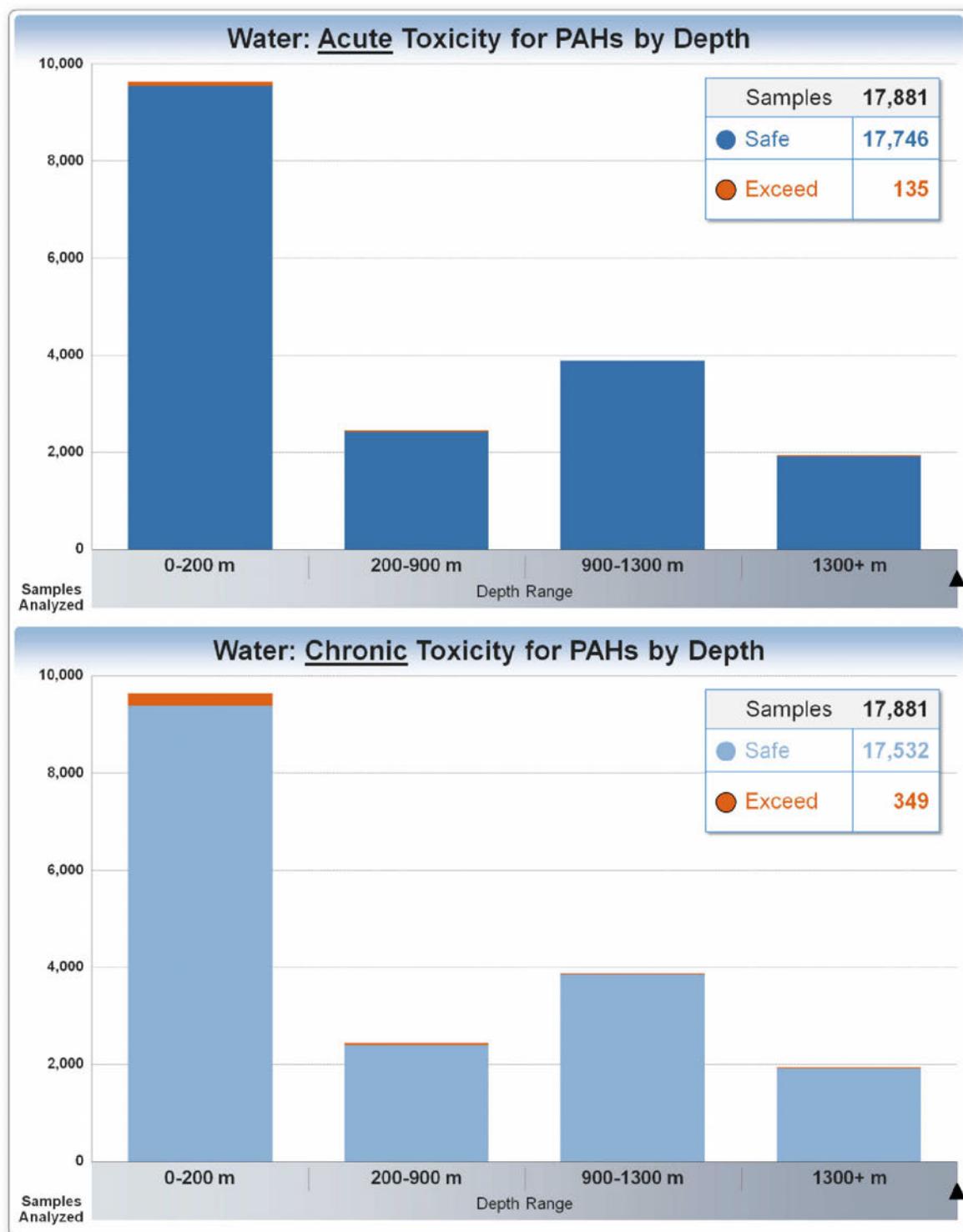


Figure 8. The 17,881 individual water samples summarized in the Figure 5 Pie Chart are shown here based on the depth range where the samples were collected. These are the same data as shown in Figures 6 and 7, but they are shown here based on depth ranges in meters.

9. A second category of oil-related chemicals is the BTEX chemicals. These chemicals are much more soluble in water than PAHs and, if they reach the water surface, they are highly volatile and will evaporate very quickly.
10. Of the 16,772 water samples collected for BTEX, 100% were found to be safe for aquatic life using the standard EPA benchmark assessment method for acute and chronic toxicity for BTEX (Figure 9). It is possible that concentrations of BTEX exceeded the EPA benchmark very near the wellhead while the fresh oil was released, although there are no data to support this.
11. These results are consistent with earlier investigations by the federal government⁴⁶ and consistent with our knowledge that BTEX chemicals were dissolved, diluted, degraded, and evaporated very quickly.

⁴⁶ See, e.g., OSAT-1.

Water: EPA Acute Benchmark for BTEX



100%
Safe for
Aquatic Life

Samples	16,772
Safe	16,772
Exceed	-

Water: EPA Chronic Benchmark for BTEX



100%
Safe for
Aquatic Life

Samples	16,772
Safe	16,772
Exceed	-

Figure 9. Out of all of the 16,772 samples collected and measured for the volatile BTEX chemicals, not a single sample exceeded either the acute or chronic EPA benchmark for BTEX chemicals.

12. Using the same data from Figure 9, there were elevated, but non-toxic concentrations of BTEX near the wellhead that quickly disappeared to non-detectable levels within 25 km of the wellhead (Figure 10).



Figure 10. The total toxicity associated with the BTEX chemicals in water samples, expressed as TU's, is shown based on distance from the wellhead for acute toxicity (top graph) and chronic toxicity (bottom graph). Despite some elevated concentrations very near the wellhead, the concentrations never came close to benchmark levels and quickly decreased to non-detectable levels within about 25 km of the wellhead. The TU method used here is the standard EPA benchmark method for assessing toxicity of BTEX.

13. Using the same data from Figures 9 and 10, and looking at the date of sample collection, there are elevated, but non-toxic concentrations of BTEX during the time of oil release, and concentrations quickly disappeared to non-detectable levels once the wellhead was capped (Figure 11).

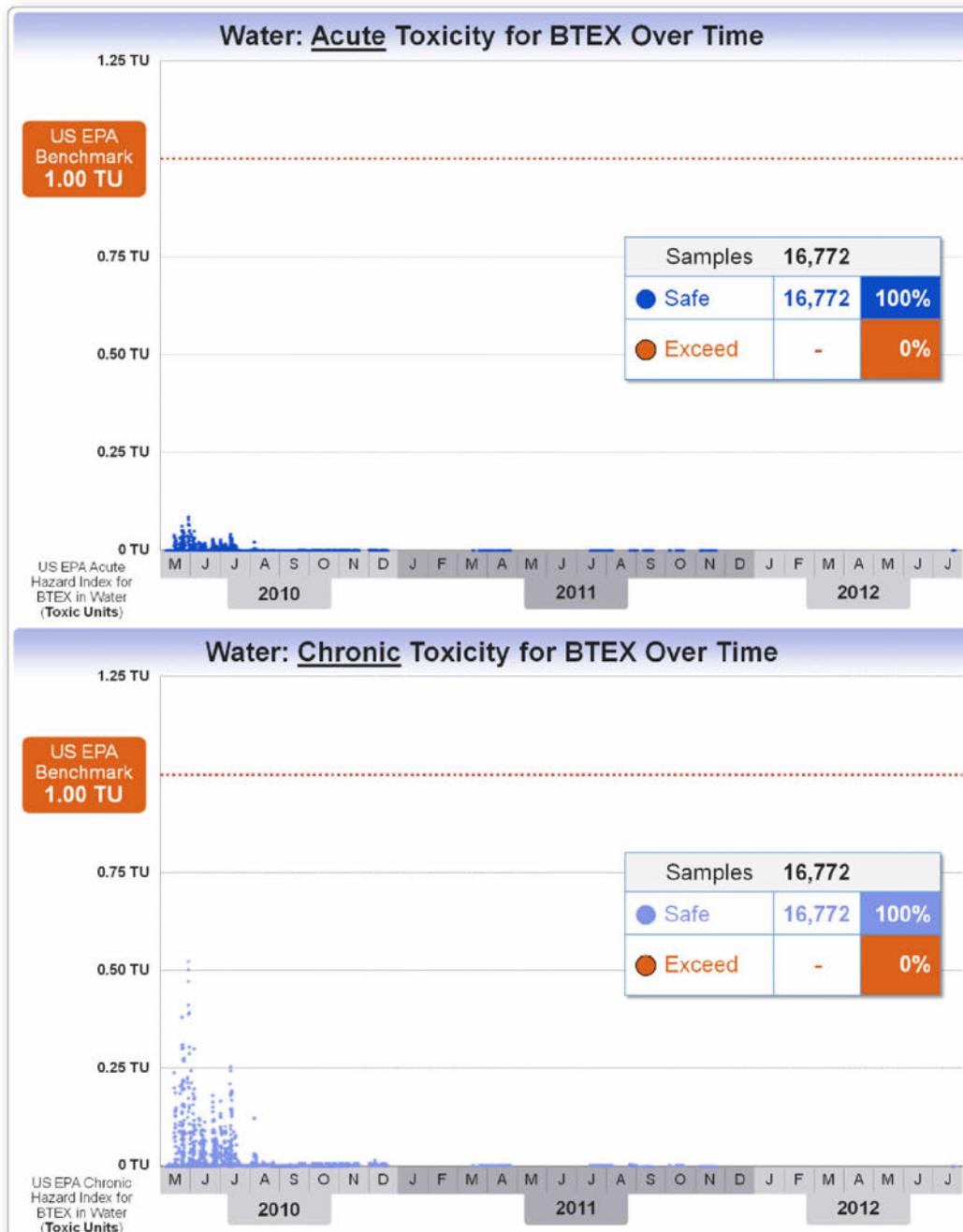


Figure 11. The total toxicity associated with the BTEX chemicals in water samples, expressed as TUs, is shown over time (top graph is for acute toxicity and the bottom graph is for chronic toxicity). Despite some elevated concentrations during the time of oil release, the concentrations never came close to levels of concern and quickly decreased to non-detectable levels once the wellhead was capped.

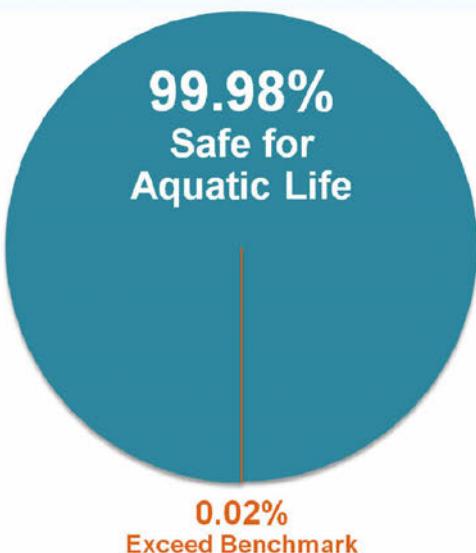
14. Other than the oil-related chemicals (PAHs and BTEX), the other class of chemicals potentially of concern is the dispersant chemicals in Corexit 9500 and 9527 that were used in the Gulf of Mexico.
15. There are several active and inert ingredients in these dispersants. The four specific chemicals potentially of concern and tested for in water samples were: 2-butoxyethanol (2BE), dipropylene glycol n-butyl ether (DPnB),⁴⁷ propylene glycol (PG), and dioctyl sodium sulfosuccinate (DOSS). EPA has established benchmarks, above which there is the possibility of harm or risk to aquatic life, for all four of these chemicals. Note that 2BE is in Corexit 9527, but not in Corexit 9500.
16. Over 8,000 water samples were analyzed for at least one of these four dispersant chemicals, with sampling targeted mostly at where and when the dispersants were used with the goal of finding the highest exposures.
17. The vast majority of these samples had no detectable concentrations of any of these four chemicals. And when they were detected, many results were qualified by the laboratory as a “tentative” identification, due to lack of instrument calibration for the reported parameter, and/or “estimated” when the concentration level was at or below the detection limit of the analytical method.
18. Out of the 5,672 samples analyzed for DOSS, only 16 samples exceeded EPA’s most stringent benchmark (Figure 12).⁴⁸ Over 5,000 samples were analyzed for 2BE and none exceeded EPA’s benchmark of 165 µg/L. None of the over 4,000 samples analyzed for DPnB exceeded EPA’s benchmark of 1,000 µg/L. PG was not measured very often, but the data available indicated exposures were at least 1,000 times below the EPA benchmark of 500,000 µg/L.
19. It is also important to note that the ubiquitous presence of dispersant related chemicals can result in false positives or “blank contamination” when testing. For example, the highest DOSS concentrations measured were in “equipment blanks” designed to test for these “false positives” in the field rather than in actual samples. It is highly likely, therefore, that many of the detections of DOSS shown in Figure 12 are the results of this blank contamination causing false positives.
20. This overall lack of dispersant-related exposure and toxicity in the water is consistent with earlier investigations by the federal government. For example, OSAT found that “[n]o exceedances of EPA’s dispersant benchmarks were observed.”⁴⁹

⁴⁷ DPnB and glycol ethers are reported with different compound names by the laboratories, however, analytically they are the same component; DPnB is a glycol ether.

⁴⁸ Note that one can obtain slightly different counts of exceedances depending on what assumptions you use to treat samples with tentative chemical identification, how you deal with the very large background contamination for DOSS that leads to “false positives,” and how you treat sample replicates (do you count individually or average). I have not dealt quantitatively with this issue for DOSS because regardless of the assumptions used, the total number of samples exceeding the EPA benchmark is vanishingly small.

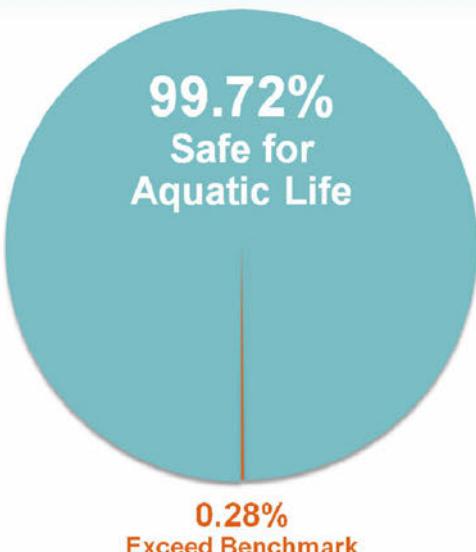
⁴⁹ OSAT-1 at 2.

Dispersants: EPA Acute Benchmark for DOSS



Samples	5,672
Safe	5,671
Exceed	1

Dispersants: EPA Chronic Benchmark for DOSS



Samples	5,672
Safe	5,656
Exceed	16

Figure 12. Out of all of the 5,672 samples collected and measured for the dispersant chemical DOSS, only one sample exceeded the acute EPA benchmark for DOSS and only 16 samples (0.28%) exceeded the chronic EPA benchmark for DOSS. There were no exceedances for the other three dispersant chemicals (graphs are not shown).

21. Using a conservative approach, elevated, but very few potentially harmful concentrations of the dispersant chemical DOSS were found during the time of oil release and near the wellhead, but then mostly quickly disappeared to non-detectable levels beyond about 25 km and once the wellhead was capped (Figure 13).

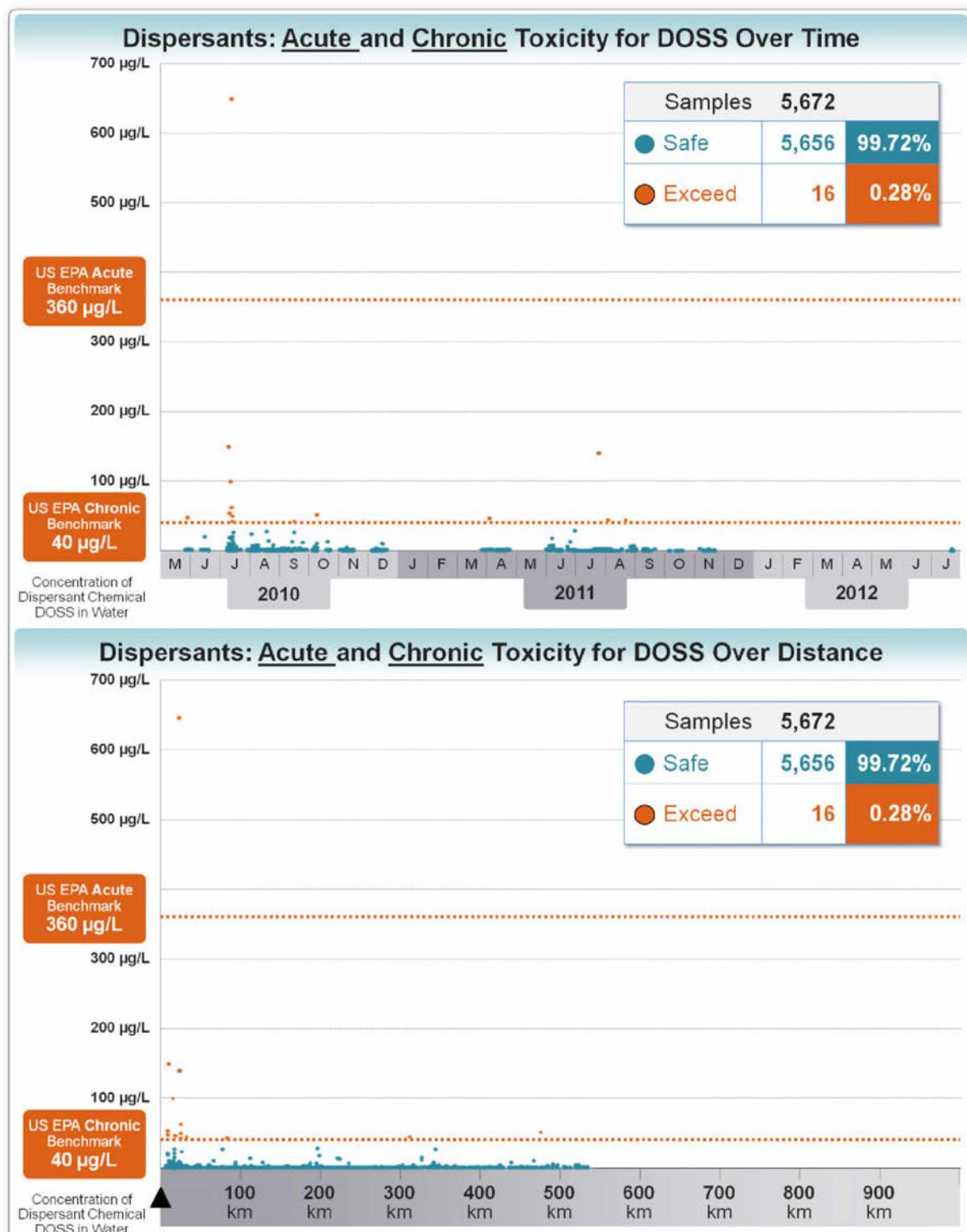


Figure 13. Despite some elevated concentrations during the time of oil release (top graph) and near the wellhead (bottom graph), only a very small number of samples exceeded the EPA chronic benchmark for DOSS (lower dashed line in each graph) and only one sample exceeded the EPA acute benchmark for DOSS (upper dashed line in each graph). The few elevated levels seen 2011 (top graph) and farther from the wellhead (bottom graph) are likely a result of the blank contamination issue discussed in the text.

22. The massive amount of water chemistry data collected during and after the spill allowed me to construct maps of the oil-related chemical concentrations and the areas of the Gulf of Mexico and time-periods that experienced exposures potentially harmful to aquatic life. The details of this statistical mapping method are provided in Appendix I.
23. Although reported surface oiling maps and the NOAA fishery closure boundaries give the impression of widespread harmful conditions to aquatic life, the actual area Gulf waters that exceeded the EPA toxicity benchmarks -- and were therefore potentially harmful to aquatic life -- were vastly smaller than these oiling and closure maps. An example of this is shown in Figure 14, where the area that would have exceeded EPA toxicity benchmarks under the worst-case scenario (the small red areas near the wellhead) is dwarfed by the fishery closure areas. Much more likely scenarios and periods beyond May 2010 show even smaller areas of potential concern.⁵⁰

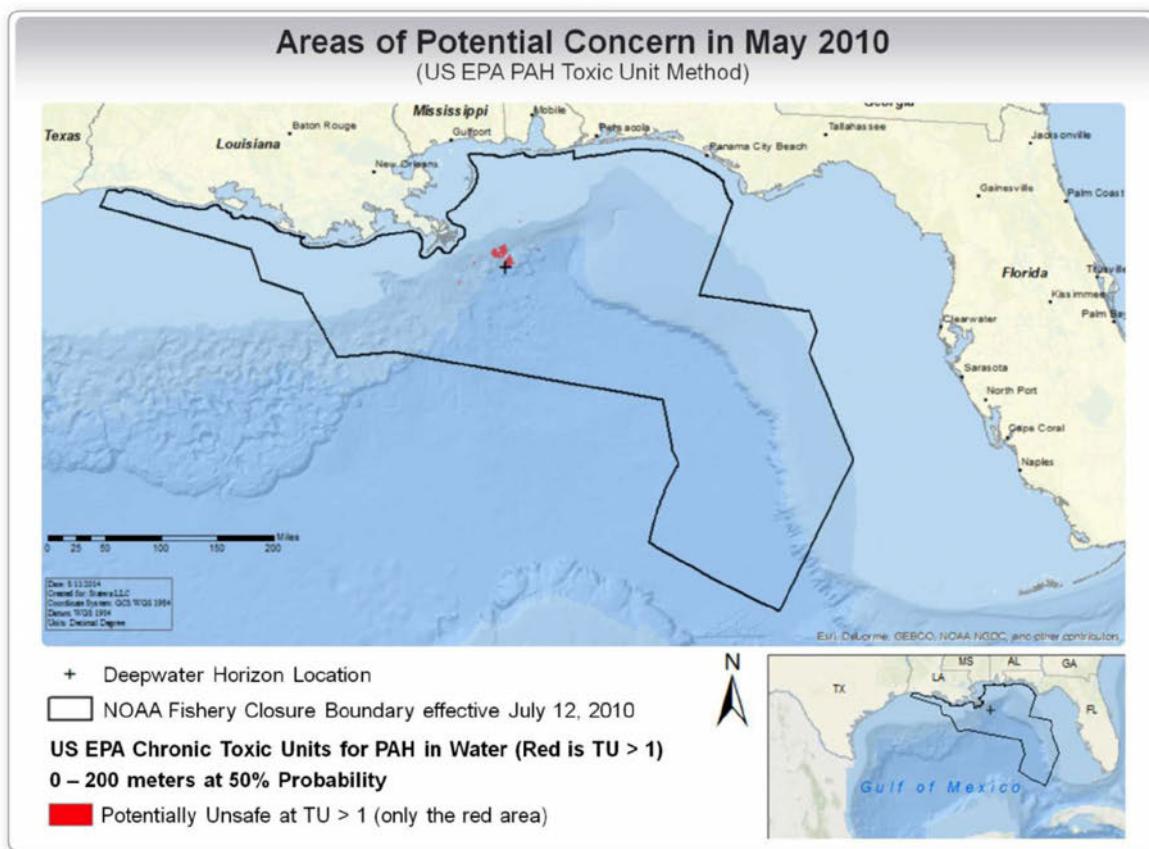


Figure 14. This map shows the maximum NOAA fishery closure area (boundary drawn with black line) compared to the most conservative estimate of the area that is potentially harmful to aquatic life. See Appendix I for a description of the methodology used to map the area of potential harm.

⁵⁰ See Appendix I.

24. The individual water sample data and the aggregated data underlying the statistical mapping tell a very consistent story. Using a conservative approach to analyzing the data, so as to resolve any doubts or uncertainties in favor of overestimating potential impact, I find that waters that were potentially harmful to aquatic life due to concentrations of oil-related chemicals were limited to relatively small areas, mostly near the wellhead region and at the water surface, and while the oil was being released. This finding is consistent with findings made in government reports.⁵¹
25. Using a similar, conservative approach to analyzing the dispersant data, I find that with a handful of possible exceptions, the dispersant chemicals were never harmful to aquatic life at any time or location.

B. Limited Potential Harm in Gulf Sediments

Fewer than 2% of sediment samples collected in the areas investigated exceeded EPA sediment toxicity benchmarks. As with the water data, the few sediment samples that exceeded these benchmarks were largely limited to the area very close in distance to the wellhead.

1. PAHs are the best indicator for oil-related toxicity in sediment.
2. Of the 8,181 sediment samples collected for PAHs, 98% were found to be safe for sediment dwelling organisms using the standard EPA benchmark assessment method for acute and chronic toxicity for PAHs in sediment (Figure 17). Even when focusing on only those samples collected within the areas known or suspected of having oil, the percentage of samples considered safe is still about 98%. And this is despite the fact that most of the sampling was targeting locations where oil chemical exposure and toxicity would be highest.
3. There are substantial pre-spill data on PAH concentrations in the deepwater sediments in the northern Gulf of Mexico region including the Macondo well site.^{52,53,54} These studies

⁵¹ See Appendix K for a discussion of consistency with the reports of the Joint Analysis Group (JAG), a group formed at the direction of the National Incident Commander for the spill.

⁵² Rowe, G.T. and Kennicut, M.C. 2009. Northern Gulf of Mexico Continental Slope Habitats and Benthic Ecology Study, Final Report. OCS Study, MMS 2009-039.

⁵³ Continental Shelf Associates, Inc. 2006. Effects of Oil and Gas Exploration and Development at Selected Continental Slope Sites in the Gulf of Mexico. Volume I: Executive Summary. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study MMS 2006-044. 45 pp.

⁵⁴ Wade, T.I., et al. 2008. Trace elements and polycyclic aromatic hydrocarbons (PAHs) concentrations in deep Gulf of Mexico sediments. Deep-Sea Research II 55:2585-2593.

fairly consistently indicate pre-spill background concentrations of PAHs of about 1,000 µg/kg and lower. One particular study showed a concentration as high as 24,000 µg/kg.⁵⁵

4. The vast majority (88%) of the 8,181 sediment samples had concentrations of PAHs at or below this 1,000 µg/kg background level and 99% of the sediment samples were below the highest background level measured before the spill.

⁵⁵ Continental Shelf Associates, Inc. 2006. Effects of Oil and Gas Exploration and Development at Selected Continental Slope Sites in the Gulf of Mexico. Volume I: Executive Summary. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study MMS 2006-044, 45 pp. As discussed more fully below, this background concentrations of oil in the sediment are due, in part, to the presence of natural oil seeps in the Gulf of Mexico.

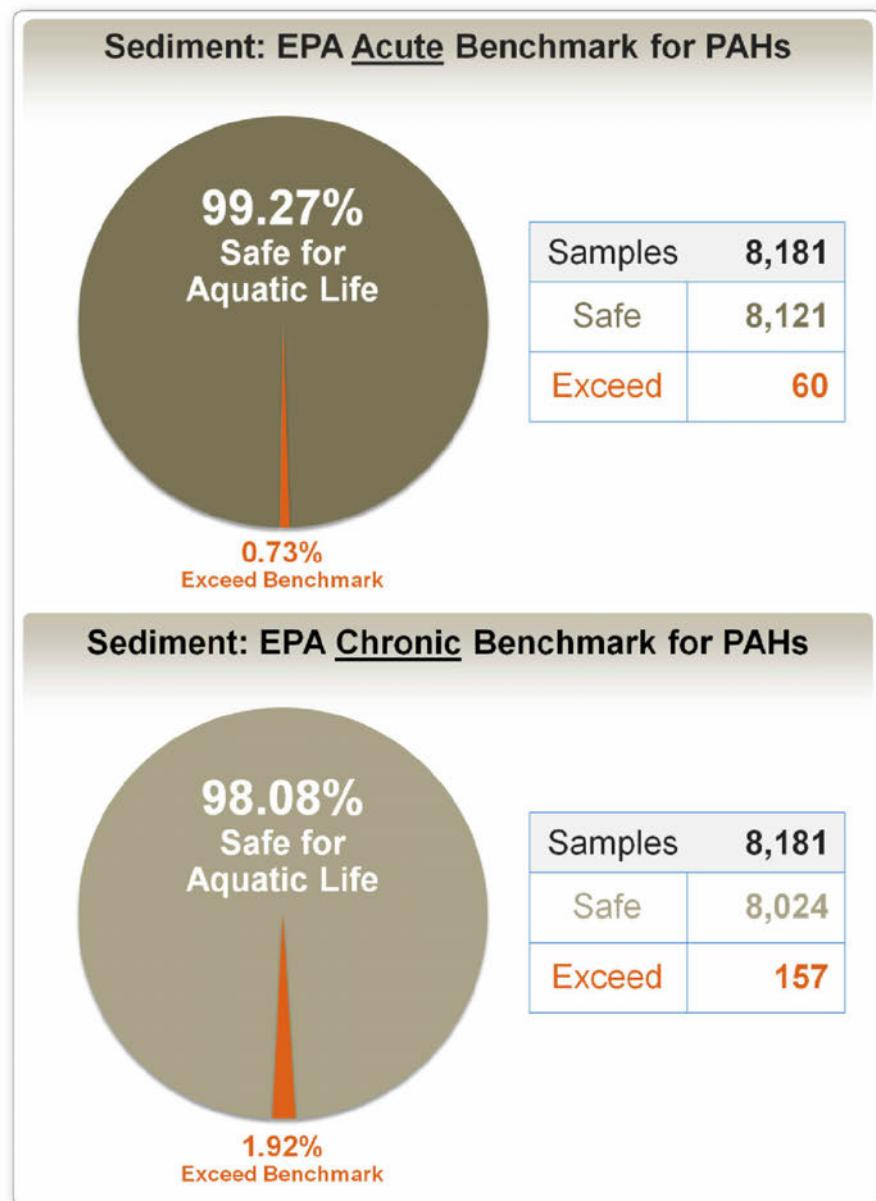


Figure 15. Using the standard EPA benchmark for PAHs to assess the potential toxicity of sediment samples, only about 2% or less of all samples collected are considered to be of potential harm to aquatic life. The chronic benchmark (bottom chart) has more exceedances than acute (top chart) because it requires a somewhat lower concentration of PAHs to cause chronic toxicity compared to acute toxicity.

5. The small number of samples that exceeded the EPA benchmark for PAHs in sediment were located mostly near the wellhead (Figure 16).
6. This overall lack of oil-related toxicity in the sediment is consistent with earlier investigations by the federal government. For example, OSAT found that “Since 3 August 2010 [...] ~1% of sediment samples exceeded EPA's Aquatic Life benchmarks

for polycyclic aromatic hydrocarbons (PAHs) [...] Of the sediment exceedances, only those within 3 km of the wellhead were consistent with MC252.”⁵⁶

7. Using the same chemical fingerprinting method performed by OSAT,⁵⁷ I found that about 25% of the samples indicating potentially harmful concentrations of PAHs in the sediment were not MC252 oil and another 25% could not be distinguished from natural oil seeps in the area. After these are removed, only about one-half of the sediment samples exceeding EPA benchmarks likely resulted from the oil spill.
8. Over 4,000 sediment samples also were collected and analyzed for dispersant-related chemicals. Over 90% of the samples had no detectable dispersant chemical and the remaining samples either had only a tentatively identified dispersant near the method reporting limit or below the method reporting limit. There was one exception, a single sample near the wellhead was elevated above these “background” concentrations. Given the low toxicity of the dispersant chemicals, it is unlikely that this concentration would be harmful, but if it were, it would be the only one sample out of the more than 4,000 sediment samples collected.

⁵⁶ See, e.g., OSAT-1 at 2.

⁵⁷ OSAT-1, Appendix C: Ecotoxicity Addendum.

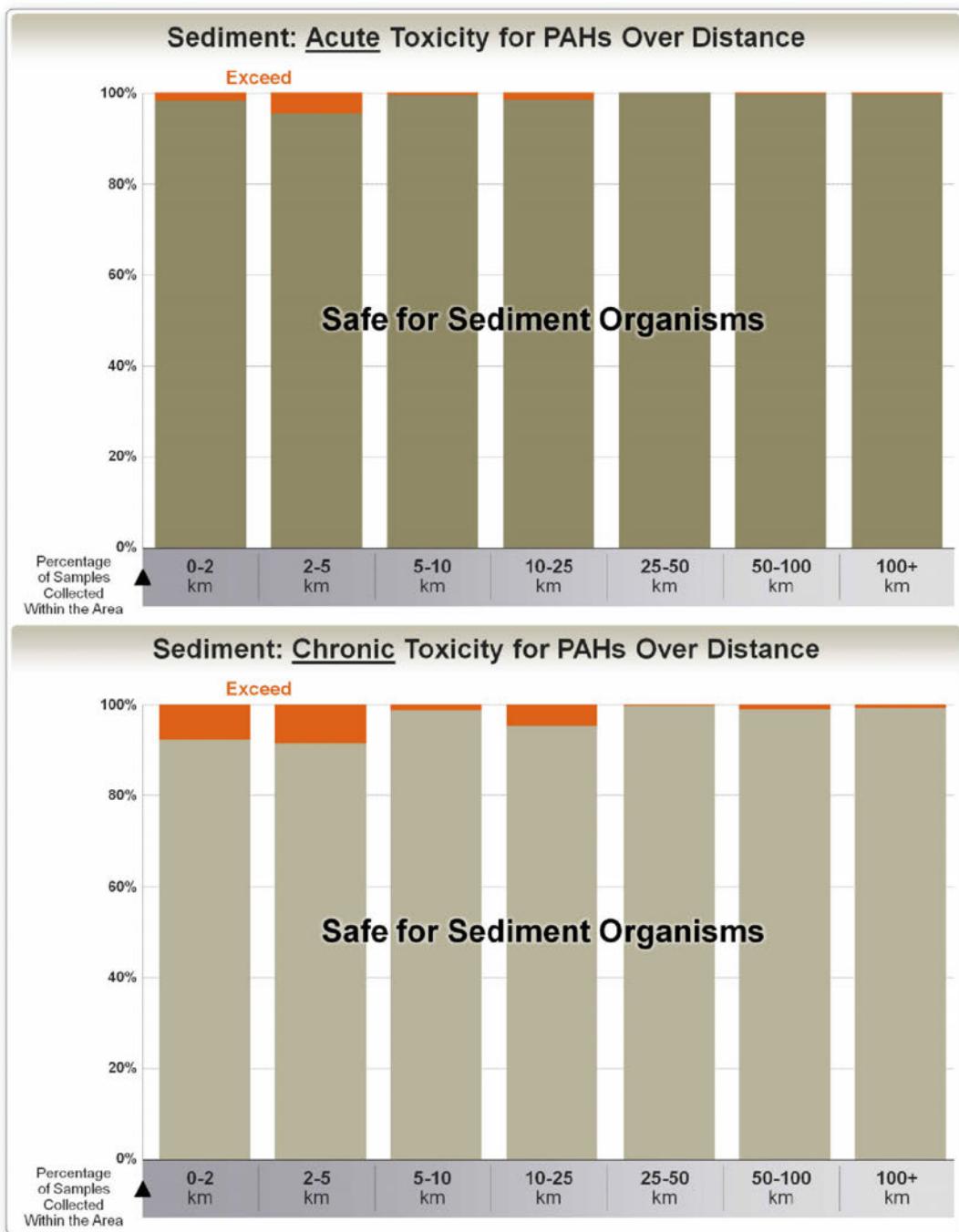


Figure 16. Using the standard EPA benchmark for chronic toxicity of PAHs in sediment, we can see that the small number of samples that were potentially harmful were near the wellhead (within 5 km). Note that many of the samples that exceeded the EPA benchmark for chronic toxicity of PAHs in sediment could not be distinguished from natural oil seeps in the area. Crude oils have a characteristic PAH and petroleum biomarker signature or chemical fingerprint. However, the Southern Louisiana Sweet Crude oil “family,” which includes the natural Macondo oil seeps, as well as the nearby Biloxi Dome oil seeps, have very similar chemical signatures and could not be distinguished from one another in many of the sediment samples. Thus, for many of the sediment samples that did exceed the EPA PAH benchmark, it remains uncertain whether the PAHs came from *Deepwater Horizon* or the natural seeps.

C. Limited Potential Harm Based upon *Deepwater Horizon* Toxicity Testing

In addition to comparing water and sediment results to EPA benchmarks, I have reviewed over 900 laboratory toxicity tests undertaken as part of the *Deepwater Horizon* environmental investigation. These laboratory tests confirm that any potentially harmful effects of the oil spill were largely limited to exposures that occurred during the release of oil and close in distance to the wellhead.

In addition to the benchmark analysis presented above, the potential for toxicity can be evaluated by conducting toxicity tests.

A toxicity test is a procedure using living organisms to determine whether a chemical or mixture, such as oil, is toxic *under conditions of the test*. A toxicity test measures the degree of the effect of a specific chemical or mixture on exposed test organisms.

It is important to recognize, as the founder of the discipline of toxicology, Paracelsus, said nearly 500 years ago, that “all substances are toxic, it is the dose that makes the poison.” Thus, the results of a toxicity test are useful only in the context of the “dose.” With regard to the oil spill, the exposures that elicited a toxic response in the laboratory are only useful insofar as the same concentrations or “doses” were experienced in the Gulf of Mexico.

There are two broad categories of toxicity testing that were performed to help understand the potential impact of the oil spill:

- (1) Toxicity testing on water and sediment samples from the Gulf of Mexico that organisms were actually exposed to.
- (2) Toxicity testing using a “surrogate,” or laboratory generated exposures that attempt to represent actual exposures that occurred in the Gulf of Mexico.

Below, I will discuss the toxicity testing in the context of how we can relate those results to what actually happened in the Gulf of Mexico.

i. Water Toxicity Testing Generally

1. Toxicity testing of water was performed on (a) samples that were collected during and shortly after the oil release and (b) laboratory-generated samples that were intended to serve as surrogate for what happened in the Gulf.
2. As mentioned above, the toxicity studies that utilized laboratory-generated oil exposures relied on the formation of a water-accommodated fraction (WAF). A WAF is created by adding oil to water, mixing at low energy, and allowing the water to “accommodate” or receive the soluble chemicals from the oil. Because oil is less dense than water, most of it will float to the top. The water is then separated from the discrete oil layer and used for toxicity and/or chemical testing.

3. A variation of the WAF is the Chemically Enhanced WAF, or CEWAF, that tests a mixture of oil with dispersant.
4. Toxicity studies that utilized standard and well-accepted practices for creating the WAF or CEWAF were included in my analysis. Studies that did not follow accepted protocol for preparing a WAF were not included. Details on these methods and reasons for exclusion of any data are provided in Appendix G.
5. The use of a WAF for toxicity testing will simulate the highest possible exposure to oil-related chemicals. This is because a WAF is created in a “closed” system (a bottle) where oil-related chemicals that dissolve into the water cannot be further diluted or degraded. This contrasts with the real-world environment. The Gulf of Mexico is an “open system” where (a) the dissolved oil-related chemicals mix rapidly with clean water and thus are diluted, and (b) natural bacteria are present to biodegrade the oil and oil-related chemicals. In this way, the use of a WAF for toxicity testing results in a conservative approach to assessing potential toxicity and harm to aquatic life. To correct this bias, some studies will dilute the WAF enough to achieve concentrations that match what was measured in the field. This additional dilution was not done in most of the toxicity tests performed in connection with the spill. Most of the WAF dilutions contained PAH concentrations far above what was measured in the Gulf.

ii. EPA’s Water Toxicity Testing

1. During the use of dispersants in the Gulf of Mexico, the EPA conducted toxicity testing of water samples containing oil-dispersant mixtures, once again with the intention of capturing the worst-case scenario. The EPA’s results were summarized as follows:

*...the toxicity data does not indicate any significant effects on aquatic life.*⁵⁸
2. Although the purpose of these toxicity tests were primarily to evaluate the environmental safety of the dispersants, the samples tested were a mixture of the dispersant and oil, so they were a direct and very effective measure of the “total” toxicity of the dispersant-oil mixture that was present.
3. The EPA also performed laboratory toxicity testing of numerous dispersants, including Corexit 9500 that was used in the Gulf of Mexico.⁵⁹ A battery of toxicity tests were conducted showing that, while dispersant products varied somewhat in their toxicity to specific organisms, Corexit 9500 generally was no more toxic than other dispersant

⁵⁸ U.S. EPA. BP's Analysis of Subsurface Dispersant Use, available at <http://www.epa.gov/bpspill/dispersants-bp.html>.

⁵⁹ The EPA published toxicity data for numerous dispersants including the Corexit 9500A that was used in this spill (Analysis of eight oil spill dispersants using rapid, in vitro tests for endocrine and other biological activity, Richard S. Judson et al. Environmental Science and Technology, 2010, 44, 5979-5985). See also Adriana C. Bejarano & Edwin Levine and Alan J. Mearns. Effectiveness and potential ecological effects of offshore surface dispersant use during the Deepwater Horizon oil spill: a retrospective analysis of monitoring data. (2013) Environ Monit Assess 185:10281–10295.

products. The concentrations required to elicit a toxic response could only have occurred very close to the time and location of dispersant application to the water. There are no data from the field to indicate there were ever harmful concentrations of the dispersant.

iii. NOAA's Water Toxicity Testing

1. The NOAA laboratory toxicity testing studies represent a large portion of the testing for potential toxicity of the oil and oil-dispersant mixtures, consisting of nearly 300 complete toxicity studies.
2. The data available from NOAA included no toxicity endpoint calculations and no summary of the tests or results (with a few exceptions) and no quality assurance validation.
3. Only about one third of NOAA's laboratory toxicity testing followed the standard methods for preparing a WAF or CEWAF⁶⁰ and those data are included in my analysis.
4. Over half of the laboratory toxicity tests used non-standard experimental methods and these were not used because of the lack of documented comparability to standard methods and because these methods do not provide a reasonable representation of conditions in the Gulf of Mexico. The reasons for excluding these data are explained in more detail in Appendix G.
5. There were only three standard WAF tests conducted by NOAA. The remainder were either CEWAF, which are included in my analysis, or novel experimental methods designed to test research hypotheses which were not included in my analysis.
6. The NOAA toxicity testing included seven different invertebrate species and eight different fish species. There was a focus on the most sensitive life stages of these organisms. Both acute and chronic toxicity was measured.
7. NOAA's toxicity tests indicate findings that are largely in agreement with similar tests conducted over the past few decades on oil and oil-dispersant mixture toxicities, including that fresh oil is more toxic than weathered oil; oil-dispersant mixtures are sometimes slightly more toxic than just oil, but many times there was no meaningful difference, and sometimes the oil alone was slightly more toxic; sub-lethal chronic toxicity endpoints require a lower exposure to elicit meaningful effects than acute toxicity endpoints; the addition of a source of ultraviolet light (UV) can increase toxicity in the laboratory; and early life stages, such as embryos and young larval stages, were more sensitive than adults.
8. Although these results add to the database we have on oil and oil-dispersant toxicity, none of these results alters our overall understanding of oil or dispersant toxicity.

⁶⁰ See Appendix G.

9. In the context of the *Deepwater Horizon* oil spill, a critical finding from NOAA's toxicity testing is that meaningful harmful effects usually only occurred at high concentrations of oil and dispersants; these concentrations were rarely seen in the actual chemistry data collected during and after the spill.
10. For example, even using a WAF at full strength (100% WAF), there was not meaningful toxicity (acute or chronic) observed for oyster embryos. This particular test used the equivalent of about 27 µg/L of total PAH. Only about 40 samples collected in the entire Gulf of Mexico exceeded 27 µg/L, and in this NOAA test, that level of exposure caused no toxicity.
11. There were other more sensitive species and life stages, but most of those still required the equivalent of at least 5 µg/L total PAH to cause meaningful harmful effects in the laboratory. Concentrations at 5 µg/L or higher were found in only about 200 of the 17,882 samples collected in the Gulf waters and all but a few of those were collected near the wellhead and during the time the oil was released. These statistics do not take into account the fact that the chemical fingerprint of about half of the samples that displayed concentrations at 5 µg/L or higher does not match MC252 oil.
12. Overall, the data from the NOAA laboratory toxicity tests are consistent with the benchmark analysis set forth above.

iv. *BP's Water Toxicity Testing*

1. The BP laboratory toxicity testing studies represent a comprehensive investigation into the potential toxicity of the oil and oil-dispersant mixtures, consisting of nearly 300 complete and validated toxicity studies and over 700 separate toxicity tests.
2. The data available from BP included complete reports of the toxicity studies and statistical analysis of toxicity endpoints.
3. The laboratory toxicity testing mostly followed the standard methods for preparing a WAF or CEWAF,⁶¹ and those data are included in my analysis.
4. A few of BP's laboratory toxicity tests used non-standard experimental methods, and these were not used because of the lack of documented comparability to standard methods. The same criteria for acceptance were applied to BP data and government toxicity data.
5. BP's toxicity studies included tests on fresh oil and specific PAH compounds as "positive" controls (using a chemical or mixture that you know will cause toxicity).
6. Most of the BP toxicity studies (217) tested the WAF from weathered oil collected in the Gulf of Mexico.

⁶¹ See Appendix G.

7. A substantial number of BP's toxicity studies (50) tested oil plus the Corexit 9500 dispersant, using the same field-collected weathered oil as above, plus freshly applied dispersant.
8. There were six studies testing the toxicity of the Corexit 9500 dispersant alone, without any oil.
9. In addition, 55 of BP's toxicity studies tested the toxicity of oil with strong UV radiation. UV light has been reported to increase the toxicity of some PAHs, while it also plays a very important role in the degradation of PAHs in surface waters.
10. The tested organisms consisted of marine algae, 10 different species of invertebrates and 8 different species of fish, multiple life stages (*e.g.*, newly fertilized eggs, newly hatched eggs, adults), and multiple acute and chronic time points (*e.g.*, 8 hours and 1, 2, 3, 4, 7, 21, and 28 days).
11. As with the NOAA tests, the vast majority of the tests were conducted on the life stages that are usually most sensitive to oil chemicals such as PAHs including eggs (embryos) and newly hatched eggs (1-15 days old).
12. The BP toxicity results were very consistent with those conducted by NOAA, as reported above. Thus, while these BP studies add to our database on oil and dispersant toxicity, they do not alter our general understanding of oil and dispersant toxicity. Below, I cover a few details not mentioned above.
13. The BP data included many standard WAF tests, and they were made mostly from two fresh and two weathered oils. A smaller series of tests were performed on oil supplied by NOAA that was artificially weathered in the laboratory. NOAA also performed tests on these same oils.
14. The fresh oil evidenced acute toxicity at about 80% of full strength to mysid shrimp but never to the silverside fish even at 100% (both organisms are commonly used in toxicity tests). Fresh oil only existed right at the wellhead where these species do not live.
15. For the fresh oil, chronic toxicity (21-28 days) to sensitive early life stages was observed at lower PAH concentrations, seen in about 100 samples, but again, fresh oil only existed near the wellhead.
16. WAFs of weathered oil were not acutely toxic to shrimp or silverside fish even at full strength (100%).
17. For moderately weathered oil, chronic toxicity (28 days) to sensitive early life stages of shrimp was observed at PAH concentrations seen in only a few samples and for the silverside fish at PAH concentrations seen in fewer than 100 samples.
18. For heavily weathered oil, chronic toxicity (21-28 days) to sensitive early life stages was never observed for shrimp and for the silverside fish only at PAH concentrations seen in a few samples.

19. These results consistently show that the toxicity of the oil decreases as the oil weathers. This is consistent with much of the data from NOAA and from the scientific literature.
20. Adding Corexit 9500 to the oil to create the chemically enhanced WAF, or CEWAF, generally does not change the toxicity much, causing toxicity to increase slightly in some tests⁶² and decrease in others. The most noticeable increases in toxicity of the CEWAF occurred with fresh oil and not with weathered oil.
21. The larval stages of spotted sea trout and red drum were about the same or even less sensitive than the silverside fish or shrimp, with even 100% fresh crude oil causing no toxicity to the sensitive larval stage of the red drum.
22. Rather than repeat the other conclusions from the NOAA toxicity tests, since they are essentially the same, I simply reiterate that the BP-sponsored toxicity testing is consistent with the EPA benchmark analysis of limited toxicity and with the conclusion that very few (less than 2%) of the 17,882 water samples would be potentially harmful to aquatic organisms.

v. *Sediment Toxicity Testing Generally*

1. Toxicity testing of sediment was performed on (a) samples that were collected during and shortly after the oil release and (b) laboratory-generated samples that were intended to serve as surrogate for what happened in the Gulf. The surrogate samples were generated in the laboratory by spiking clean sediment with an oil.
2. The sediment toxicity test data came from two sources: BP and NOAA.
3. The data from BP include full toxicity endpoint analysis and a document summarizing the tests and the results, and verifying quality assurance validation.
4. The data from NOAA included no endpoint calculations and no summary of the tests or results or quality assurance validation.

vi. *NOAA's Sediment Toxicity Testing*

1. There was no comprehensive sampling survey of sediment toxicity, but some sediment samples were collected and sent to different laboratories for different types of toxicity tests.
2. There were two types of toxicity tests on field-collected sediment: (1) *Whole Sediment* toxicity tests using the whole unaltered sediment, and (2) *Sediment Elutriate* toxicity tests where the sediment is mixed with water and the water (known as the elutriate) is tested for toxicity. The whole sediment tests are the preferred standard, whereas the elutriate

⁶² The addition of dispersants like Corexit may increase the concentration of oil in the WAF and thereby increases the toxicity of the WAF. It does not make the oil more toxic.

tests are easier to perform. Both are commonly used and accepted, and both were used in my analysis.

3. There were also laboratory tests where oil was added (spiked) to clean sediment to conduct toxicity experiments.
4. Toxicity tests using field-collected sediment on the oyster, flounder, and shrimp showed no meaningful mortality.
5. Sediment toxicity tests using an amphipod crustacean showed mortality in six samples and no mortality in four samples. There were insufficient data provided to explain this difference.
6. Sediment toxicity tests on blue crabs showed no toxicity even at PAH concentrations far in excess of any measured in the field.
7. Sediment elutriate toxicity tests on oyster embryos showed some mortality at the highest concentrations in two samples and no mortality at any concentrations in a third sample.
8. Clean sediments were spiked with two different weathered oils by five different labs for a total of 15 sediment spiking toxicity studies. There was no standardization of the tests, so it is not possible to directly compare the data across the studies.
9. In a series of oil-spiked sediment tests, there was little or no toxicity relative to control tests for shrimp, flounder, oyster, and the killifish.
10. Another oil-spiked sediment test showed toxicity to flounder only at oil levels far in excess of that found in the Gulf of Mexico.
11. A series of oil-spiked sediment tests with the amphipod *Leptocheirus* showed toxicity in 13 samples and little or no toxicity in 27 samples. In general, toxicity was found only in samples spiked with oil far in excess of what was found in the Gulf of Mexico.
12. Given the low numbers of field-collected sediment samples tested for toxicity, one cannot draw significant conclusions from these data. However, knowing that sediment sampling was targeted to find samples with the highest amount of oil and oil-related chemicals, these toxicity test results indicate that some toxicity in sediments likely occurred but was limited.
13. Overall, the toxicity tests using weathered oil spiked into clean sediments indicated toxicity generally only occurs at oil concentrations far in excess of what was actually measured in the Gulf of Mexico.

vii. BP's Sediment Toxicity Testing

1. Sediment toxicity testing was conducted on samples collected in the oil spill zone using two very common and standard sediment toxicity test organisms (the amphipod crustacean, *Leptocheirus plumulosus*, and the Gulf-coast shrimp, *Americamysis bahia*). These tests are conducted by placing the test organisms in the sediment for either 4 days

or 10 days (depending on the test), counting the number that survive at the end of the test and then comparing this result to a clean control sediment that is known not to cause toxicity.

2. There were two types of sediments toxicity tests: (1) *Whole Sediment* toxicity tests using the whole unaltered sediment and (2) *Sediment Elutriate* toxicity tests where the sediment is mixed with water and the water (or elutriate) is tested for toxicity. The whole sediment tests are the preferred standard, whereas the elutriate tests are easier to perform. Both are commonly used and accepted, and both were used in my analysis.
3. The vast majority of the sediment samples collected were no different from the controls and were considered safe (Figure 17), with only 6 out of 153 sediment samples (4%) considered potentially harmful. This result is consistent with the sediment chemistry data that indicated only about 2% of the sediment samples would be potentially harmful to sediment dwelling organisms.

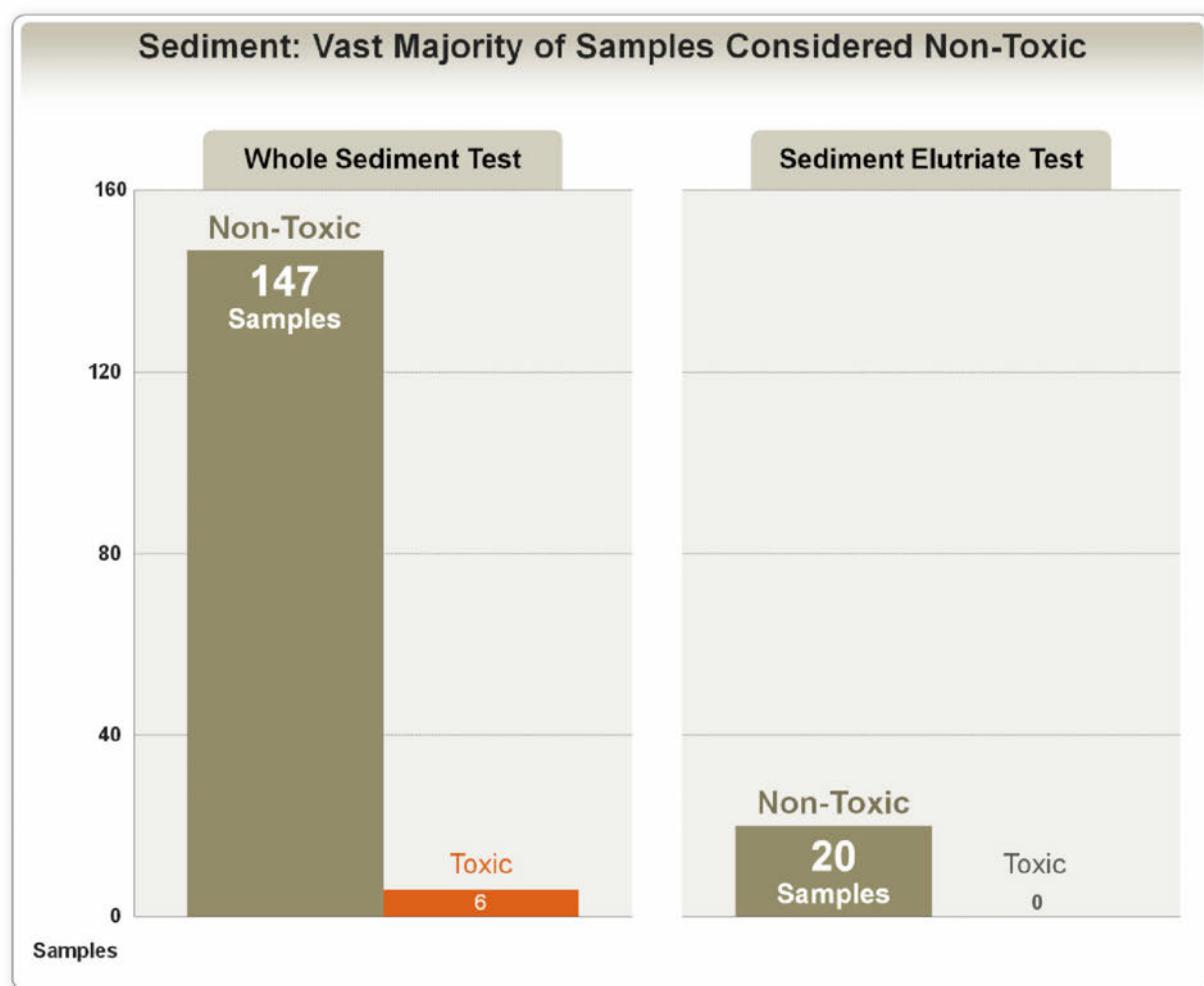


Figure 17. The whole sediment and sediment elutriate tests indicated that very few sediments were potentially harmful to sediment dwelling organisms.

VI. THE CHEMISTRY AND TOXICITY RESULTS ARE NOT SURPRISING

The results above are not surprising given the location of the spill, the environmental conditions in the Gulf of Mexico, and the behavior of oil in the environment. Most of the oil released from the Macondo wellhead was rendered harmless very quickly through dilution, evaporation, biodegradation, and other processes.

Scientists understand very well how oil moves in the environment, and how factors such as location, weathering, biodegradation, dissolution, evaporation, and other processes -- together with important response actions such as skimming, burning, and dispersing oil -- can limit the environmental effects of an oil spill.⁶³ This understanding helps explain the chemistry and toxicity results reported above. This next section of my report will briefly discuss these important factors.

A. Overview

1. To provide context for the discussion that follows, I begin with a brief description of the principal steps in the oil's pathway from the wellhead into the water column, to the surface and into the air, and of the biodegradation, dissolution, dilution, photodegradation, and other processes that reduced the oil's toxicity.
2. When the oil first left the wellhead, it rose upwards and broke apart into droplets. The larger of these droplets rose directly to the surface, while the smallest ones generally migrated at depth southwest with the currents.
3. The droplets that rose directly to the surface coalesced into thin slicks that were either skimmed, burned, or dispersed into the water by the response workers, or that evaporated, degraded, washed onto the shore, and dispersed naturally.
4. At every step of the oil's pathway through the water, the oil was dissolving and dispersing via dilution. Oil is composed of many chemicals, some slightly soluble in water (meaning that they can dissolve) and others practically insoluble. The most soluble chemicals dissolved along the path from the wellhead to the surface, leaving the less-soluble chemicals to form the slick.
5. The Macondo oil itself is a "light" crude oil and is known to contain much lower amounts of the potentially toxic PAH chemicals compared to "heavier" oils and also to degrade much more quickly than heavier crude oils.

⁶³ Farrington, J.W. 2014. Oil Pollution in the Marine Environment II: Fates and Effects of Oil Spills. Environment: Science and Policy for Sustainable Development 56:16, 20. ("There was much stated in the early stages of the BP Deepwater Horizon Macondo well accident that this accident was unprecedented and the fate of the gas and oil underwater in the deep water of 1500 meters was unexpected. It was unprecedented but not unexpected.").

6. Biodegradation also occurred at every step of this pathway in the water. The bottom of the Gulf releases oil through natural seeps. The oil from these seeps sustains great populations of oil-consuming bacteria in a hydrocarbon-rich ecological system. During the spill, these bacteria quickly consumed oil and oil constituents, just as they naturally consume the oil from seeps. This process, called biodegradation, removed Macondo oil from the environment.
7. The oil droplets that reached the surface coalesced into slicks, which the response skimmed and burned. Sunlight and waves contributed as well, the former breaking down the oil chemicals and the latter breaking up the slicks.
8. Some of the remaining slicks traveled to the shores of the Gulf states. To minimize the impact of these slicks, response workers applied chemical dispersants both at the wellhead and on the slicks themselves. The dispersants applied at the wellhead helped keep the droplets from surfacing, and the dispersants applied at the surface helped break up the slicks and put the oil back into the water to degrade.
9. In the remainder of this section, I describe each of the major steps of this pathway: the flow out of the wellhead, the deep dissolved oil and small oil droplets, the rise of the larger droplets through the water column and attendant dissolution, the formation of surface slicks, and the destruction of the oil by the ever-present bacteria that consumed it.
10. While picturing what is happening to the oil and oil-related chemicals, it is important to understand how dissolution (dissolving the chemical in water) and dilution (the mixing of a more concentrated solution of the chemical with clean water) are distinct processes but they work hand-in-hand to reduce toxicity.
11. When oil and water are mixed, and the more soluble chemicals begin to dissolve, it is these dissolved chemicals (mostly) that can cause potential toxicity. If your oil-water system were “closed and sterile,” the dissolved chemical would build up and eventually cause toxicity. This is exactly what happens in the laboratory WAF toxicity testing.
12. But as you will see in the discussion below – the Gulf of Mexico is far from a “closed and sterile” environment. In an open dynamic system like the Gulf, the dissolved chemicals are quickly diluted to harmless exposures by the constant mixing with the cleaner ocean water.
13. And these diluted oil-related chemicals are then also available to be consumed by bacteria, evaporated (if at the water surface), or degraded by non-biological pathways.
14. These processes are captured in the diagram shown in Figure 18.

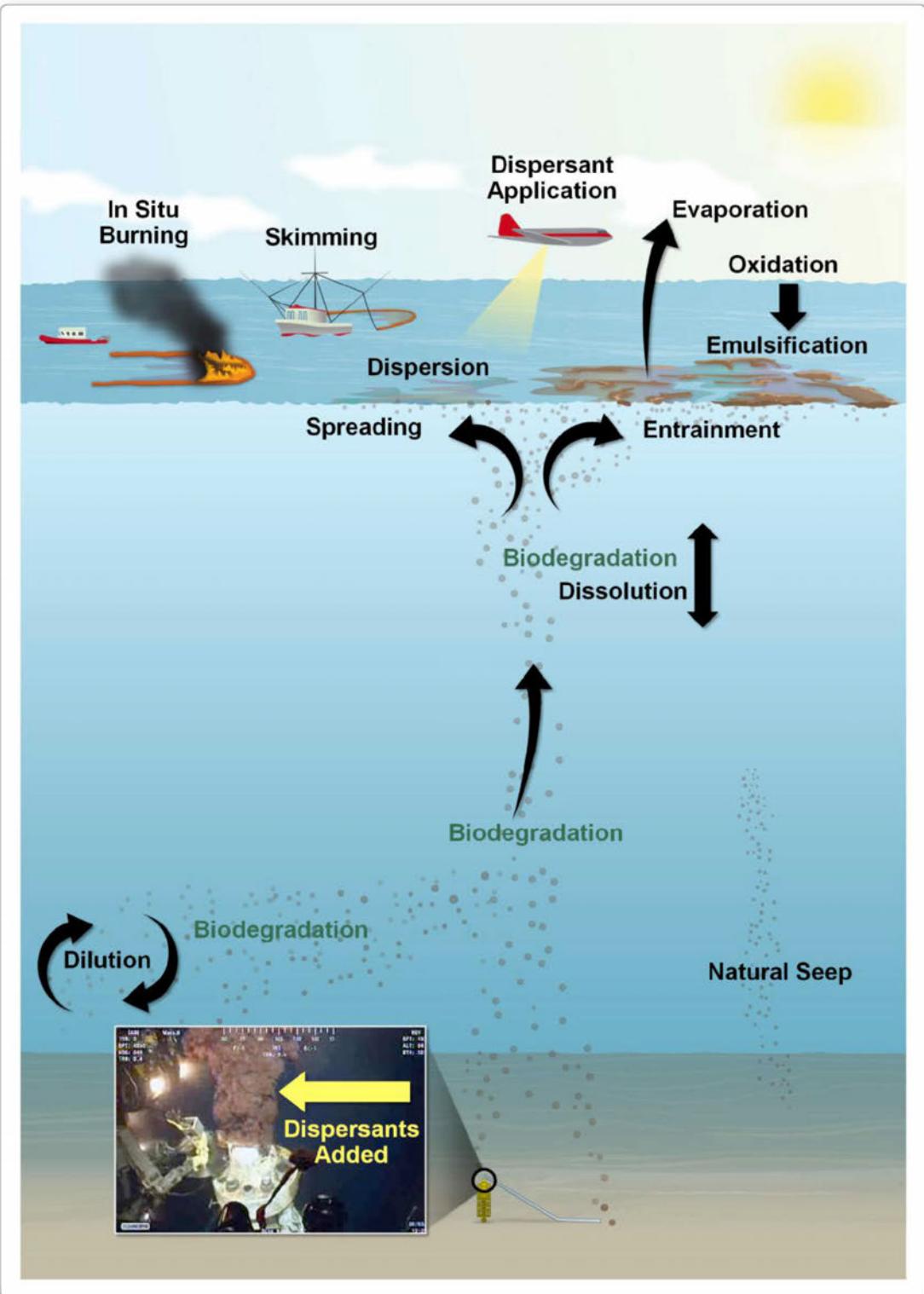


Figure 18. Some of the pathways and processes acting on the spilled oil are shown here. Details are provided in the text. Note that *biodegradation* is taking place everywhere and all the time.

B. The Oil Immediately After It Left the Wellhead

1. The pressurized oil and gas rose from the wellhead fragmenting into droplets of various sizes.⁶⁴ The most soluble oil components began to dissolve, and the oil either rose directly as buoyant droplets or traveled with the deep ocean currents away from the wellhead.
2. Whether the oil rose directly from the wellhead or traveled with the ocean currents depended on whether it was dissolved or in droplets, and whether the droplets were large or small. The dissolved oil chemicals and the smallest droplets, those below a few thousandths of an inch, had low or negligible buoyancy and traveled with the ocean currents.^{65,66} The larger droplets floated directly up to the surface and coalesced into slicks,⁶⁷ with the largest droplets surfacing the fastest.
3. In an effort to reduce the amount of surfacing oil, protect surface life and shorelines, and protect the response workers at the sea surface, the response workers injected dispersants at the wellhead.^{68,69} Dispersants act to reduce droplet size, thereby increasing the number of droplets, reducing the number that rise to form slicks, slowing the ascent of those that rise and increasing the amount of oil that dissolves.

C. The Oil Mixture at Depth

1. The oil, oil compounds, and dispersants that moved with the currents at depth traveled to the southwest where biodegradation and mixing quickly removed or diluted them. This oil mixture was well studied during the response, in part because scientists and response workers were concerned that the bacteria degrading this mixture might consume so much

⁶⁴ Socolofsky, S.A., Adams, E.E., Sherwood, C.R. 2011. Formation dynamics of subsurface hydrocarbon intrusions following the Deepwater Horizon blowout. *Geophysical Research Letters* 38:L09602..

⁶⁵ Ryerson, T.B., Camilli, R., Kessler, J.D., Kujawinski, E.B., Reddy, C.M., Valentine, D.L., Atlas, E., Blake, D.B., Joost de Gouw, M.S., Parrish, D.D., Peischla, J., Seewald, J.S., and Warneke, C. 2012. Chemical data quantify Deepwater Horizon hydrocarbon flow rate and environmental distribution. *PNAS* 109(50):20246-20253.

⁶⁶ Federal Interagency Solutions Group, Oil Budget Calculator Science and Engineering Team. Oil Budget Calculator, Deepwater Horizon (November 2010).

⁶⁷ Ryerson, T.B., Camilli, R., Kessler, J.D., Kujawinski, E.B., Reddy, C.M., Valentine, D.L., Atlas, E., Blake, D.B., Joost de Gouw, M.S., Parrish, D.D., Peischla, J., Seewald, J.S., and Warneke, C. 2012. Chemical data quantify Deepwater Horizon hydrocarbon flow rate and environmental distribution. *PNAS* 109(50):20246-20253.

⁶⁸ Federal On-Scene Coordinator. On Scene Coordinator Report, Deepwater Horizon Oil Spill, Submitted to the National Response Team (September 2011).

⁶⁹ See Dep. of Dr. Jane Lubchenco at 105:9-11 (“using dispersants decreases environmental risks to shorelines and organisms at the surface”).

oxygen that the oxygen would fall to dangerously low levels (it did not).^{70, 71, 72} The deep layer also was the only area outside the slicks and immediate vicinity of the wellhead that had the potential for significant toxicity. The sampling locations for this oil mixture are shown in Figure 2.

2. As a result, we have a clear picture of the dynamics of the oil mixture at depth. The primary layer formed near the wellhead at around 900-1300 meters,^{73,74} migrated to the southwest^{75, 76, 77} and quickly biodegraded and diluted below levels of toxicological relevance. There were secondary layers of the oil mixture at shallower depths, but the deepest layer carried the highest concentrations.⁷⁸ Even the deepest layer was quite dilute; as discussed in Section IV.A and shown in Figure 8, out of 3,883 samples collected from the deep layer between 900-1300 meters, only 1.1% (chronic) and 0.4% (acute) of the samples were above toxicity benchmarks.

D. The Rising Oil Droplets

1. The oil droplets too large to stay at depth rose to the surface.⁷⁹ This rise period was important because it provided time for the more soluble oil chemicals to dissolve out of the droplets.

⁷⁰ U.S. Coast Guard and U.S. EPA, Dispersant Monitoring and Assessment Directive for Subsurface Dispersant Application at 3 (May 10, 2010).

⁷¹ Joint Analysis Group, Review of Preliminary Data to Examine Oxygen Levels In the Vicinity of MC252#1, May 8 to August 9, 2010 (Aug. 16, 2010).

⁷² BP, Part I, Dispersed Plume Characterization Plan, Proof of Concept (May 8, 2010).

⁷³ Socolofsky, S.A., Adams, E.E., and Sherwood, C.R. 2011. Formation dynamics of subsurface hydrocarbon intrusions following the Deepwater Horizon blowout. Geophysical Research Letters 38:L09602.

⁷⁴ Spier, C., Stringfellow, W.T., Hazen, T.C., and Conrad, M. Distribution of hydrocarbons released during the 2010 MC252 oil spill in deep offshore waters. Environmental Pollution 173:224-30.

⁷⁵ Diercks, A.R., Highsmith, R.C., Asper, V.L., Joung, D-J., Zhou, Z., Guo, L., Shiller, A.M., Joye, S.B., Teske A.P., Guinaso N., Wade, T.L., and Lohrenz, S.E. 2010. Characterization of Subsurface Polycyclic Aromatic Hydrocarbons at the Deepwater Horizon Site. Geophysical Research Letters 37(L20602):1-6, doi:10.1029/2010GL045046.

⁷⁶ Camilli, R., Reddy, C.R., Yoerger, D.R., Van Mooy, B.A.S., Jakuba, M.V., Kinsey, J.C., McIntyre, C.P., Sylva, S.P., and Maloney, J.V. 2010. Tracking Hydrocarbon Plume Transport and Biodegradation at Deepwater Horizon. Science 330:201-204.

⁷⁷ Kessler, J.D., Valentine, D.L., Redmond, M.C., Du, M., Chan, E.W., Mendes, S.D., Quiroz, E.W., Villanueva, C.J., Shusta, S.S., Werra, L.M., Yvon-Lewis, S.A., and Weber, T.C. 2011. A Persistent Oxygen Anomaly Reveals the Fate of Spilled Methane in the Deep Gulf of Mexico. Science 331:312-15.

⁷⁸ Spier, C., Stringfellow, W.T., Hazen, T.C., and Conrad, M. Distribution of hydrocarbons released during the 2010 MC252 oil spill in deep offshore waters. Environmental Pollution 173:224-30.

⁷⁹ Ryerson, T.B., Camilli, R., Kessler, J.D., Kujawinski, E.B., Reddy, C.M., Valentine, D.L., Atlas, E., Blake, D.B., Joost de Gouwa, M.S., Parrish, D.D., Peischla, J., Seewald, J.S., and Warneke, C. 2012.

2. For example, one study estimated that fully 25% of mass of the oil and gas mixture rising from the wellhead dissolved before reaching the surface.⁸⁰

E. The Surface Slick

1. The surface slick was a visible manifestation of the oil after the release and was frequently photographed and discussed in the media but largely misunderstood. Slicks from surface spills (e.g., from oil tankers or pipelines) can release toxic chemicals into the surface waters under the slicks where many fish, shellfish, and other marine organisms spend some or all of their lives. The *Deepwater Horizon* slick, however, resulted from a subsea release rather than a surface spill. In the *Deepwater Horizon* incident, some of the oil chemicals dissolved before the droplets reached the surface, and other droplets and oil chemicals traveled to the southwest in a layer 900-1300 meters deep.
2. Even the word “slick” can be misleading. The word “slick” may conjure up the image of a blanket of black oil covering the sea surface, which was not how the *Deepwater Horizon* oil actually appeared on the ocean surface. Aerial photographs of the *Deepwater Horizon* slicks, including those included as Figure 18 and Figure 19, generally show that the slicks were bands of lightly-colored oil rather than black blankets.
3. These bands of oil changed from day to day, but on any particular day only a small area might be covered by slick. Furthermore, slicks are often microscopically thin, no more than a few thousandths of an inch.^{81,82} Figure 19 provides an example of a *Deepwater Horizon* slick.⁸³

Chemical data quantify Deepwater Horizon hydrocarbon flow rate and environmental distribution. PNAS 109(50):20246-20253, p. 1.

⁸⁰ Ryerson, T.B., Camilli, R., Kessler, J.D., Kujawinski, E.B., Reddy, C.M., Valentine, D.L., Atlas, E., Blake, D.B., Joost de Gouw, M.S., Parrish, D.D., Peischla, J., Seewald, J.S., and Warneke, C. 2012. Chemical data quantify Deepwater Horizon hydrocarbon flow rate and environmental distribution. PNAS 109(50):20246-20253, p. 3.

⁸¹ NOAA Office of Response and Restoration, Emergency Response Division. Deepwater Horizon Oil: Characteristics and Concerns (May 15, 2010).

⁸² Federal Interagency Solutions Group, Oil Budget Calculator Science and Engineering Team. Oil Budget Calculator, Deepwater Horizon (November 2010).

⁸³ NOAA Office of Response and Restoration, Training: Aerial Observation of Oil Spills, available at <http://response.restoration.noaa.gov/training-and-education/training/workshops/aerial-observation-training.html>.



<http://response.restoration.noaa.gov/training-and-education/training/workshops/aerial-observation-training.html>

Figure 19. Example of a typical Deepwater Horizon “slick,” consisting most often of scattered ribbons of thin sheens of highly weathered oil.



<http://incidentnews.noaa.gov/incident/8220/526518/DSC07724.JPG>

Figure 20. Example of an oil-water emulsion known as “mousse”, which is highly weathered oil mixed with water observed to be as much as one to two-tenths of an inch thick.

4. The *Deepwater Horizon* slicks had lost significant amounts of their mass,⁸⁴ to dissolution and small droplets, by the time they reached the surface. The dissolution was part of the chemical “weathering” of the *Deepwater Horizon* oil.
5. This weathering continued after surfacing, by evaporation, photodegradation, and dispersion back into the water column. The exact amount of weathering is unknown, but the Federal Interagency Solutions Group, in its Oil Budget Calculator, estimated that the oil that surfaced had lost between 37% and 50% of its volume to evaporation and dissolution.⁸⁵ Other estimates have found that 61% of the oil volume would have been lost to evaporation in the absence of dissolution.⁸⁶ Response workers supplemented this natural weathering by skimming, burning, and dispersing the oil with chemical dispersants.
6. In sum, many of the most soluble oil chemicals dissolved as the droplets rose to the surface, and additional chemicals evaporated once the droplets arrived there.⁸⁷

F. Biodegradation

Throughout the pathways described above, from wellhead to slicks, bacteria consumed the oil. These oil-consuming bacteria were abundant at the time of the spill because oil seeps naturally into the northern Gulf at rates high enough to support large, robust bacterial populations.⁸⁸ Consequently, when the *Deepwater Horizon* oil flowed out of the wellhead, bacteria were there to consume it.

⁸⁴ Ryerson, T.B., Camilli, R., Kessler, J.D., Kujawinski, E.B., Reddy, C.M., Valentine, D.L., Atlas, E., Blake, D.B., Joost de Gouw, M.S., Parrish, D.D., Peischla, J., Seewald, J.S., and Warneke, C. 2012. Chemical data quantify Deepwater Horizon hydrocarbon flow rate and environmental distribution. PNAS 109(50):20246-20253.

⁸⁵ Federal Interagency Solutions Group, Oil Budget Calculator Science and Engineering Team. Oil Budget Calculator, Deepwater Horizon at 19 (November 2010).

⁸⁶ Lewan, M.D., Warden, A., Dias, R.F., Lowry, Z.K., Hannah, T.L., Lillis, P.G., Kokaly, R.F., Hoefen, T.M., Swayze, G.A., Mills, C.T., Harris, S.H., and Plumlee, G.S. 2014. Asphaltene content and composition as a measure of Deepwater Horizon oil spill losses within the first 80 days. Organic Geochemistry 75:54-60, doi:10.1016/j.orggeochem.2014.06.004.

⁸⁷ Reddy, C.M., Arey, J.S., Seewald, J.S., Sylva, S.P., Lemkau, K.L., Nelson, R.K., Carmichael, C.A., McIntyre, C.P., Fenwick, J., Ventura, G.T., Van Mooy, B.A.S., and Camilli, R. 2012. Composition and fate of gas and oil released to the water column during the Deepwater Horizon oil spill. PNAS 109(50):20229-20234.

⁸⁸ Smith, R.H., Johns, E.M., Goni, G.J., Trinanes, J., Lumpkin, R., Wood, A.M., Kelble, C.R., Cummings, S.R., Lamkin, J.T., Privoznik, S. 2014. Oceanographic conditions in the Gulf of Mexico in July 2010, during the Deepwater Horizon oil spill. Continental Shelf Research 77(1):118-131.

Natural Seeps

1. The presence of natural seeps in the Gulf of Mexico has been known for many years. According to J.R. MacDonald and his colleagues, who were among the early researchers who studied the Gulf seeps:

Evidence for extensive natural hydrocarbon seepage in this region comes from historical records of floating and beached oil that predate modern offshore production and transport, from extensive collections of oil-stained marine sediments, and from widespread occurrence of chemosynthetic tube worms, mussels, and clams, which depend on chemically reduced compounds associated with hydrocarbon seepage.⁸⁹

2. In 1993, Dr. MacDonald and his colleagues provided one of the first estimates of the total oil seepage. Using satellite imagery, they concluded that at least 120,000 barrels of oil a year were seeping into the northern Gulf.
3. Other estimates followed, including a 2003 estimate by Kvenvolden and Cooper of approximately 550,000 barrels per year,⁹⁰ and an estimate by the U.S. Minerals Management Service (now the Bureau of Ocean Energy Management) of 40 million gallons per year, or 1.27 million barrels per year.⁹¹
4. To help visualize the Gulf of Mexico seeps, I have reproduced a figure below (Figure 21) that shows some of the locations in the northern Gulf where seeps are likely to be present.⁹²

⁸⁹ Macdonald, I.R., Guinasso, N.L. Jr., Ackleson, S.G., Amos, J.F., Duckworth, R., Sassen, R., Brooks, J.M. 1993. Natural Oil Slicks In The Gulf Of Mexico Visible From Space. *Journal of Geophysical Research* 98(C9):16,351-16,364 (citations omitted).

⁹⁰ Kvenvolden, K. A. and Cooper, C. K. 2003. Natural seepage of crude oil into the marine environment. *Geo-Marine Letters* 23(140).

⁹¹ Memorandum from Captain J.E. Hanzlik to RRT VI Consensus Network Participants dated May 13, 2010 at 4. See also, National Research Council. 2003. *Oil on the Sea III: Inputs, Fates and Effects at 191*, available at http://www.nap.edu/catalog.php?record_id=10388 (summarizing estimates of seeps in the Northern Gulf of Mexico).

⁹² Lanoil, B.D., et al. 2001. Bacteria and Archaea physically associated with Gulf of Mexico gas hydrates. *Applied and Environmental Microbiology* 67(11):5143-5153.

Map of the Natural Oil Seeps in the Northern Gulf of Mexico

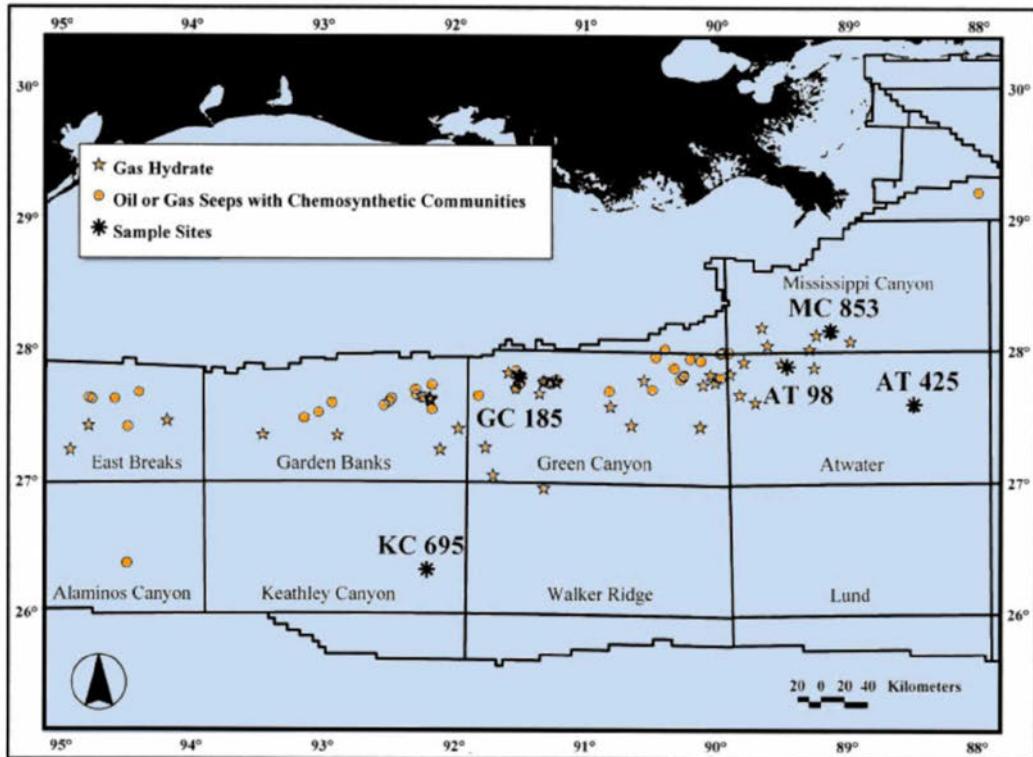


Figure 21. A non-comprehensive map of natural oil seeps in the northern Gulf of Mexico.

Bacterial Biodegradation

1. The large amounts of oil that seep into the Gulf of Mexico support proportionately large numbers of bacteria that consume seep oil. These were the bacteria that consumed the oil from the *Deepwater Horizon*.
2. The bacteria that consumed the *Deepwater Horizon* oil did so quickly. Dr. Jane Lubchenco, the NOAA Administrator from 2009 to 2013, remarked on this during her deposition in this case. She described as follows what happened when the bacteria encountered the *Deepwater Horizon* oil:

*...the bacteria that are normally decomposing that [seep] oil began to do so with the MC252 oil. And they consumed it rapidly . . .*⁹³

⁹³ Dep. of Dr. Jane Lubchenco, 90:9-14.

3. One reason the bacteria consumed the oil so quickly was that their ancestors have consumed Gulf oil for millennia, and they can do so both at the surface of the Gulf⁹⁴ and in its cold, deep waters.^{95, 96, 97} For some classes of oil chemicals, the half-lives ranged from only 1.2 to 6.1 days.^{98, 99, 100} Other classes of chemicals had longer half-lives,¹⁰¹ but for PAHs and other chemicals of toxicological significance, the half-lives of chemicals in the seawater were generally expected to be short.¹⁰²
 4. To put this in perspective, if a compound has a half-life of one day, bacteria will consume more than 90% of it in less than four days. If a compound has a half-life of one week, bacteria will consume more than 90% of it in less than four weeks. Thus, much of the oil released into the water quickly disappeared, consumed by the abundant populations of bacteria sustained by the Gulf's natural seeps.
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⁹⁴ Edwards, B.R., Reddy, C.M., Camilli, R., Carmichael, C.A., Longnecker, K., Van Mooy, B.A.S. 2011. Rapid microbial respiration of oil from the Deepwater Horizon spill in offshore surface waters of the Gulf of Mexico. Environmental Research Letters 6(035301), doi:10.1088/1748-9326/6/3/035301, 9 pp.

⁹⁵ Redmond, M.C. and Valentine, D.L. 2011. Natural gas and temperature structured a microbial community response to the Deepwater Horizon oil spill. PNAS 109:20292-20297.

⁹⁶ Valentine D.L., et al. 2010. Propane respiration jump-starts microbial response to a deep oil spill. Science 330:208-211.

⁹⁷ Hazen, T.C., Dubinsky, E.A., DeSantis, T.Z., Andersen, G.L., Piceno, Y.M., Singh, N., Jansson, J.K., Probst, A., Borglin, S.E., Fortney, J.L., Stringfellow, W.T., Bill, M., Conrad, M.E., Tom, L.M., Chavarria, K.L., Alusi, T.R., Lamendella, R., Joyner, D.C., Spier, C., Baelum, J., Auer, M., Zemla, M.L., Chakraborty, R., Sonnenthal, E.L., D'Haeseleer, P., Holman, H.Y.N., Osman, S., Lu, Z.M., Van Nostrand, J., Deng, Y., Zhou, J.Z., and Mason, O.U. 2010. Deep-sea oil plume enriches indigenous oil-degrading bacteria. Science 330:204-208.

⁹⁸ Hazen, T.C., Dubinsky, E.A., DeSantis, T.Z., Andersen, G.L., Piceno, Y.M., Singh, N., Jansson, J.K., Probst, A., Borglin, S.E., Fortney, J.L., Stringfellow, W.T., Bill, M., Conrad, M.E., Tom, L.M., Chavarria, K.L., Alusi, T.R., Lamendella, R., Joyner, D.C., Spier, C., Baelum, J., Auer, M., Zemla, M.L., Chakraborty, R., Sonnenthal, E.L., D'Haeseleer, P., Holman, H.Y.N., Osman, S., Lu, Z.M., Van Nostrand, J., Deng, Y., Zhou, J.Z., and Mason, O.U. 2010. Deep-sea oil plume enriches indigenous oil-degrading bacteria. Science 330:204-208.

⁹⁹ Bælum, J., Borglin, S., Chakraborty, R., Fortney, J.L., Lamendella, R., Mason, O.U., Auer, M., Zemla, M., Bill, M., Conrad, M.E., Malfatti, S.A., Tringe, S.G., Holman, H.Y., Hazen, T.C., and Jansson, J.K. 2012. Deep-sea bacteria enriched by oil and dispersant from the Deepwater Horizon spill. Environmental Microbiology, doi:10.1111/j.1462-2920.2012.02780.

¹⁰⁰ Chakraborty, R., Borglin, S.E., Dubinsky, E.A., Andersen, G.L., and Hazen, T.C. 2012. Microbial response to the MC-252 oil and Corexit 9500 in the Gulf of Mexico. Frontiers in Microbiology, Microbiotechnology, Ecotoxicology and Bioremediation 3(357):1-6, 4 doi: 10.3389/fmicb.2012.00357.

¹⁰¹ See, e.g., Valentine D.L., et al. 2010. Propane respiration jump-starts microbial response to a deep oil spill. Science 330:208-211, p. 1.

¹⁰² Siron, R., Pelletier, E., and Brochu, C. Environmental Factors Influencing the Biodegradation of Petroleum Hydrocarbons in Cold Seawater. Archives of Environmental Contamination and Toxicology 28(4):406-416.

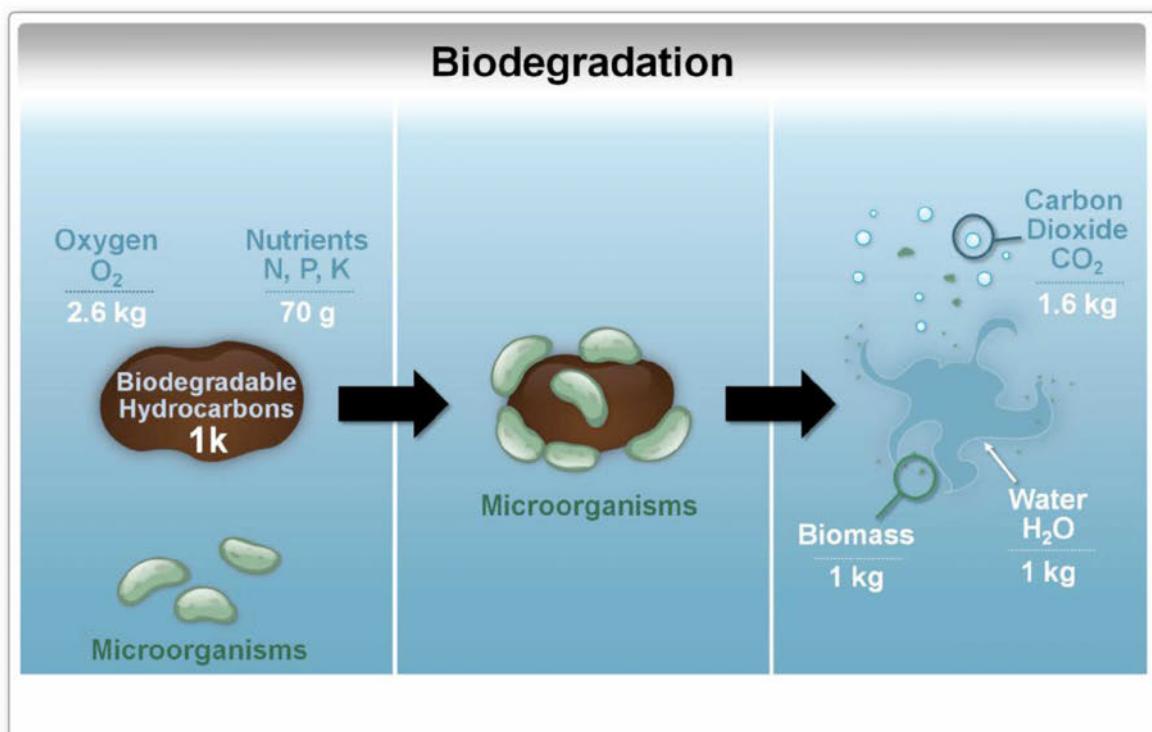


Figure 22. A conceptual picture of how the bacteria cover an oil drop and convert much of it to harmless carbon dioxide and water.

5. A second reason the bacteria consumed the oil so quickly was the recirculating Gulf currents.¹⁰³ When the bacteria first encountered the oil, the bacterial populations had to grow before they could reach their maximum consumption rate. The recirculating Gulf currents took care of this by periodically carrying the oil and bacteria back to the wellhead rather than off to the southwest. As a result, the oil that emerged from the wellhead often encountered bacteria that already had grown populous by consuming oil. These bacteria required little time to begin rapid biodegradation.
6. A third reason the bacteria consumed the oil so quickly was the subsea dispersants injected at the wellhead. As Dr. Lubchenco explained:

And they consumed it rapidly, especially -- especially because dispersants were used which breaks up the oil into smaller particles to make them more available to the bacteria.¹⁰⁴

Dispersants break up the oil, making it more available to be consumed by bacteria.¹⁰⁵

¹⁰³ Valentine, D.L., Mezic, I., Macešić, S., Crnjarić-Žic, N., Ivic, S., Hogand, P.K., Fonoberove, V.A., and Loireb, S. 2012. Dynamic autoinoculation and the microbial ecology of a deep water hydrocarbon irruption. PNAS 100:20286.

¹⁰⁴ Dep. of Dr. Jane Lubchenco, 90:11-14. See also Lubchenco, J., McNutt, M.K., Dreyfus, G., Murawski, S.A., Kennedy, D.M., Anastas, P.T., Chu, S., and Hunter, T. 2012. Science in support of the Deepwater Horizon response. PNAS 109(50), doi:10.1073/pnas.1204729109.

7. When bacteria consume hydrocarbons, they break down the components of the oil, thereby removing potential toxicity from the environment.
8. Thus, the bacteria in the Gulf did what they had evolved to do -- they consumed the oil. They did so more quickly than might have been expected because of the inherent capacity of the bacteria themselves, the recirculating Gulf currents and the injection of dispersants at the wellhead.

E. Summary

1. The oil left the wellhead and then fragmented into small droplets, with the smallest remaining behind in a deep layer of droplets and dissolved oil that drifted to the southwest. The larger droplets rose to the surface, shedding dissolved chemicals along the way. Once at the surface, the droplets coalesced into slicks, evaporated, photo-degraded, dispersed, and were subject to response actions. And bacteria consumed the oil, particularly the oil that was in the water.
2. As a result, only a few areas in Gulf waters ever had the potential to create toxicity. The areas that had potential to create toxicity -- for example, the area immediately around the wellhead -- promptly fell below the EPA toxicity benchmarks soon after the wellhead was capped.

The opinions I have provided in this report are based on the documents and data referred to in this report¹⁰⁵ combined with my education and experience.¹⁰⁶ I am continuing to review environmental data from the spill. Should additional information or data become available, I may amend these opinions if warranted.



August 15, 2014

Dr. Damian Shea

¹⁰⁵ Dep. of Dr. Jane Lubchenco, 90:21-22.

¹⁰⁶ A complete list of materials referred to in this report is provided in Appendix A.

¹⁰⁷ My CV is provided in Appendix B.

VII. APPENDICES

Appendix A. Consideration Materials

Appendix A-1: Confidential Reports, Deposition Transcripts, and Other Materials	
Date	Description
2011-00-00	Deepwater Horizon Quality Assurance Project Plan For The BP MC252 Incident Sample Management Group. 2011. BP-MC252-QAPP, 55 pp + Appendices.
2014-06-11	Deposition of Dr. Amy Merten.
2014-07-10	Deposition of Dr. Jane Lubchenco.
2014-00-00	General Laboratory Protocols and Procedures: Deepwater Horizon Laboratory Toxicity Testing. 2014. Prepared for: U.S. Department of Commerce, National Oceanic and Atmospheric Administration. Prepared by: Stratus Consulting Inc.
2010-11-00	NOAA/BP-ENTRIX NRDA Cooperative Deep Tow Cruise 1, November 2010 Arctic-HOS Davis 4 Cruise Plan. Study Reference No. 140, p. 1.
2014-02-04	Quality Assurance Project Plan: Deepwater Horizon Laboratory Toxicity Testing Version 4. 2014. Prepared for: U.S. Department of Commerce, National Oceanic and Atmospheric Administration. Prepared by: Stratus Consulting Inc., February 4, 2014, 34 pp + Appendices.

Appendix A-2: Books, Papers, Reports, and Photographs in the Public Domain	
Date	Description
2007-03-01	Akita, Y., Carter, G., and Serre, M.L. 2007. Spatiotemporal Non-Attainment Assessment of Surface Water Tetrachloroethene in New Jersey. Journal of Environmental Quality 36(2):508-520.
2012-11-15	Analytical Quality Assurance Plan Mississippi Canyon 252 (Deepwater Horizon) Natural Resource Damage Assessment. Version 3.1, 2012, 38pp.
2012-00-00	Bælum, J., Borglin, S., Chakraborty, R., Fortney, J.L., Lamendella, R., Mason O.U., Auer, M., Zemla, M., Bill, M., Conrad, M.E., Malfatti, S.A., Tringe S.G., Holman H.Y., Hazen T.C., and Jansson J.K. 2012. Deep-sea bacteria enriched by oil and dispersant from the Deepwater Horizon spill. Environmental Microbiology, doi:10.1111/j.1462-2920.2012.02780.
2013-00-00	Bejarano, A.C., Levine, E., Mearns, A.J. 2013. Effectiveness and potential ecological effects of offshore surface dispersant use during the Deepwater Horizon oil spill: a retrospective analysis of monitoring data. Environmental Monitoring and Assessment 185:10281-10295 .
2010-05-08	BP, Part I, Dispersed Plume Characterization Plan, Proof of Concept (May 8, 2010).

2010-10-08	Camilli, R., Reddy, C.R., Yoerger, D.R., Van Mooy, B.A.S., Jakuba, M.V., Kinsey, J.C., McIntyre, C.P., Sylva, S.P., and Maloney, J.V. 2010. Tracking Hydrocarbon Plume Transport and Biodegradation at Deepwater Horizon. <i>Science</i> 330:201-204.
2012-00-00	Chakraborty, R., Borglin, S.E., Dubinsky, E.A., Andersen, G.L., and Hazen, T.C. 2012. Microbial response to the MC-252 oil and Corexit 9500 in the Gulf of Mexico. <i>Frontiers in Microbiology, Microbiotechnology, Ecotoxicology and Bioremediation</i> 3(357):1-6, 4 doi: 10.3389/fmicb.2012.00357.
1999-00-00	Chiles, J-P. and Delfiner, P. 1999. <i>Geostatistics: Modeling Spatial Uncertainty</i> . ISBN: 0-471-08315-1.
2002-00-00	Christakos, G., Bogaert, P., and Serre, M.L. 2002. <i>Temporal GIS: Advanced Functions for Field-Based Applications</i> , Springer-Verlag, New York, N.Y., 217pp. ISBN: 978-3-540-41476-6.
2000-00-00	Christakos, G. 2000. <i>Modern Spatiotemporal Geostatistics</i> . ISBN: 978-0486488189.
1997-00-00	Coelho, G.M. and Aurand, D.V. (eds.). 1998. Proceedings of the Seventh Meeting of the Chemical Response to Oil Spills: Ecological Effects Research Forum. November 13-14, 1997. Ecosystem Management & Associates, Inc., Purcellville, VA. EM&A Report 97-02, p. 53.
2009-00-00	Coulliette, A.D., Money, E., Serre, M.L., and Noble, R.T. 2009. Space/Time Analyses of Fecal Pollution and Rainfall in an Eastern North Carolina Estuary. <i>Environmental Science & Technology</i> 43(10):3728-3735.
1993-00-00	Cressie, N., <i>Statistics for Spatial Data</i> . 1993. ISBN: 978-0471002550.
2010-10-21	Diercks, A.R., Highsmith, R.C., Asper, V.L., Joung, D-J., Zhou, Z., Guo, L., Shiller, A.M., Joye, S.B., Teske A.P., Guinaso N., Wade, T.L., and Lohrenz, S.E. 2010. Characterization of Subsurface Polycyclic Aromatic Hydrocarbons at the Deepwater Horizon Site. <i>Geophysical Research Letters</i> 37(L20602):1-6, doi:10.1029/2010GL045046.
2011-08-03	Edwards, B.R., Reddy, C.M., Camilli, R., Carmichael, C.A., Longnecker, K., Van Mooy, B.A.S. 2011. Rapid microbial respiration of oil from the Deepwater Horizon spill in offshore surface waters of the Gulf of Mexico. <i>Environmental Research Letters</i> 6(035301), doi:10.1088/1748-9326/6/3/035301, 9 pp.
2010-06-23	Explanation of PAH benchmark calculations using EPA PAH ESB approach, originally developed by Dave Mount (ORD Duluth), available at http://www.epa.gov/bpspill/water/explanation-of-pah-benchmark-calculations-20100622.pdf .
2014-06-27	Farrington, J.W. 2014. Oil Pollution in the Marine Environment II: Fates and Effects of Oil Spills. <i>Environment: Science and Policy for Sustainable Development</i> 56:16, 20.
2010-11-00	Federal Interagency Solutions Group, Oil Budget Calculator Science and Engineering Team. Oil Budget Calculator, Deepwater Horizon (November 2010).

2011-09-00	Federal On-Scene Coordinator. On Scene Coordinator Report, Deepwater Horizon Oil Spill, Submitted to the National Response Team (September 2011).
2013-00-00	Gardiner, W.W., Word, J.Q., Word, J.D., Perkins, R.A., McFarlin, K.M., Hester B.W., Word, L.S., and Ray, C.M. 2013. The acute toxicity of chemically and physically dispersed crude oil to key arctic species under arctic conditions during the open water season. Environmental Toxicology and Chemistry 32(10):2284–2300.
1997-05-00	Griffin, L.F. and Calder, J.A. 1977. Toxic effect of water-soluble fractions of crude, refined, and weathered oils on the growth of a marine bacterium. Applied and Environmental Microbiology 33(5):1092–1096.
N/A	Gulf Science Data website Submerged Sediment Data Publication Summary Report, <i>available at</i> https://www.piersystem.com/go/doc/6145/2076530/SedimentChemistry-S-01v01-02-zip .
N/A	Gulf Science Data website Water Chemistry Data Publication Summary Report, <i>available at</i> https://www.piersystem.com/go/doc/6145/2171870/WaterChemistry-W-01v02-02-zip .
2010-10-08	Hazen, T.C., Dubinsky, E.A., DeSantis, T.Z., Andersen, G.L., Piceno, Y.M., Singh, N., Jansson, J.K., Probst, A., Borglin, S.E., Fortney, J.L., Stringfellow, W.T., Bill, M., Conrad, M.E., Tom, L.M., Chavarria, K.L., Alusi, T.R., Lamendella, R., Joyner, D.C., Spier, C., Baelum, J., Auer, M., Zemla, M.L., Chakraborty, R., Sonnenthal, E.L., D'Haeseleer, P., Holman, H.Y.N., Osman, S., Lu, Z.M., Van Nostrand, J., Deng, Y., Zhou, J.Z., and Mason, O.U. 2010. Deep-sea oil plume enriches indigenous oil-degrading bacteria. Science 330:204-208 .
2008-00-00	Hudson, P., Khan, C., Saravanabhan, G., Clarke, L., Shaw, B., Nabeta, K., Helferty, A., Brown, S., Wang, Z., Hollebone, B., Lee, K., and Short, J. 2008. What Compounds in Crude Oil Cause Chronic Toxicity to Larval Fish? Oil Spill Response: A Global Perspective. NATO Science for Peace and Security Series C: Environmental Security, pp 193-194.
2011-08-00	Joint Analysis Group for the Deepwater Horizon Oil Spill. Review of Preliminary Data to Examine Subsurface Oil in the Vicinity of MC252#1, May 19 to June 19, 2010 (August 2011).
2010-08-16	Joint Analysis Group, Review of Preliminary Data to Examine Oxygen Levels In the Vicinity of MC252#1, May 8 to August 9, 2010 (Aug. 16, 2010).
2010-00-00	Judson, R.S., et al. 2010. Analysis of Eight Oil Spill Dispersants Using Rapid, In Vitro Tests for Endocrine and Other Biological Activity. Environmental Science & Technology 44:5979-5985.
2011-01-21	Kessler, J.D., Valentine, D.L., Redmond, M.C., Du, M., Chan, E.W., Mendes, S.D., Quiroz, E.W., Villanueva, C.J., Shusta, S.S., Werra, L.M., Yvon-Lewis, S.A., and Weber, T.C. 2011. A Persistent Oxygen Anomaly Reveals the Fate of Spilled Methane in the Deep Gulf of Mexico. Science 331:312-15.

2003-10-03	Kvenvolden, K. A. and Cooper, C. K. 2003. Natural seepage of crude oil into the marine environment. <i>Geo-Marine Letters</i> 23(140).
2001-00-00	Lanoil, B.D., et al. 2001. Bacteria and Archaea physically associated with Gulf of Mexico gas hydrates. <i>Applied and Environmental Microbiology</i> 67(11):5143-5153.
2014-06-18	Lewan, M.D., Warden, A., Dias, R.F., Lowry, Z.K., Hannah, T.L., Lillis, P.G., Kokaly, R.F., Hoefen, T.M., Swayze, G.A., Mills, C.T., Harris, S.H., and Plumlee, G.S. 2014. Asphaltene content and composition as a measure of Deepwater Horizon oil spill losses within the first 80 days. <i>Organic Geochemistry</i> 75:54-60, doi:10.1016/j.orggeochem.2014.06.004.
2007-00-00	LoBuglio, J. N., Characklis, G. W., and Serre, M. L. 2007. Cost-effective water quality assessment through the integration of monitoring data and modeling results. <i>Water Resources Research</i> 43(W03435):1-16, doi:10.1029/2006WR005020.
2012-00-00	Lubchenco, J., McNutt, M.K., Dreyfus, G., Murawski, S.A., Kennedy, D.M., Anastas, P.T., Chu, S., and Hunter, T. 2012. Science in support of the Deepwater Horizon response. <i>PNAS</i> 109(50), doi:10.1073/pnas.1204729109.
1993-00-00	Macdonald I. R., Guinasso N. L. Jr., Ackleson S. G., Amos J. F., Duckworth R., Sassen R., Brooks J. M, "Natural Oil Slicks In The Gulf Of Mexico Visible From Space," <i>Journal of Geophysical Research</i> (Sept. 15, 1993), Vol. 98, No. C9, Pages 16,351-16,364
2010-05-13	Memorandum from Captain J.E. Hanzalik to RRT VI Consensus Network Participants re: RRT Call to Discuss Proposal for Criteria and Consensus to Resume a Proposed 3-5 Day Operation Trial of Sub Sea Disp (May 13, 2010) .
2012-01-19	Messier, K.P., Akita, Y., and Serre, M.L. 2012. Integrating address geocoding, land use regression, and spatiotemporal geostatistical estimation for groundwater tetrachloroethylene. <i>Environmental Science & Technology</i> 46(5):2772-2780.
2002-10-00	Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. Fifth Edition. October 2002. EPA-821-R-02-012, 208 pp + Appendices.
N/A	Mousse Image, <i>available at</i> http://incidentnews.noaa.gov/incident/8220/526518/DSC07724.JPG .
2003-00-00	National Research Council. 2003. Oil on the Sea III: Inputs, Fates and Effects at 191, <i>available at</i> http://www.nap.edu/catalog.php?record_id=10388 .
2005-00-00	National Research Council. 2005. Oil Spill Dispersants: Efficacy and Effects Committee on Understanding Oil Spill Dispersants: Efficacy and Effects, Ocean Studies Board, Division on Earth and Life Studies. National Academies Press, 400pp.
1995-00-00	Neff, J.M. and Stubblefield, W.A. 1995. Chemical and toxicological evaluation of water quality following the Exxon Valdez oil spill. In Wells, P.G., Butler, J.N, and Hughes, J.S. (eds.) Exxon Valdez oil spill: fate and effects in Alaskan waters. ASTM Special Technical Publication No. 1219. American Society of Testing and Materials, Philadelphia, pp. 141-177.

1976-00-00	Neff, J.M., Cox, B.A., Dixit, D., and Anderson J.W. 1976. Accumulation and release of petroleum-derived aromatic hydrocarbons by four species of marine animals. <i>Marine Biology</i> 38:279-289.
2010-05-15	NOAA Office of Response and Restoration, Emergency Response Division, Deepwater Horizon Oil: Characteristics and Concerns (May 15, 2010).
N/A	NOAA Office of Response and Restoration, Training: Aerial Observation of Oil Spills, <i>available at</i> http://response.restoration.noaa.gov/training-and-education/training/workshops/aerial-observation-training.html .
N/A	NOAA, Type of Preassessment Information Available, Appendix G, <i>available at</i> http://www.darrp.noaa.gov/library/pdf/PPD_AP-G.PDF .
2011-00-00	Nowell, L.H., Ludtke, A.S., Mueller, D.K., and Scott, J.C. 2011. In: U.S. Geological Survey (Ed.), Organic Contaminants, Trace and Major Elements, and Nutrients in Water and Sediment Sampled in Response to the Deepwater Horizon Oil Spill. U.S. Department of the Interior, Reston, Virginia, p. 128. Open-File Report 2011-1271.
1999-00-00	Olea, R.A. Geostatistics for Engineers and Earth Scientists (1999). ISBN-10: 0792385233.
2010-12-17	Operational Science Advisory Team (OSAT) Unified Area Command Summary Report for Sub-Sea and Sub-Surface Oil and Dispersant Detection: Sampling and Monitoring, December 17, 2010 (OSAT-1)
2011-07-08	Operational Science Advisory Team (OSAT) Summary Report for Sub-Sea and Sub-Surface Oil and Dispersant Detection: Ecotoxicity Addendum (July 8, 2011)
1905-06-17	Rand, G., et al. (Eds.). 1995. Fundamentals of Aquatic Toxicology: Effects, Environmental Fate and Risk Assessment, 2nd Edition. New York, N.Y., 1125 pp. ISBN: 978-1560320913.
2012-12-11	Reddy, C.M., Arey, J.S., Seewald, J.S., Sylva, S.P., Lemkau, K.L., Nelson, R.K., Carmichael, C.A., McIntyre, C.P., Fenwick, J., Ventura, G.T., Van Mooy, B.A.S., and Camilli, R. 2012. Composition and fate of gas and oil released to the water column during the Deepwater Horizon oil spill. <i>PNAS</i> 109(50):20229-20234.
2012-00-00	Redmond, M.C. and Valentine, D.L. 2011. Natural gas and temperature structured a microbial community response to the Deepwater Horizon oil spill. <i>PNAS</i> 109:20292-20297.
2009-07-00	Rowe, G.T. and Kennicutt, M.C. 2009. Northern Gulf of Mexico Continental Slope Habitats and Benthic Ecology Study, Final Report. OCS Study, MMS 2009-039.
2012-00-00	Ryerson, T.B., Camilli, R., Kessler, J.D., Kujawinski, E.B., Reddy, C.M., Valentine, D.L., Atlas, E., Blake, D.B., Joost de Gouwa, M.S., Parrish, D.D., Peischla, J., Seewald, J.S., and Warneke, C. 2012. Chemical data quantify Deepwater Horizon hydrocarbon flow rate and environmental distribution. <i>PNAS</i> 109(50):20246-20253.

2012-00-00	Sanders, A.P, Messier, K.P., Shehee, M., Rudo, K., Serre, M.L., Fry, R.C. 2012. Arsenic in North Carolina: Public Health Implications. <i>Environment International</i> 38:10-16.
1999-00-00	Serre, M. L., and Christakos, G. 1999. Modern geostatistics: Computational BME in the light of uncertain physical knowledge--the Equus Beds Study. <i>Stochastic Environmental Research and Risk Assessment</i> 13(1):1-26.
2001-00-00	Singer, M.M., Aurand, D.V., Coelho, G.M., Sowby, M., Bragin, G.E., Clark, J.R., and Tjeerdema R.S. 2001. Making, measuring and using water accommodated fractions of petroleum for toxicity testing. In: Proceedings, 2001 International Oil Spill Conference, American Petroleum Institute, Washington, DC, pp. 1269-1274.
2010-04-00	SINTEF. 2010. Chemical and toxicological characterization of water accommodated fraction (WAF) of crude oils, <i>available at</i> http://www.sintef.no/upload/Materialer_kjemi/Marin%20milj%C3%B8teknologi/faktaark/WAF-web.pdf .
1995-00-00	Siron, R., Pelletier E., and Brochu C. Environmental Factors Influencing the Biodegradation of Petroleum Hydrocarbons in Cold Seawater. <i>Archives of Environmental Contamination and Toxicology</i> 28(4):406-416.
2014-00-00	Smith, A.S., Flemings, P.B., and Fulton, P.M. 2014. Hydrocarbon flux from natural deepwater Gulf of Mexico vents. <i>Earth and Planetary Science Letters</i> 395:241-253.
2014-00-00	Smith R.H., Johns E.M., Goni G.J., Trinanes J., Lumpkin R., Wood A.M., Kelble C.R., Cummings S.R., Lamkin J.T., Privoznik S., Oceanographic conditions in the Gulf of Mexico in July 2010, during the Deepwater Horizon oil spill, <i>Continental Shelf Research</i> , Volume 77, 1 April 2014, Pages 118-131
2011-05-12	Socolofsky, S.A., Adams, E.E., Sherwood, C.R. Formation dynamics of subsurface hydrocarbon intrusions following the Deepwater Horizon blowout. <i>Geophysical Research Letters</i> 38:L09602.
2013-00-00	Spier, C., Stringfellow, W.T., Hazen, T.C., and Conrad, M. Distribution of hydrocarbons released during the 2010 MC252 oil spill in deep offshore waters. <i>Environmental Pollution</i> 173:224-30.
N/A	Surface Slick Image, available at http://response.restoration.noaa.gov/training-and-education/training/workshops/aerial-observation-training.html .
2010-05-10	U.S. Coast Guard and U.S. EPA, Dispersant Monitoring and Assessment Directive for Subsurface Dispersant Application at 3 (May 10, 2010).
2003-11-00	U.S. EPA. 2003. Procedures for the derivation of equilibrium partitioning sediment benchmarks (ESBs) for the protection of benthic organisms: PAH mixtures. EPA-600-R-02-013, <i>available at</i> http://www.epa.gov/nheerl/download_files/publications/PAHESB.pdf .
2004-00-00	U.S. EPA. 2004. National Whole Effluent Toxicity (WET) Implementation Guidance EPA 832-B-04-003.
2000-07-00	U.S. EPA. 2000. Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136), EPA 821-B-00-004.

2010-05-30	U.S. EPA Region 6 Quality Assurance Sampling Plan, p 3-5.
2010-06-30	U.S. EPA Off. Of Res. Develop., Comparative Toxicity of Eight Oil Dispersant Products on Two Gulf of Mexico Aquatic Test Species at 7 (June 30, 2010), <i>available at</i> http://www.epa.gov/bpspill/reports/ComparativeToxTest.Final.6.30.10.pdf
N/A	U.S. EPA. BP's Analysis of Subsurface Dispersant Use, <i>available at</i> http://www.epa.gov/bpspill/dispersants-bp.html .
N/A	U.S. EPA. Methods for Detecting Dispersants in Water, <i>available at</i> http://www.epa.gov/bpspill/dispersant-methods.html .
N/A	U.S. EPA. Water Quality Benchmarks for Aquatic Life, <i>available at</i> http://www.epa.gov/bpspill/water-benchmarks.html#gen2 .
N/A	U.S. EPA. Whole Efluent Toxicity, <i>available at</i> http://water.epa.gov/scitech/methods/cwa/wet/ .
2001-03-00	U.S. EPA. 2001. EPA Requirements for Quality Assurance Project Plans, (EPA QA/R-5) EPA/240/B-01/003. U.S. Environmental Protection Agency, Office of Environmental Information. Washington, DC, March 2001, <i>available at</i> http://www.epa.gov/quality/qs-docs/r5-final.pdf .
2002-12-00	U.S. EPA, 2002. Guidance for Quality Assurance Project Plans, (EPA QA/G-5) EPA/240/R-02/009, December 2002, available at http://www.epa.gov/quality/qs-docs/g5-final.pdf
2002-00-00	U.S. EPA. 2002. Guidance on Environmental Data Verification and Data Validation, (EPA QA/G-8) EPA/240-R-02/004. U.S. Environmental Protection Agency, Office of Environmental Information. Washington, DC, <i>available at</i> http://www.epa.gov/QUALITY/qs-docs/g8-final.pdf .
2008-00-00	U.S. EPA. 2008. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-08/01. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. Washington, DC.
2010-06-23	U.S. EPA. 2010. Explanation of PAH benchmark calculations using EPA PAH ESB approach, <i>available at</i> http://www.epa.gov/bpspill/water/explanation-of-pah-benchmark-calculations-20100622.pdf .
2000-07-00	U.S. EPA. 2000. Guidance for Data Quality Assessment, Practice Methods for Data Analysis, (EPA QA/G-9) EPA/600/R-96/084. U.S. Environmental Protection Agency, Office of Environmental Information. Washington, DC, July 2000.
2010-09-16	Valentine D.L., et al. 2010. Propane respiration jump-starts microbial response to a deep oil spill. Science 330:208-211.
2012-00-00	Valentine, D.L., Mezic, I., Macešić, S., Crnjarić-Žic, N., Ivic, S., Hogand, P.K., Fonoberove, V.A., and Loireb, S. 2012. Dynamic autoinoculation and the microbial ecology of a deep water hydrocarbon eruption. PNAS 100:20286.

10/20/2013	Vilcaez, J., Li, L., and Hubbard, S.S. 2013. A new model for the biodegradation kinetics of oil droplets: application to the <i>Deepwater Horizon</i> oil spill in the Gulf of Mexico. <i>Geochemical Transactions</i> 14:4.
2008-09-05	Wade, T.I., et al. 2008. Trace elements and polycyclic aromatic hydrocarbons (PAHs) concentrations in deep Gulf of Mexico sediments. <i>Deep-Sea Research II</i> 55:2585-2593.

CONFIDENTIAL PURSUANT TO PTO 13

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Appendix B. Curriculum Vitae and List of Publications

DAMIAN SHEA

Department of Biological Sciences
North Carolina State University
Raleigh, NC 27695-7633
(919) 332-3878 mobile
(919) 515-5327 fax
d_shea@ncsu.edu

EDUCATION

- 1985 Ph.D. Environmental Chemistry, University of Maryland, College Park, MD
1981 B.A. Chemistry, SUNY Plattsburgh, Plattsburgh, NY

PROFESSIONAL POSITIONS

- 2011-14 Professor and University Director Southeast Climate Science Center, NC State University
2006-11 Professor and Department Head, Department of Biology, NC State University
2001-06 Department Head, Department of Environmental and Molecular Toxicology, NCSU
1993- Assistant, Associate, Full Professor of Toxicology, Department of Toxicology, NCSU
1991-93 Senior Research Scientist and Laboratory Manager, Battelle Memorial Institute, Duxbury, MA
1989-91 Principal Research Scientist, Battelle Ocean Sciences, Duxbury, MA
1987- Consultant on environmental toxicology/chemistry for various clients
1987-89 Assistant Professor, Department of Chemistry, University of Massachusetts, Dartmouth, MA
1987 AAAS/EPA Environmental Science and Engineering Fellow, U.S. EPA
1985-87 National Research Council Postdoctoral Fellow, National Bureau of Standards (now NIST)
1982-85 Research Assistant, Department of Chemistry, University of Maryland

SELECTED HONORS AND PROFESSIONAL MEMBERSHIPS

- 1978- Member, American Chemical Society
1988- Member, Society of Environmental Toxicology and Chemistry (SETAC)
1992- Study Section and *ad hoc* Grant Proposal Reviewer for EPA, NSF, NIH and other agencies
1998-11 Co-PI EPA Cooperative Training in Environmental Health Sciences Research
2000-01 Chair, EPA Peer Review Panel for EPA Water Quality Criteria for the Protection of Human Health
2002-04 Member, US AID Task Force to Develop Environmental Assessment Program for Armenia

2007-10	Member, Peer Review Team for cANIMIDA MMS Alaska Environmental Studies Program
2007-14	Program Director, Howard Hughes Medical Institute Undergraduate Science Education Program
2011-14	University Director, Department of the Interior Southeast Climate Science Center

RELEVANT RESEARCH PROJECT EXPERIENCE (selected from over 50 projects)

1989-92	Several studies on the fate and effects of the <i>Exxon Valdez</i> Oil Spill
1991-93	Program Manager for the Boston Harbor Outfall Monitoring Program
1994-96	Historical loading and fate of contaminants to Boston Harbor and Massachusetts Bay
1995-98	Bioaccumulation of contaminants in right whales and pilot whales
1995-00	Sources, fate, and effects of pesticides and other chemicals at 25 National Wildlife Refuges in the Lower Mississippi River Alluvial Valley
2005-	Mechanisms controlling bioavailability of PAH in aquatic systems
2008-	Passive sampling devices for measuring polar and non-polar organic chemicals in water
2009-	Organic chemical exposure and ecological effects in several rivers in China
2010-2013	Incorporating Chemical and Biological Availability into the Risk Assessment of Oil Contaminated Soils (with Chevron Energy Technology Company)

PUBLICATIONS

1. Hu, Jing, Alden C. Adrián, Jun Nakamura, Damian Shea, and Michael D. Aitken. "Bioavailability of (Geno) toxic Contaminants in Polycyclic Aromatic Hydrocarbon-Contaminated Soil Before and After Biological Treatment." *Environmental Engineering Science* 31, no. 4 (2014): 176-182.
2. Hardison, D. Ransom, William G. Sunda, Patricia A. Tester, Damian Shea, and R. Wayne Litaker. "Increased cellular brevetoxins in the red tide dinoflagellate *Karenia brevis* under CO₂ limitation of growth rate: Evolutionary implications and potential effects on bloom toxicity." *Limnol. Oceanogr* 59, no. 2 (2014): 560-577.
3. Hardison, Donnie Ransom, William G. Sunda, Damian Shea, and Richard Wayne Litaker. "Increased toxicity of *Karenia brevis* during phosphate limited growth: Ecological and evolutionary implications." *PLoS one* 8, no. 3 (2013): e58545.
4. Gjeltema, Jenessa, Michael Stoskopf, Damian Shea, and Ryan De Voe. "Assessment of Polycyclic Aromatic Hydrocarbon Contamination of Breeding Pools Utilized by the Puerto Rican Crested Toad, *Peltophryne lemur*." *International Scholarly Research Notices* 2012 (2012).
5. Ransom Hardison, D., William G. Sunda, R. Wayne Litaker, Damian Shea, and Patricia A. Tester. "Nitrogen limitation increases brevetoxins in *Karenia Brevis* (Dinophyceae):Implications for bloom toxicity" *Journal of Phycology* 48, no. 4 (2012): 844-858.

6. Mosher, Shad, W. Gregory Cope, Frank X. Weber, Damian Shea, and Thomas J. Kwak. "Effects of lead on Na⁺, K⁺-ATPase and hemolymph ion concentrations in the freshwater mussel *Elliptio complanata*." *Environmental toxicology* 27, no. 5 (2012): 268-276.
7. Shea, Damian, and Waverly Thorsen. "Ecological Risk Assessment." *Toxicology and Human Environments* 112 (2012): 323.
8. Cope, W. G., F. M. Holliman, T. J. Kwak, N. C. Oakley, P. R. Lazaro, D. Shea, T. Augspurger, J. M. Law, J. P. Henne, and K. M. Ware. "Assessing water quality suitability for shortnose sturgeon in the Roanoke River, North Carolina, USA with an in situ bioassay approach." *Journal of Applied Ichthyology* 27, no. 1 (2011): 1-12.
9. Bringolf, Robert B., Rebecca M. Heltsley, Teresa J. Newton, Chris B. Eads, Stephen J. Fraley, Damian Shea, and W. Gregory Cope. "Environmental occurrence and reproductive effects of the pharmaceutical fluoxetine in native freshwater mussels." *Environmental Toxicology and Chemistry* 29, no. 6 (2010): 1311-1318.
10. Henson-Ramsey, Heather, Jay Levine, Suzanne Kennedy-Stoskopf, Sharon K. Taylor, Damian Shea, and Michael K. Stoskopf. "Development of a dynamic pharmacokinetic model to estimate bioconcentration of xenobiotics in earthworms." *Environmental Modeling & Assessment* 14, no. 3 (2009): 411-418.
11. Patisaul, Heather B., Katherine T. Burke, Ruth E. Hinkle, Heather B. Adewale, and Damian Shea. "Systemic administration of diarylpropionitrile (DPN) or phytoestrogens does not affect anxiety-related behaviors in gonadally intact male rats." *Hormones and behavior* 55, no. 2 (2009): 319-328.
12. Mendoza, Wilson G., Ralph N. Mead, Larry E. Brand, and Damian Shea. "Determination of brevetoxin in recent marine sediments." *Chemosphere* 73, no. 8 (2008): 1373-1377.
13. Henson-Ramsey, H., S. Kennedy-Stoskopf, J. F. Levine, S. K. Taylor, D. Shea, and M. K. Stoskopf. "Acute toxicity and tissue distributions of malathion in *Ambystoma tigrinum*." *Archives of environmental contamination and toxicology* 55, no. 3 (2008): 481-487.
14. Chaves, Alicia, Damian Shea, and David Danehower. "Analysis of chlorothalonil and degradation products in soil and water by GC/MS and LC/MS." *Chemosphere* 71, no. 4 (2008): 629-638.
15. Henson-Ramsey, Heather, Damian Shea, Jay F. Levine, Suzanne Kennedy-Stoskopf, Sharon K. Taylor, and Michael K. Stoskopf. "Assessment of the effect of varying soil organic matter content on the bioavailability of malathion to the common nightcrawler, *Lumbricus terrestris* L." *Bulletin of environmental contamination and toxicology* 80, no. 3 (2008): 220-224.
16. Tester, Patricia A., Damian Shea, Steven R. Kibler, Sabrina M. Varnam, Megan D. Black, and R. Wayne Litaker. "Relationships among water column toxins, cell abundance

- and chlorophyll concentrations during *Karenia brevis* blooms." *Continental Shelf Research* 28, no. 1 (2008): 59-72.
17. Chaves, Alicia, Damian Shea, and W. Gregory Cope. "Environmental fate of chlorothalonil in a Costa Rican banana plantation." *Chemosphere* 69, no. 7 (2007): 1166-1174.
 18. Bringolf, Robert B., W. Gregory Cope, M. Chris Barnhart, Shad Mosher, Peter R. Lazaro, and Damian Shea. "Acute and chronic toxicity of pesticide formulations (atrazine, chloryrifos, and permethrin) to glochidia and juveniles of *Lampsilis siliquoidea*." *Environmental Toxicology and Chemistry* 26, no. 10 (2007): 2101-2107.
 19. Bringolf, Robert B., W. Gregory Cope, Chris B. Eads, Peter R. Lazaro, M. Christopher Barnhart, and Damian Shea. "Acute and chronic toxicity of technical-grade pesticides to glochidia and juveniles of freshwater mussels (unionidae)." *Environmental Toxicology and Chemistry* 26, no. 10 (2007): 2086-2093.
 20. Bringolf, Robert B., W. Gregory Cope, Shad Mosher, M. Chris Barnhart, and Damian Shea. "Acute and chronic toxicity of glyphosate compounds to glochidia and juveniles of *Lampsilis siliquoidea* (Unionidae)." *Environmental Toxicology and Chemistry* 26, no. 10 (2007): 2094-2100.
 21. Henson-Ramsey, H., S. Kennedy-Stoskopf, J. Levine, D. Shea, S. K. Taylor, and M. K. Stoskopf. "A comparison of two exposure systems to apply malathion to *Lumbricus terrestris* L." *Bulletin of environmental contamination and toxicology* 78, no. 6 (2007): 427-431.
 22. Kong, Xiang Q., Damian Shea, Ronald E. Baynes, Jim E. Riviere, and Xin-Rui Xia. "Regression method of the hydrophobicity ruler approach for determining octanol/water partition coefficients of very hydrophobic compounds." *Chemosphere* 66, no. 6 (2007): 1086-1093.
 23. McCarthy, Annette M., Jerad D. Bales, W. Gregory Cope, and Damian Shea. "Modeling pesticide fate in a small tidal estuary." *Ecological Modeling* 200, no. 1 (2007): 149-159.
 24. Thorsen, Waverly A., W. Gregory Cope, and Damian Shea. "Toxicokinetics of Environmental Contaminants in Freshwater Bivalves." *Freshwater Bivalve Ecotoxicology* (2006): 169.
 25. Shea, D., P. Tester, J. Cohen, S. Kibler, and S. Varnam. "Accumulation of brevetoxins by passive sampling devices." *African Journal of Marine Science* 28, no. 2 (2006): 379-381.
 26. Hewitt, Amanda H., W. Gregory Cope, Thomas J. Kwak, Tom Augspurger, Peter R. Lazaro, and Damian Shea. "Influence of water quality and associated contaminants on survival and growth of the endangered Cape Fear shiner (*Notropis mekistocholas*)." *Environmental toxicology and chemistry* 25, no. 9 (2006): 2288-2298.

27. Heltsley, Rebecca M., W. Gregory Cope, Damian Shea, Robert B. Bringolf, Thomas J. Kwak, and Edward G. Malindzak. "Assessing organic contaminants in fish: comparison of a nonlethal tissue sampling technique to mobile and stationary passive sampling devices." *Environmental science & technology* 39, no. 19 (2005): 7601-7608.
28. Gregory, Samuel T., Damian Shea, and Elizabeth Guthrie-Nichols. "Impact of vegetation on sedimentary organic matter composition and polycyclic aromatic hydrocarbon attenuation." *Environmental science & technology* 39, no. 14 (2005): 5285-5292
29. Kong, Xiang Q., Damian Shea, Wondwossen A. Gebreyes, and Xin-Rui Xia. "Novel hydrophobicity ruler approach for determining the octanol/water partition coefficients of very hydrophobic compounds via their polymer/solvent solution distribution coefficients." *Analytical chemistry* 77, no. 5 (2005): 1275-1281.
30. Heltsley, Rebecca M., W. Gregory Cope, Damian Shea, Robert B. Bringolf, Thomas J. Kwak, and Edward G. Malindzak. "Assessing organic contaminants in fish: comparison of a nonlethal tissue sampling technique to mobile and stationary passive sampling devices." *Environmental science & technology* 39, no. 19 (2005): 7601-7608.
31. Neal, J. Wesley, Nathan M. Bachelier, Richard L. Noble, Damian Shea, and W. Gregory Cope. "The mystery of Dos Bocas Reservoir, Puerto Rico: Explaining extreme spatial heterogeneity in largemouth bass distribution." *Caribbean journal of science* 41, no. 4 (2005): 804-814.
32. Thorsen, W. A., D. Forestier, T. Sandifer, P. R. Lazaro, W. G. Cope, and D. Shea. "Elimination rate constants of 46 polycyclic aromatic hydrocarbons in the Unionid mussel, *Elliptio complanata*." *Archives of environmental contamination and toxicology* 47, no. 3 (2004): 332-340.
33. Thorsen, Waverly A., W. Gregory Cope, and Damian Shea. "Bioavailability of PAHs: Effects of soot carbon and PAH source." *Environmental science & technology* 38, no. 7 (2004): 2029-2037.
34. Shea, Damian. "Transport and Fate of Toxicants in the Environment." A textbook of modern toxicology (2004) 479.
35. Shea, Damian. "Environmental risk assessment." A Textbook of Modern Toxicology (2004) 501.

Appendix C. List of water and sediment studies

The list of studies included in this Appendix was compiled from the following documents:

- (1) Appendix A from the Gulf Science Data website Water Chemistry Data Publication Summary Report, *available at*
<https://www.piersystem.com/go/doc/6145/2171870/WaterChemistry-W-01v02-02-zip>.
- (2) Appendix A from the Gulf Science Data website Submerged Sediment Data Publication Summary Report, *available at*
<https://www.piersystem.com/go/doc/6145/2076530/SedimentChemistry-S-01v01-02-zip>.

The data from the studies listed below are available on the Gulf Science Data website and have been integrated for use in the analyses presented in this report. A detailed citation list of the data compilation collections is provided in Appendix D.

Data Publication Summary Report

Water Chemistry
Reference No. W-01v02-02

Appendix A

Water Chemistry Study List

Study Type	SRN	Study Name in the Database	Study Description Title
BP NRDA Independent	1	Berm	Shallow Subtidal and Intertidal Benthic and Epibenthic Baseline Sampling Plan for the Louisiana Barrier Island Project
NRDA Cooperative	26	Shallow Coral Tier 1 Baseline	Mississippi Canyon 252 Incident Shallow Coral Tier 1 Plan and NRDA Plan for Samples of Opportunity in Support of the Water Column Baseline
NRDA Cooperative	29	Nearshore Submerged Oil Characterization: 2010	Nearshore Ephemeral Data Collections: Submerged Oil Characterization across Multiple Habitats
NRDA Cooperative	30	Nearshore Fish Kill	Investigative Plan for Fish and Invertebrate Kills in the Northern Gulf of Mexico
BP NRDA Independent	32.1	State Fisheries Monitoring - LDWF Inshore: 2010	Opportunistic Sampling during the LDWF Inshore Fisheries Monitoring Surveys
BP NRDA Independent	33	State Fisheries Monitoring - LDWF Nearshore	Opportunistic Sampling During the LDWF Nearshore Fisheries Monitoring Surveys
BP NRDA Independent	34	State Fisheries Monitoring - LDWF Offshore	Opportunistic Sampling During the LDWF Offshore Fisheries Monitoring Surveys
BP NRDA Independent	37.1	Shallow Subtidal Benthic Baseline	Shallow Subtidal Benthic and Water Baseline Plan for MC 252 NRDA
BP NRDA Independent	37.2	Nearshore Water Sampling (NGOM)	Nearshore Surface Water and Sediment Sampling Plan for MC 252 NRDA
NRDA Cooperative	71	SAV Tier 1 Baseline	Submerged Aquatic Vegetation Tier 1 Pre-Assessment Plan, Pre-Impact Baseline Characterization
NRDA Cooperative	72	SAV Tier 2 Pre-Assessment	Submerged Aquatic Vegetation Tier 2 Pre-Assessment, Post Spill Exposure Characterization Plan
NRDA Cooperative	76.1	SAV JELA 2010	Sampling and Analysis Plan for Jean Lafitte National Historic Park and Preserve Submerged Aquatic Vegetation Natural Resource Damage Assessment

Data Publication Summary Report

**Water Chemistry
Reference No. W-01v02-02**

Study Type	SRN	Study Name in the Database	Study Description Title
NRDA Cooperative	77	LDEQ Nearshore Sediment Baseline	Work Plan for Sediment and Water Collection and Analyses for Baseline NRDA Purposes in Louisiana
NRDA Cooperative	78	LDEQ Nearshore Sediment Pre-Assessment	Pre-Assessment Phase Water Sampling for NRDA Purposes in Louisiana
BP NRDA Independent	87	Intertidal Baseline Sediment and Water Sampling	Deepwater Horizon Sediment, Water Chemistry, and Benthic Infauna Sampling Plan
NRDA Cooperative	88	Beach Baseline: Texas	Texas Baseline Survey and Sampling Plan
NRDA Cooperative	89.1	Beach Baseline: Florida Keys	Florida Keys Baseline Sampling Plan for Water and Sediment
NRDA Cooperative	89.2	Beach Baseline: West Florida	NRDA Pre-Impact Sampling Plan for West Coast of Florida: Hernando County through Collier County
NRDA Cooperative	89.3	Beach Baseline: Southeast Florida	Southeast Florida Water and Sediment Baseline Sampling Plan
NRDA Cooperative	104	Plankton Imaging SIPPER: September 2010 (Specialty Diver 1)	NRDA Plankton Sampling Plan & Fall 2010 Cruise Plan: <i>Specialty Diver 1</i> – September 2010 SIPPER Cruise
NRDA Cooperative	105	Plankton Imaging SIPPER: May/June 2010 (Gordon Gunter)	Proposal for NRDA Data Collection for Deepwater Horizon Oil Spill, NOAA Vessel <i>Gordon Gunter</i> , May–June 2010 SIPPER Cruise
NRDA Cooperative	106	Plankton Imaging SIPPER: May 2010 (Weatherbird II)	Field Plan for Cooperative Research Cruise to Document Biotic Effects of the Deepwater Horizon Oil Spill – May 2010
NRDA Cooperative	113	1-meter MOCNESS Plankton: September 2010 (Walton Smith I)	NRDA Plankton Sampling Plan and Fall 2010 Cruise Plan – <i>Walton Smith 1</i>
Trustee NRDA Independent	115	Water Column Processes: Spring 2011 (Walton Smith IV)	NRDA Spring 2011 Water Column Processes Cruise Plan (M/V <i>Walton Smith</i> Cruise 4)
NRDA Cooperative	116	1-meter MOCNESS Plankton: September/October 2010 (Walton Smith III)	NRDA Plankton Sampling Plan & Fall 2010 Cruise Plan – <i>Walton Smith 3</i>
BP NRDA Independent	133.1	Broader Gulf (BGOM) Water Chemistry Pilot Survey (Rachel Bordelon)	Broader Gulf of Mexico Water Column Study—Pilot Survey
BP NRDA Independent	133.3	Broader Gulf (BGOM) Water Chemistry Cruise 1	Broader Gulf of Mexico Water Column Study—Cruise 1

Data Publication Summary Report

Water Chemistry
Reference No. W-01v02-02

Study Type	SRN	Study Name in the Database	Study Description Title
NRDA Cooperative	134	Ephemeral Offshore Water Chemistry: Jack Fitz 1	Field Plan for Water-Column Profiling to Measure Dissolved-Phase Aromatic Hydrocarbons and Free Oil Droplets as a Function of Depth and Location Relative to the Subsurface Oil Release
NRDA Cooperative	135	Offshore Water Chemistry: Cooperative December 2010	NOAA/BP-Cardno ENTRIX NRDA Cooperative Deep Tow Cruise 2, December 2010 Arctic-HOS Davis 5-Sarah Bordelon Cruise Plan
BP NRDA Independent	136	Broader Gulf (BGOM) Water Chemistry Cruise 2	Broader Gulf of Mexico Water Column Study—Cruise 2
NRDA Cooperative	137	Offshore Water Chemistry: American Diver 1	Water Column Injury Ephemeral Data Collections: Deepwater Horizon Oil Spill (DWHOS) Plan for Adaptive Water Column NOAA-NRDA Sampling (PAWNNS) Cruise Plan—American Diver 1 and Ocean Veritas 9
BP NRDA Independent	138	Broader Gulf (BGOM) Water Chemistry Cruise 3	Broader Gulf of Mexico Water Column Study—Cruise 3
NRDA Cooperative	139	Offshore Water Chemistry: American Diver 2	Water Column Injury Ephemeral Data Collections: Deepwater Horizon Oil Spill (DWHOS) Plan for Adaptive Water Column NOAA-NRDA Sampling (PAWNNS) Cruise Plan—American Diver 2
NRDA Cooperative	140	Offshore Water Chemistry: Cooperative November 2010	NOAA/BP-ENTRIX NRDA Cooperative Deep Tow Cruise 1, November 2010 Arctic-HOS Davis 4 Cruise Plan
NRDA Cooperative	141	Ephemeral Offshore Water Chemistry: Jack Fitz 2	Water Column Injury Ephemeral Data Collections: Cruise 2: Surface Water Sampling Plan Deepwater Horizon Oil Spill (DWHOS)
NRDA Cooperative	142	Ephemeral Offshore Water Chemistry: Jack Fitz 3	Water Column Injury Ephemeral Data Collections: NRDA Cruise 4: Jack Fitz 3 Water Sampling Plan Deepwater Horizon Oil Spill (DWHOS)
NRDA Cooperative	143	Ephemeral Offshore Water Chemistry: Bunny Bordelon 1	Water Column Injury Ephemeral Data Collections: Cruise 3: Surface Water Sampling Plan for Dispersant Treated Oil Deepwater Horizon Oil Spill (DWHOS)
BP NRDA Independent	145	Broader Gulf (BGOM) Water Chemistry Cruise 4	Broader Gulf of Mexico Water Column Study—Cruise 4
NRDA Cooperative	146	Adaptive Water Column Chemistry (Hos Davis 1)	Water Column Injury Ephemeral Data Collections: Deepwater Horizon Oil Spill (DWHOS) Plan for Adaptive Water Column NOAA-NRDA Sampling (PAWNNS) Cruise Plan—HOS Davis 1

Data Publication Summary Report

Water Chemistry
Reference No. W-01v02-02

Study Type	SRN	Study Name in the Database	Study Description Title
NRDA Cooperative	147	Adaptive Water Column Chemistry (Hos Davis 2)	Water Column Injury Ephemeral Data Collections: Deepwater Horizon Oil Spill (DWHOS) Plan for Adaptive Water Column NOAA-NRDA Sampling (PAWNNS) Cruise Plan—HOS Davis 2
BP NRDA Independent	148	Broader Gulf (BGOM) Water Chemistry Cruise 5	Broader Gulf of Mexico Water Column Study—Cruise 5
NRDA Cooperative	149	Adaptive Water Column Chemistry (Hos Davis 3)	Water Column Injury Ephemeral Data Collections: Deepwater Horizon Oil Spill (DWHOS) Plan for Adaptive Water Column NOAA-NRDA Sampling (PAWNNS) Cruise Plan—HOS Davis 3
NRDA Cooperative	153	Deepwater Sediment ROV: Spring 2011 (Hos Sweetwater 2)	MC252 Deepwater Horizon Oil Spill Deep Benthic Communities and Water Column Data Collection March–April 2011 HOS Sweetwater ROV Sediment and Bottom-Water Sampling Cruise Plan
NRDA Cooperative	154	Deepwater Sediment ROV: Summer 2011 (Hos Sweetwater 4/6)	MC252 Deepwater Horizon Oil Spill Deep Benthic Communities and Water Column Data Collection July–September 2011 HOS Sweetwater ROV Sediment and Bottom-Water Sampling Cruise Plan
BP NRDA Independent	156.1	Offshore Natural Hydrocarbon Seeps: Cruise 1	Deepwater Horizon Accident, NRDA Sampling Plan: Natural Hydrocarbon Seeps Cruise 1 Plan
BP NRDA Independent	156.2	Offshore Natural Hydrocarbon Seeps: Cruise 2	Deepwater Horizon Accident, NRDA Sampling Plan: Natural Hydrocarbon Seeps Cruise 2 Plan
BP NRDA Independent	160	2011 Mississippi River Flood	Assessment of the May 2011 Mississippi River Flood Event
NRDA Cooperative	192	NOAA Offshore Water Chemistry: Brooks McCall 2	NRDA Plan for Samples of Opportunity in Support of the Water Column Injury
Trustee Independent	312	Mussel Watch May 2010	Mussel Watch May 2010
BP Non-NRDA Independent	316	2012 GCIMT Surface Slick Sampling: MC-20	BP Wave Glider Gen2—HBOI Water Sampling Plan
Non-NRDA Response	328	Skandi-Neptune Deepwater Chemistry	Subsea Sample Collection Using ROV
NOAA Non-NRDA Independent	934	NOAA offshore water chemistry sampling on NOAA vessels	NOAA Sampling on NOAA Vessels

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Water Chemistry
Reference No. W-01v02-02

Study Type	SRN	Study Name in the Database	Study Description Title
Non-NRDA Response	935	NOAA Offshore Water Chemistry Sampling on Response Vessels	NOAA Sampling on Response Vessels
Trustee Non-NRDA Independent	936	Gordon Gunter Opportunistic Water Chemistry Sampling	Opportunistic Water Chemistry Sampling aboard the R/V <i>Gordon Gunter</i>
Non-NRDA Response	1008	Natural Seep Water Sampling	Natural Seep Water Sampling
Non-NRDA Response	1012	Fate of Oil Response Team	Fate of Oil Response Team
Non-NRDA Response	1018	Dispersant Environmental Effects Program	Dispersant Environmental Effects Program
Non-NRDA Response	1018.2	CSIRO	Commonwealth Scientific and Industrial Research Organisation Water Sampling
Non-NRDA Response	1018.3	EcoRigs Water Quality Sampling	EcoRigs Water Quality Sampling
Non-NRDA Response	1019	Dispersant Reconnaissance Surveys	Dispersant Reconnaissance Surveys
Non-NRDA Response	1020	Deep Sea Sediments and Operational Annex	Deep Sea Sediments and Operational Annex
Non-NRDA Response	1022	Deepwater Dispersant Sampling Program	Deepwater Dispersant Sampling Program
Non-NRDA Response	1031	R/V Ferrel Sampling Transects	R/V <i>Ferrel</i> Sampling Transects
Non-NRDA Response	1035	Near Shore Water and Sediment	Near Shore Water and Sediments
Non-NRDA Response	1039	Special Request Turtle Mortality Investigation	Special Request Turtle Mortality Investigation
Non-NRDA Response	1050	Offshore Volatile Organic Compounds	Offshore Volatile Organic Compounds
Non-NRDA Response	1051	Near Field Water Sampling	Near Field Water Sampling

SRN: Study Reference Number

Appendix A

Submerged Sediment Chemistry Study List

Study Type ¹	SRN	Study Name in the Database	Study Description Title
BP NRDA Independent	1	Berm	Shallow Subtidal and Intertidal Benthic and Epibenthic Baseline Sampling Plan for the Louisiana Barrier Island Project
NRDA Cooperative	26	Shallow Coral Tier 1 Baseline	Mississippi Canyon 252 Incident Shallow Coral Tier 1 Plan and NRDA Plan for Samples of Opportunity in Support of the Water Column Baseline
NRDA Cooperative	28	Nearshore Submerged Oil Characterization: 2011	Submerged Oil Characterization Across Multiple Habitats for Assessment of Persistent Exposures in Nearshore Sediments (2011)
NRDA Cooperative	29	Nearshore Submerged Oil Characterization: 2010	Nearshore Ephemeral Data Collections: Submerged Oil Characterization across Multiple Habitats
NRDA Cooperative	30	Nearshore Fish Kill	Investigative Plan for Fish and Invertebrate Kills in the Northern Gulf of Mexico
BP NRDA Independent	32.1	State Fisheries Monitoring - LDWF Inshore: 2010	Opportunistic Sampling during the LDWF Inshore Fisheries Monitoring Surveys
BP NRDA Independent	37.1	Shallow Subtidal Benthic Baseline	Shallow Subtidal Benthic and Water Baseline Plan for MC 252 NRDA
BP NRDA Independent	37.2	Nearshore Water Sampling (NGOM)	Nearshore Surface Water and Sediment Sampling Plan for MC 252 NRDA
NRDA Cooperative	68	Oyster Phase I: 2010	Mississippi Canyon 252 Oil Spill, Oyster Sampling Plan, Phase I – High Priority Sites
NRDA Cooperative	70	Oyster Transition: 2010/2011	Mississippi Canyon 252 Oil Spill, Oyster Sampling Transition Plan, October 2010 to April 2011
NRDA Cooperative	71	SAV Tier 1 Baseline	Submerged Aquatic Vegetation Tier 1 Pre-Assessment Plan, Pre-Impact Baseline Characterization
NRDA Cooperative	72	SAV Tier 2 Pre-Assessment	Submerged Aquatic Vegetation Tier 2 Pre-Assessment, Post Spill Exposure Characterization Plan
NRDA Cooperative	73	SAV Tier 3 Assessment	Mississippi Canyon 252 Oil Spill Submerged Aquatic Vegetation Tier 3 Injury Assessment Data Collection Plan

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Reference No. S-01v01-02**

Study Type ¹	SRN	Study Name in the Database	Study Description Title
NRDA Cooperative	75	SAV Fresh/Brackish Water Communities	Natural Resource Damage Assessment Work Plan for Assessing Potential Impacts to Fresh and Brackish Water Submerged Aquatic Vegetation Communities from the Deepwater Horizon (MC-252) Oil Spill
NRDA Cooperative	76.1	SAV JELA 2010	Sampling and Analysis Plan for Jean Lafitte National Historic Park and Preserve Submerged Aquatic Vegetation Natural Resource Damage Assessment
NRDA Cooperative	77	LDEQ Nearshore Sediment Baseline	Work Plan for Sediment and Water Collection and Analyses for Baseline NRDA Purposes in Louisiana
NRDA Cooperative	78	LDEQ Nearshore Sediment Pre-Assessment	Pre-Assessment Phase Water Sampling for NRDA Purposes in Louisiana
NRDA Cooperative	89.1	Beach Baseline: Florida Keys	Florida Keys Baseline Sampling Plan for Water and Sediment
NRDA Cooperative	106	Plankton Imaging SLIPPER: May 2010 (Weatherbird II)	Field Plan for Cooperative Research Cruise to Document Biotic Effects of the Deepwater Horizon Oil Spill – May 2010
NRDA Cooperative	131	Deepwater Hardground ROV (Holiday Chouest)	Deepwater ROV Sampling to Assess Potential Impacts to Hardbottom Coral Communities and Associates from the Deepwater Horizon Oil Spill
NRDA Cooperative	132	Mesophotic Reef: 2011	Mississippi Canyon 252 Deepwater Horizon Oil Spill, NRDA Sampling Plan, Mesophotic Reef Follow-Up Cruise Plan
NRDA Cooperative	135	Offshore Water Chemistry: Cooperative December 2010	NOAA/BP-Cardno ENTRIX NRDA Cooperative Deep Tow Cruise 2, December 2010 Arctic-HOS Davis 5-Sarah Bordelon Cruise Plan
NRDA Cooperative	149	Adaptive Water Column Chemistry (Hos Davis 3)	Water Column Injury Ephemeral Data Collections: Deepwater Horizon Oil Spill (DWROS) Plan for Adaptive Water Column NOAA-NRDA Sampling (PAWNNS) Cruise Plan—HOS Davis 3
NRDA Cooperative	151	Offshore Corals Tier 1	Mississippi Canyon 252 Incident NRDA Tier 1 for Deepwater Communities: Work Plan and SOPs
NRDA Cooperative	152	Offshore Corals Time Lapse Camera	Time Lapse Camera and Sediment Trap Retrieval and Redeployment Plan
NRDA Cooperative	153	Deepwater Sediment ROV: Spring 2011 (Hos Sweetwater 2)	MC252 Deepwater Horizon Oil Spill Deep Benthic Communities and Water Column Data Collection March–April 2011 HOS Sweetwater ROV Sediment and Bottom-Water Sampling Cruise Plan

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**Submerged Sediment Chemistry
Reference No. S-01v01-02**

Study Type ¹	SRN	Study Name in the Database	Study Description Title
NRDA Cooperative	154	Deepwater Sediment ROV: Summer 2011 (Hos Sweetwater 4/6)	MC252 Deepwater Horizon Oil Spill Deep Benthic Communities and Water Column Data Collection July–September 2011 HOS Sweetwater ROV Sediment and Bottom-Water Sampling Cruise Plan
BP NRDA Independent	156.1	Offshore Natural Hydrocarbon Seeps: Cruise 1	Deepwater Horizon Accident, NRDA Sampling Plan: Natural Hydrocarbon Seeps Cruise 1 Plan
BP NRDA Independent	156.2	Offshore Natural Hydrocarbon Seeps: Cruise 2	Deepwater Horizon Accident, NRDA Sampling Plan: Natural Hydrocarbon Seeps Cruise 2 Plan
NRDA Cooperative	157	Deepwater Softbottom Sediment (Sarah Bordelon 9)	Mississippi Canyon 252 Oil Spill, NRDA Sampling Plan—Deepwater Sediment Sampling to Assess Potential Post-spill Benthic Impacts from the Deepwater Horizon Oil Spill
BP NRDA Independent	160	2011 Mississippi River Flood	Assessment of the May 2011 Mississippi River Flood Event
NRDA Cooperative	163.1	Oyster Quadrat: 2011	Mississippi Canyon 252 Spill, Oyster Sampling Plan: 2011 Oyster Quadrat and Sediment Sampling
BP NRDA Independent	191	Sediment Hydrocarbon Trends	Temporal Trends of Hydrocarbons in Deepwater Sediment Cores Collected near the MC252 Well
USGS Non-NRDA Independent	306	Deepwater Corals - Cape Hatteras	USGS Deep-sea Coral Communities Cruise: R/V Cape Hatteras
BOEM and NOAA Non-NRDA Independent	307	Deepwater Corals - Ron Brown	Deepwater Program: Exploration and Research of Northern Gulf of Mexico Deepwater Natural and Artificial Hard Bottom Habitats with Emphasis on Coral Communities: Reefs, Rigs and Wrecks, "Lophelia II"
USM NRDA Independent	308	DeepwaterBenthic--Red Crab Samples--SEP 2010	Deepwater Benthic: Red Crab Samples, September 2010
NOAA Non-NRDA Independent	312	Mussel Watch May 2010	Mussel Watch May 2010
NOAA Non-NRDA Independent	313	Mussel Watch November 2010	Mussel Watch November 2010
PSU and WHOI Non-NRDA Independent	902	Atlantis Cruise Dec 4-15 2010	Deep-sea Coral Communities Cruise: R/V Atlantis

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Submerged Sediment Chemistry
Reference No. S-01v01-02

Study Type ¹	SRN	Study Name in the Database	Study Description Title
Unknown Non-NRDA Independent	913	Toxicity Sediment Collection 2011 – Louisiana	Toxicity Sediment Collection 2011 – Louisiana
MDEQ Non-NRDA Independent	916	MDEQ Preassessment Early MAY 2010	MDEQ Pre-assessment April & May 2010
MDEQ Non-NRDA Independent	917	MDEQ-Preassessment-Late APR 2010	MDEQ Pre-assessment April 2010
NOAA Non-NRDA Independent	934	NOAA offshore water chemistry sampling on NOAA vessels	NOAA Sampling on NOAA Vessels
Non-NRDA Response	1001	Shallow Water Submerged Oil	Shallow Water Submerged Oil
Non-NRDA Response	1003	Sunken Oil Delineation	Sunken Oil Delineation
Non-NRDA Response	1012	Fate of Oil Response Team	Fate of Oil Response Team
Non-NRDA Response	1020	Deep Sea Sediments and Operational Annex	Deep Sea Sediments and Operational Annex
Non-NRDA Response	1046	NOAA Ship <i>Nancy Foster</i> Archived Sediment Samples	NOAA Ship <i>Nancy Foster</i> Archived Sediment Samples

¹ Study Type Notes:

BP: BP Exploration & Production Inc. and BP Gulf Coast Restoration Organization

BOEM: Bureau of Ocean Energy Management

MDEQ: Mississippi Department of Environmental Quality

NOAA: National Oceanic and Atmospheric Administration

NRDA: natural resource damage assessment

PSU: Pennsylvania State University

SRN: Study Reference Number

USGS: U.S. Geological Survey

USM: University of Mississippi

WHOI: Woods Hole Oceanographic Institution

Appendix D. Gulf Science Data Citations

BP. Gulf Science Data, Water Chemistry Data File. Website: <http://gulfsciencedata.bp.com/>, directory: Water; subdirectory: Water Chemistry; filename: WaterChemistry_W-01v02-01.csv (zipped). Last modified May 2014.

BP. Gulf Science Data Dispersant Marker Water Chemistry Data. Website: <http://gulfsciencedata.bp.com/>, directory: Water; subdirectory: Dispersant Marker WaterChemistry; filename: WaterChemistry_W-02v01-01.zip. Last modified January 24, 2014.

BP. Gulf Science Data, Submerged Sediment Chemistry Data File. Website: <http://gulfsciencedata.bp.com/>, directory: Offshore Sediment; subdirectory: Sediment Chemistry; filename: SedimentChemistry_S-01v01-01.zip. Last modified January 22, 2014.

BP. Gulf Science Data, Dispersant Marker Submerged Sediment Chemistry Data File. Website: <http://gulfsciencedata.bp.com/>, directory: Offshore Sediments; subdirectory: Dispersant Marker Sediment Chemistry; filename: SedimentChemistry_S-02v01-01.csv (zipped). Last modified July 2.

BP. "Gulf Science Data MC-252 Oil Characterization Data File." Reference No. O-01v01-01. Last modified November 12, 2013. <http://gulfsciencedata.bp.com/go/doctype/6145/178706>

BP. Gulf Science Data Reference Oil Characterization Data. Website: <http://gulfsciencedata.bp.com/>, directory: Oil; subdirectory: Oil Characteristics – additional reference oils; filename: OilChemistry_O-04v01-01.zip. Last modified January 22, 2014.

BP. Gulf Science Data Laboratory QC Control Oil Chemistry Data. Website: <http://gulfsciencedata.bp.com/>, directory: Oil; subdirectory: Laboratory QC Control Oil Chemistry; filename: OilChemistry_O-02v02-01.zip. Last modified January 24, 2014.

BP. Gulf Science Data Oil, Oil Source Interpretations Data File. Website: <http://gulfsciencedata.bp.com/>, directory: Oil; subdirectory: Oil Source Interpretations; filename: OilSourceInterpretations_O-03v01-01.zip. Last modified February 12, 2014.

Appendix E. Quality Assurance review

It is important to use reliable data to assess potential environmental impacts. As acknowledged by NOAA regarding the *Deepwater Horizon* oil spill: “Quality Assurance (QA) is essential for the collection and analysis of data in a manner that is scientifically acceptable and legally defensible.”¹⁰⁸

To ensure that only reliable and appropriate data formed the basis of my opinion, I have reviewed the chemistry and toxicity data according to the quality assurance guidelines published by the EPA.^{109,110,111} This review followed EPA guidance.^{112,113}

I have considered the chemistry and toxicity data from federal and state agencies, BP, and other sources using the criteria listed in Table 1 to ensure that all data meet minimum standards of traceability and quality assurance, and were generated using appropriate methods. These criteria were applied equally and consistently to all data.

¹⁰⁸ NOAA. Type of Preassessment Information Available, Appendix G, *available at* http://www.darrp.noaa.gov/library/pdf/PPD_AP-G.PDF.

¹⁰⁹ U.S. EPA. 2002. Guidance for Quality Assurance Project Plans, (EPA QA/G-5) EPA/240/R-02/009. U.S. Environmental Protection Agency, Office of Environmental Information. Washington, DC, December 2002, *available at* <http://www.epa.gov/quality/qs-docs/g5-final.pdf>.

¹¹⁰ U.S. EPA. 2001. EPA Requirements for Quality Assurance Project Plans, (EPA QA/R-5) EPA/240/B-01/003. U.S. Environmental Protection Agency, Office of Environmental Information. Washington, DC, March 2001, *available at* <http://www.epa.gov/quality/qs-docs/r5-final.pdf>.

¹¹¹ U.S. EPA. 2000. Guidance for Data Quality Assessment, Practice Methods for Data Analysis, (EPA QA/G-9) EPA/600/R-96/084. U.S. Environmental Protection Agency, Office of Environmental Information. Washington, DC, July 2000.

¹¹² U.S. EPA. 2002. Guidance on Environmental Data Verification and Data Validation, (EPA QA/G-8) EPA/240-R-02/004. U.S. Environmental Protection Agency, Office of Environmental Information. Washington, DC, *available at* <http://www.epa.gov/QUALITY/qs-docs/g8-final.pdf>.

¹¹³ U.S. EPA. 2008. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-08/01. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. Washington, DC.

Table 1. Criteria used to accept data for this report

Characteristic	Criteria
Field Sampling Plan	Meets guidelines set by USEPA and is scientifically defensible
Quality Assurance Plan (QAP)	Meets guidelines set by USEPA and is scientifically defensible
Data Quality Objectives (DQOs)	Meets QAP requirements and documentation is available to perform adequate review and verification
Chain-of-Custody	Meets QAP requirements and documentation is available
Independent Data Verification	Procedure and verification result is documented
Appropriate Methods	Well-established standardized methods that meet DQOs for precision, accuracy, completeness, representativeness, and comparability; and are scientifically defensible

The Quality Assurance Project Plans for both the BP¹¹⁴ and federal government¹¹⁵ chemistry data programs were of high quality and met the guidelines established by EPA. According to the Gulf Science Data website, prior to posting on the website, chemistry data were validated in accordance with the EPA guidelines for data review, and field sample attributes (for example, coordinates, depth, and collection date) were verified in order to accurately place samples in space and time. Data validation of analytical chemistry data was performed to assess the data's completeness, correctness, and compliance with applicable analytical method requirements. Data verification reviews were performed to ensure completeness and correctness of each sample's associated latitude, longitude, depth, and sample collection date.

As a result of my review, it is my opinion that the data on the Gulf Science Data website are of high quality and can be used with the usual care given to this type of environmental data. This includes reviewing laboratory qualifier codes, method detection and reporting limits, and associated quality control samples to determine if specific data are appropriate for the intended use. For example, most of the data reported for the dispersant chemical DOSS had "U" qualifier codes indicating the reported concentration was the detection limit. Almost all of the remainder of the DOSS data had a "J" qualifier code indicating the reported value is only an estimate. And the quality control field and equipment blank samples for DOSS had very high DOSS background contamination indicating a very high probability of "false positives" for DOSS. Thus, in the case of DOSS, quality control information was available to review the quality of the data and to determine that great care should be taken in using those data and that the use of the

¹¹⁴ Deepwater Horizon Quality Assurance Project Plan For The BP MC252 Incident Sample Management Group. BP-MC252-QAPP. 2011, 55 pp + Appendices.

¹¹⁵ Analytical Quality Assurance Plan Mississippi Canyon 252 (Deepwater Horizon) Natural Resource Damage Assessment. Version 3.1, 2012, 38 pp.

data must be appropriately qualified. This is the type of review I performed on all of the chemistry data prior to using it in my analysis.

This level of review was not possible for other sources of data, notably data from academic studies. Without this documentation or access to actual data, rather than just summary tables or graphs, I could not verify that the criteria outlined in Table 1 were met. This is not to say that the data were not of high quality, only that I could not verify this due to incomplete information. Thus, no chemistry data other than that on the Gulf Science Data website were used in my analysis, except to refer to other published data and studies to help provide context to my analysis.

The toxicity data fell into two categories. The data supplied by BP was fully validated and included formal, final reports signed by a Quality Assurance Office and the Study Director/Monitor. In most cases toxicity endpoints were calculated and statistical analysis was provided. In contrast, with the exception of a few studies, the data provided by the federal government was only raw data, with no reports and no signatures indicating Quality Assurance officer or Study Director review or approval. To the extent possible given the information available, the government toxicity data were reviewed to ensure that all data meet the quality assurance (QA) standards established by the federal government for assessing environmental impact. My analysis was only a screening and cannot fully substitute for a full and official quality assurance review; however, it is my opinion, based on the information available to me, that the government-provided toxicity data are largely of high quality and acceptable for use in my analysis.

Both the BP and the federal government toxicity studies followed well-designed and appropriate Quality Assurance Plans.¹¹⁶¹¹⁷¹¹⁸

A final criterion I used was to evaluate the appropriateness of the methods. This must be done in the context of the use of the data. Going back to the example of DOSS, the analytical methods were insufficient to detect DOSS at very low concentrations. However, the methods met all requirements to assess whether DOSS posed a potential threat to aquatic life. The toxicity of DOSS is so low, that a value below or at the detection limit provided a large margin of safety and allowed adequate assessment of DOSS potential to cause harm to aquatic life.

All of the chemistry methods I reviewed passed the test of adequacy for assessing environmental impact of oil-related and dispersant chemicals.

¹¹⁶ Quality Assurance Project Plan: Deepwater Horizon Laboratory Toxicity Testing Version 4. Prepared for: U.S. Department of Commerce, National Oceanic and Atmospheric Administration. Prepared by: Stratus Consulting Inc. February 4, 2014, 34 pp + Appendices.

¹¹⁷ General Laboratory Protocols and Procedures: Deepwater Horizon Laboratory Toxicity Testing. Prepared for: U.S. Department of Commerce, National Oceanic and Atmospheric Administration. Prepared by: Stratus Consulting Inc. 2014.

¹¹⁸ Each individual toxicity study performed by BP contains a study protocol signed by the Principal Investigator and the validator. Each study protocol includes a quality criteria section, discussing the quality assurance plan.

This was not the case for all of the toxicity study methods. The actual toxicity testing protocols were mostly standard methods and from the available information most were appropriate. However, the method of exposure to oil-related chemicals in many cases was novel and did not follow standard, well-accepted procedures. There were exposure methods used by BP and especially by the federal government that, in my opinion, did not meet the standard of appropriateness due to poor comparability and representativeness for the intended purpose. This is discussed in detail in Appendix G.

Overall, the data used to help form my opinions are of high quality and meet the quality assurance standards established by the federal government for assessing environmental impact. In the report, I have identified those cases where the data were not appropriate or scientifically defensible for the intended use.

Appendix F. EPA Benchmarks and Toxic Unit Analysis

The EPA benchmark calculations and use of Toxic Units (TU) is a well-developed method for assessing the additive effects of PAH and BTEX chemicals on aquatic organisms. This method can be adapted to use in sediments by use of organic carbon normalization as described below. The theoretical background, derivation, and some practical implementation guidance are provided in EPA documentation.¹¹⁹

With regard to the EPA method I have used in this report, work published by NOAA scientists states that “it is important to remember that the TPAH-EBTU was developed using acute toxicity data generated under exposures conditions longer (days) than those expected during an oil spill (minutes to hours).”¹²⁰ This publication went on to describe the method as a conservative approach, and then used the method to assess ecological effects of the *Deepwater Horizon* oil spill.

This EPA TU approach has been used previously by NOAA, EPA, and the USGS to assess toxicity of PAHs and BTEX to aquatic life resulting from the *Deepwater Horizon* oil spill.^{121,122,123}

I utilize the method in a similar way, adding up the toxicities of 34 PAHs as prescribed by EPA. EPA has indicated¹²⁴ that the assumption that the 34 PAHs are truly additive may be an overestimate of toxicity because some studies indicate toxicity is actually less than predicted by this addition. It is, therefore, a conservative approach. Using even more than 34 PAHs would compound this potential problem.

¹¹⁹ U.S. EPA. 2003. Procedures for the derivation of equilibrium partitioning sediment benchmarks (ESBs) for the protection of benthic organisms: PAH mixtures. EPA-600-R-02-013, available at http://www.epa.gov/nheerl/download_files/publications/PAHESB.pdf.

¹²⁰ Bejarano, A.C., Levine, E., and Mearns, A.J. 2013. Effectiveness and potential ecological effects of offshore surface dispersant use during the Deepwater Horizon oil spill: a retrospective analysis of monitoring data. Environmental Monitoring and Assessment 185:10281-10295.

¹²¹ Adriana C. Bejarano & Edwin Levine and Alan J. Mearns. Effectiveness and potential ecological effects of offshore surface dispersant use during the Deepwater Horizon oil spill: a retrospective analysis of monitoring data. (2013) Environ Monit Assess 185:10281–10295.

¹²² U.S. EPA. Water Quality Benchmarks for Aquatic Life, available at <http://www.epa.gov/bpspill/water-benchmarks.html#gen2>.

¹²³ Nowell, L.H., Ludtke, A.S., Mueller, D.K., and Scott, J.C. 2011. Organic Contaminants, Trace and Major Elements, and Nutrients in Water and Sediment Sampled in Response to the Deepwater Horizon Oil Spill. In: U.S. Geological Survey (Ed.). U.S. Department of the Interior, Reston, Virginia, p. 128. Open-File Report 2011-1271.

¹²⁴ U.S. EPA. 2003. Procedures for the derivation of equilibrium partitioning sediment benchmarks (ESBs) for the protection of benthic organisms: PAH mixtures. EPA-600-R-02-013, available at http://www.epa.gov/nheerl/download_files/publications/PAHESB.pdf.

The following text (until the end of this Appendix) is reproduced nearly verbatim from the EPA documentation on this approach¹²⁵ with minor changes for greater clarity and to reference specific use of this method in this report. All of the data I used in this report includes the full suite of alkylated PAHs.

Explanation of PAH Benchmark Calculations Using EPA PAH ESB Approach¹²⁶

The effects of PAHs are cumulative (additive to be more precise) across all of the PAH compounds in petroleum. When you measure a single PAH, phenanthrene, for example, only a small percentage of the aggregate effect of the petroleum-contaminated mixture is measured.

The "potency divisors" used in the calculation represent the amount of an individual chemical (*i.e.*, phenanthrene), by itself, that can cause an adverse effect. So, if there was a spill that was nothing but pure phenanthrene, the "potency divisor" for phenanthrene would be the same as the effect level for phenanthrene alone, and one would just compare the two numbers.

PAH Benchmark Calculation for Water Samples

In the case of oil, phenanthrene is just one chemical that contributes to the overall potency of the petroleum mixture. To determine the overall effect of the petroleum in water, one must combine the contributions of all the individual chemicals in the petroleum mixture. The effect of the mixture can be calculated by simply adding together the fractional contributions of all of the components of the mixture. So to estimate the total effect of the mixture of PAHs in an oil sample, first you divide each of the individual compounds by the potency divisor (explained above), then the ratios are added together to calculate the combined toxicity. (See example calculation on page 5.)

PAH Benchmark Calculation for Sediment Samples

To determine PAHs in sediment, it is important to factor in the amount of organic carbon in the sediment. When organic carbon is present in sediment, PAHs bind to the organic carbon, making the PAHs less available to aquatic life, thus lessening their toxicity. For example, both sediments A and B have measured phenanthrene concentrations of 10,000 ug/kg dry weight. Sediment A has an organic carbon concentration of 1% and Sediment B has an organic carbon concentration of 2%. Sediment B is considered half as toxic as Sediment A, because Sediment B can bind twice the amount of phenanthrene of Sediment A.

In order to account for the differences in bioavailability, the dry weight-based PAH concentrations measured in sediment are divided by the organic carbon concentration. From the

¹²⁵ Reproduced from: explanation-of-pah-benchmark-calculations-20100622.doc, 6/23/2010. Originally developed by Dave Mount, EPA Office of Research and Development, Duluth, MN.

¹²⁶ Reproduced from: explanation-of-pah-benchmark-calculations-20100622.doc, 6/23/2010. Originally developed by Dave Mount, EPA Office of Research and Development, Duluth, MN.

example above, the phenanthrene concentration of 10,000 ug/kg dry weight in Sediment A is divided by 0.01 (1%) kg organic carbon to equal 1,000,000 ug phenanthrene/kg organic carbon. The phenanthrene concentration of 10,000 ug/kg dry weight in Sediment B is divided by 0.02 (2%) kg organic carbon to equal 500,000 ug phenanthrene/kg organic carbon. Sediment B has a lower organic carbon-normalized phenanthrene concentration, reflective of the lower bioavailability of phenanthrene in Sediment B.

A more complex sediment example is as follows:

A sediment sample contains

9.23 ug/kg dry weight pyrene
10.00 ug/kg dry weight naphthalene
10.00 ug/kg dry weight phenanthrene
20.00 ug/kg dry weight fluoranthene
3.5% or 0.035 organic carbon concentration

1. Normalize the PAH concentrations by dividing by the fraction organic carbon:

$$(9.23 \text{ ug pyrene/kg dwt}) / (0.035 \text{ kg organic carbon/kg dwt}) = 263.7 \text{ ug pyrene/kg organic carbon}$$
$$(10.00 \text{ ug naphthalene/kg dwt}) / (0.035 \text{ kg organic carbon/kg dwt}) = 285.7 \text{ ug naphthalene/kg organic carbon}$$
$$(10.00 \text{ ug phenanthrene/kg dwt}) / (0.035 \text{ kg organic carbon/kg dwt}) = 285.7 \text{ ug phenanthrene/kg organic carbon}$$
$$(20.00 \text{ ug fluoranthene/kg dwt}) / (0.035 \text{ kg organic carbon/kg dwt}) = 571.4 \text{ ug fluoranthene/kg organic carbon}$$

2. Divide these organic carbon-normalized values by their "potency divisors" from the sediment benchmark table. The chronic "potency divisors" are:

$$\text{pyrene} = 697,000 \text{ ug/kg organic carbon}$$
$$\text{naphthalene} = 385,000 \text{ ug/kg organic carbon}$$
$$\text{phenanthrene} = 596,000 \text{ ug/kg organic carbon}$$
$$\text{fluoranthene} = 707,000 \text{ ug/kg organic carbon}$$

These calculations yield

$$(263.7 \text{ ug pyrene/kg organic carbon}) / (697,000 \text{ ug/kg organic carbon}) = 0.000378$$
$$(285.7 \text{ ug naphthalene/kg organic carbon}) / (385,000 \text{ ug/kg organic carbon}) = 0.000742$$
$$(285.7 \text{ ug phenanthrene/kg organic carbon}) / (596,000 \text{ ug/kg organic carbon}) = 0.000479$$
$$(571.4 \text{ ug fluoranthene/kg organic carbon}) / (707,000 \text{ ug/kg organic carbon}) = 0.000808$$

These numbers are basically the fraction of a chronically toxic concentration represented by that single compound. So the concentration of pyrene is 0.000378 or 0.0378% of the amount of pyrene alone that would be required to cause toxicity.

3. Add the individual fractional contributions of each PAH compound together, since the toxicity of the compounds are additive:

$$0.000378 \text{ pyrene} + 0.000742 \text{ naphthalene} + 0.000479 \text{ phenanthrene} + 0.000808 \text{ fluoranthene} = 0.002407$$

The chronic benchmark is exceeded when the sum exceeds 1.0. In this example, the PAH concentration in the sample is well below the benchmark.

The previous example is based on four PAH compounds out of hundreds that are in oil. To determine the combined potency or toxicity, the calculation procedure must be completed for all of the PAHs present in the sample. The potency of oil lies outside the dozen or so PAHs often measured.

In addition to PAHs, the BTEX compounds will also add to the overall potency of petroleum. While EPA is measuring for these chemicals in oil, it is unlikely that BTEX remained in the samples by the time *Deepwater Horizon* petroleum reached shore. This is because these chemicals are volatile, and quickly evaporate into the air when oil reaches the surface of the ocean. If there were BTEX chemicals left in the samples, it would add to the potency of the PAHs. The calculations would be performed in exactly the same way, except that the potency ratios (concentration/potency divisor) for the BTEX compounds would also be included in the sum.

Example PAH Water Benchmark Calculation							
CHEMICAL	Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Measured Concentration (ug/L)	Alkylation Multiplier	Alkyl Adjusted Concentration (ug/L)	Acute Potency Divisor (ug/L)	Chronic Potency Divisor (ug/L)	Acute Potency Ratio	Chronic Potency Ratio
Acenaphthene	0	1	0	232	55.8	0.0000	0.00000
Acenaphthylene	0	1	0	1,280	307	0.0000	0.00000
Anthracene	0	1	0	86.1	20.7	0.0000	0.00000
Benz(a)anthracene	0	1	0	9.28	2.23	0.0000	0.00000
Benzene	0	1	0	27,000	5,300	0.0000	0.00000
Benzo(a)pyrene	0	1	0	3.98	0.957	0.0000	0.00000
Benzo(b)fluoranthene	0	1	0	2.82	0.677	0.0000	0.00000
Benzo(e)pyrene	0	1	0	3.75	0.901	0.0000	0.00000
Benzo(g,h,i)perylene	0	1	0	1.83	0.439	0.0000	0.00000
Benzo(k)fluoranthene	0	1	0	2.67	0.642	0.0000	0.00000
Chrysene	0	5	0	8.49	2.04	0.0000	0.00000
Cyclohexane	0	1	0	1,900	374	0.0000	0.00000
Dibenz(a,h)anthracene	0	1	0	1.17	0.282	0.0000	0.00000
Ethylbenzene	0	1	0	4,020	790	0.0000	0.00000
Fluoranthene	4.2	1	4.2	29.6	7.11	0.1419	0.59072
Fluorene	0	14	0	164	39.3	0.0000	0.00000
Indeno(1,2,3-cd)pyrene	0	1	0	1.14	0.275	0.0000	0.00000
Isopropylbenzene	0	1	0	2,140	420	0.0000	0.00000
Methylcyclohexane	0	1	0	463	91.0	0.0000	0.00000
m-Xylene	0	1	0	3,560	700	0.0000	0.00000
Naphthalene	3	120	360	803	193	0.4482	1.86528
o-Xylene	0	1	0	3,560	700	0.0000	0.00000
Perylene	0	1	0	3.75	0.901	0.0000	0.00000
Phenanthrene	1.5	6.8	10.2	79.7	19.1	0.1280	0.53270
p-Xylene	0	1	0	3,560	700	0.0000	0.00000
Pyrene	1.2	2.1	2.52	42.0	10.1	0.0599	0.24950
Toluene	0	1	0	8,140	1,600	0.0000	0.00000
					TOTAL	0.778	3.238
					Reported Concentrations	DO NOT exceed acute benchmark because total value is less than 1	DO exceed chronic benchmark because total value is greater than 1

Legend
White = measured value from sample
Turquoise = given values
Tan = calculated values

STEP 1: Multiply Column A by Column B. The result is Column C.

STEP 2a: Divide Column C by Column D. The result is Column F.

STEP 2b: Divide Column C by Column E. The result is Column G.

STEP 3a: Sum Column F for Acute Benchmark Value.

STEP 3b: Sum Column G for Chronic Benchmark Value.

Example PAH Sediment Benchmark Calculation								
Sediment TOC (mg/kg dwt) 35000								
	Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H
CHEMICAL	Measured Concentrations (ug/kg dwt)	Organic Carbon Normalized Concentrations (ug/kg OC)	Alkylation Multiplier	Alkyl-Adjusted Concentrations (ug/kg OC)	Acute Potency Divisor (ug/kg Organic Carbon)	Chronic Potency Divisor (ug/kg Organic Carbon)	Acute Potency Ratio	Chronic Potency Ratio
Benzene	0	0	1	0	3,360,000	660,000	0.00000	0.00000
Cyclohexane	0	0	1	0	4,000,000	786,000	0.00000	0.00000
Ethylbenzene	0	0	1	0	4,930,000	970,000	0.00000	0.00000
Isopropylbenzene	0	0	1	0	5,750,000	1,130,000	0.00000	0.00000
m-Xylene	0	0	1	0	4,980,000	980,000	0.00000	0.00000
p-Xylene	0	0	1	0	4,980,000	980,000	0.00000	0.00000
o-Xylene	0	0	1	0	4,980,000	980,000	0.00000	0.00000
Methylcyclohexane	0	0	1	0	4,960,000	976,000	0.00000	0.00000
Toluene	0	0	1	0	4,120,000	810,000	0.00000	0.00000
Naphthalene	10	286	120	34286	1,600,000	385,000	0.02143	0.08905
Acenaphthylene	0	0	1	0	1,880,000	452,000	0.00000	0.00000
Acenaphthene	0	0	1	0	2,040,000	491,000	0.00000	0.00000
Fluorene	0	0	14	0	2,240,000	538,000	0.00000	0.00000
Phenanthrene	10	286	6.8	1943	2,480,000	596,000	0.00078	0.00326
Anthracene	0	0	1	0	2,470,000	594,000	0.00000	0.00000
Fluoranthene	20	571	1	571	2,940,000	707,000	0.00019	0.00081
Pyrene	9.23	264	2.1	554	2,900,000	697,000	0.00019	0.00079
Benz(a)anthracene	0	0	1	0	3,500,000	841,000	0.00000	0.00000
Chrysene	0	0	5	0	3,510,000	844,000	0.00000	0.00000
Perylene	0	0	1	0	4,020,000	967,000	0.00000	0.00000
Benzo(b)fluoranthene	0	0	1	0	4,070,000	979,000	0.00000	0.00000
Benzo(k)fluoranthene	0	0	1	0	4,080,000	981,000	0.00000	0.00000
Benzo(e)pyrene	0	0	1	0	4,020,000	967,000	0.00000	0.00000
Benzo(a)pyrene	0	0	1	0	4,020,000	965,000	0.00000	0.00000
Indeno(1,2,3-cd)pyrene	0	0	1	0	4,620,000	1,110,000	0.00000	0.00000
Dibenz(a,h)anthracene	0	0	1	0	4,660,000	1,120,000	0.00000	0.00000
Benzo(g,h,i)perylene	0	0	1	0	4,540,000	1,090,000	0.00000	0.00000
					TOTAL	0.023	0.094	
					Reported Concentrations	DO NOT exceed acute benchmark because total value is less than 1	DO NOT exceed chronic benchmark because value is less than 1	

Legend
White = measured value from sample
Turquoise = given values
Tan = calculated values

STEP 1: Divide Column A by TOC, then Multiply by 1,000,000. The result is Column B.

STEP 2: Multiply Column B by Column C. The result is Column D.

STEP 3a: Divide Column D by Column E. The result is Column G.

STEP 3b: Divide Column D by Column F. The result is Column H.

STEP 4a: Sum Column G for Acute Benchmark Value.

STEP 4b: Sum Column H for Chronic Benchmark Value.

Appendix G. Discussion of Toxicity Test Methods: WAF, CEWAF, HEWAF

This appendix address two questions regarding the use of toxicity testing on the Water Accommodated Fraction of oil (WAF), the Chemically-Enhanced Water Accommodated Fraction of oil (CEWAF), and the High-Energy Water Accommodated Fraction of oil (HEWAF).

- (1) How well do the standard laboratory-generated WAF and CEWAF represent oil-related exposure that actually took place in the Gulf of Mexico?
- (2) How well does the non-standard and experimental HEWAF represent oil-related exposure that actually took place in the Gulf of Mexico?

Toxicity Testing Using the Standard WAF and CEWAF

The toxicity testing of water that was intended to support assessment of the potential environmental impact of the *Deepwater Horizon* oil spill was performed on:

- (1) samples that were collected during and shortly after the oil release; and
- (2) laboratory-generated samples that were intended to serve as surrogate for what happened in the Gulf of Mexico.

When evaluating the potential toxicity of an oil spill, it is always best to use actual measurements at the time and location of the spill – either chemical measurements to compare to benchmarks or toxicity tests on actual samples collected from the field at the time of the spill.

However, a very significant effort was expended by both BP and the government to perform toxicity testing “after the fact” on the surrogate studies, and it is important to understand how they were conducted to properly interpret the resulting data.

The toxicity studies that utilized laboratory-generated oil exposures in water relied on the formation of a WAF. A WAF is created by adding oil to water and allowing the water to “accommodate” or receive the soluble chemicals from the oil. Because oil is less dense than water, most of it will float to the top (depending on the procedure). The water is then separated from the discrete oil layer and used for toxicity and/or chemical testing. A standard variation of the WAF is the Chemically Enhanced WAF, or CEWAF, that tests a mixture of oil with dispersant, where the test is otherwise performed in much the same way as the WAF.

The use of a WAF for toxicity testing of oil-related chemicals has a long history dating from at least the 1970's.^{127,128} The WAF was designed and refined over the years to standardize the

¹²⁷ See, for example, Neff, J.M., Cox, B.A., Dixit, D., and Anderson J.W. 1976. Accumulation and release of petroleum-derived aromatic hydrocarbons by four species of marine animals. *Marine Biology* 38:279-289.

method used to study and compare oils and dispersants (as CEWAFs), and provide a standard means of exposing organisms to the chemicals that are likely to dissolve when oil is released into water.

Although there are minor variations on the standard methods for creating a WAF and CEWAF, in the past 15 years there has been a major effort to coalesce along the standard methods developed by the Chemical Response to Oil Spills: Ecological Effects Research Forum (CROSERF)¹²⁹ and described in detail by others.^{130,131,132}

Based on this consensus, it is widely acknowledged that the WAF is designed to simulate the highest possible exposure to oil-related chemicals. This is because a WAF is created in a “closed” system (a bottle) where oil-related chemicals that dissolve into the water cannot be further diluted or degraded. Toxicity tests then use either a flow-through or static-renewal exposure system to keep the concentrations of oil-related chemicals constant during the toxicity test. This contrasts with the “real world” that is an “open system” where a) the dissolved oil-related chemicals can mix with clean water and be diluted, and b) natural bacteria are present to degrade the oil and oil-related chemicals.

Various scientists and organizations have made it clear that the WAF represents a “worst-case scenario” with regard to exposure to oil-related chemicals and the disconnect between a WAF and real world becomes greater as one moves to larger more dynamic bodies of water, such as the open ocean, where dilution is faster and greater.

For example, SINTEF, which has a long and accomplished record of studying the fate and effects of oil in the marine environment, states:¹³³

¹²⁸ Griffin, L.F. and Calder, J.A. 1977. Toxic effect of water-soluble fractions of crude, refined, and weathered oils on the growth of a marine bacterium. *Applied and Environmental Microbiology* 33(5):1092–1096.

¹²⁹ Coelho, G.M. and Aurand, D.V. (eds.). 1998. Proceedings of the Seventh Meeting of the Chemical Response to Oil Spills: Ecological Effects Research Forum. November 13-14, 1997. Ecosystem Management & Associates, Inc., Purcellville, VA. EM&A Report 97-02, p. 53.

¹³⁰ Singer, M.M., Aurand, D.V., Coelho, G.M., Sowby M., Bragin G.E., Clark J.R., and Tjeerdema R.S. 2001. Making, measuring and using water accommodated fractions of petroleum for toxicity testing. In: Proceedings, 2001 International Oil Spill Conference, American Petroleum Institute, Washington, DC, pp. 1269-1274.

¹³¹ National Research Council. Oil Spill Dispersants, Efficacy and Effects. 2005. Committee on Understanding Oil Spill Dispersants: Efficacy and Effects, Ocean Studies Board, Division on Earth and Life Studies. National Academies Press, 400pp.

¹³² Singer, M.M., Aurand, D.V., Coelho, G.M., Sowby M., Bragin G.E., Clark J.R., and Tjeerdema R.S. 2001. Making, measuring and using water accommodated fractions of petroleum for toxicity testing. In: Proceedings, 2001 International Oil Spill Conference, American Petroleum Institute, Washington, DC, pp. 1269-1274.

¹³³ SINTEF. 2010. Chemical and toxicological characterization of water accommodated fraction (WAF) of crude oils, available at http://www.sintef.no/upload/Materialer_kjemi/Marin%20milj%C3%B8teknologi/faktaark/WAF-web.pdf.

WAFs are usually prepared from two different weathering degrees, and with two oil-to-water ratios (1 to 40 and 1 to 10 000). These different WAFs illustrate “snapshots” in the dynamic process of weathering and dissolution occurring during a spill situation. The oil-to-water ratio of 1 to 40 (40 g oil/L seawater) is considered to be unrealistically high. However, the data generated gives a kind of “worst case scenario” conditions: The solutions used are assumed to be “saturated” and therefore represents a conservative estimate of concentrations foreseeable in the field. An oil-to-water ratio of 1 to 10 000 (100 mg oil/L water) is often considered to be a more realistic approach in an oil spill release (e.g. after use of chemical dispersants).

And an example from the recent scientific literature:¹³⁴

Singer et al., Fuller et al., and the National Research Council found that constant exposure testing is likely to overestimate toxicity that occurs in the open ocean beneath a spill with or without application of dispersants. Spiked exposures with declining concentrations targeting a specific rate of reduced concentrations were found to more closely represent the natural dilution of dispersed crude oil in the water column [. . .]. To simulate the dilution observed under oil spills in the field, spiked exposures were conducted with concentrations theoretically declining by half every 4 h in the present study.

This points out two issues:

- (1) The WAF system is designed to be saturated with oil-related chemicals and have a constant concentration of oil-related chemicals, neither of which is possible in an open, enormous, and dynamic system like the Gulf of Mexico.
- (2) The oil-to-water ratio can make a big difference in how much oil-related chemical is “accommodated” by the water. Oil-to-water ratios greater than 1 to 10,000 may be useful for scientific research experiments, but those conditions are not realistic.

So the key to getting a WAF to be more representative of the real world is to dilute it enough to get to concentrations actually measured in the Gulf of Mexico. The dilutions of a WAF for toxicity testing usually follow the procedure for another common chemical mixture of concern to the environment – effluent discharge. The EPA has established standard methods for Whole Effluent Testing (WET) where the effluent is diluted from 100% to 50%, 25%, 12.5%, and 6.25%, and toxicity tests are run on each.^{135,136,137}

¹³⁴ Gardiner, W.W., Word, J.Q., Word, J.D., Perkins, R.A., McFarlin, K.M., Hester, B.W., Word, L.S. and Ray, C.M. 2013. The acute toxicity of chemically and physically dispersed crude oil to key arctic species under arctic conditions during the open water season. Environmental Toxicology and Chemistry 32(10):2284–2300.

¹³⁵ U.S. EPA. Whole Effluent Toxicity, available at <http://water.epa.gov/scitech/methods/cwa/wet/>.

¹³⁶ Under the NPDES Program, U.S. EPA. 2000. Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136). U.S. Environmental Protection Agency, Office of

Most of the toxicity testing performed with the WAF, CEWAF, and HEWAF used these or at least some dilutions. However, to properly interpret the WAF toxicity results, one needs to have the WAF test match the PAH exposures measured in the Gulf of Mexico, and this requires a calibration of dilutions to match what was measured in the Gulf of Mexico. And because we know that individual PAHs have different toxicities (Appendix D), we need to look at not just the total PAH concentration but the distribution of the individual PAHs. In the absence of this analysis, one cannot make direct comparisons between the laboratory WAF or CEWAF data and the potential harm caused by the *Deepwater Horizon* oil spill.

In the absence of detailed comparisons of PAH profiles in the laboratory toxicity tests and the actual measurements in the Gulf of Mexico, and knowing that the concentrations of PAHs measured in the Gulf of Mexico were generally far below those in the WAF and CEWAF experiments (even after dilution), it is my opinion that the WAF and CEWAF data can only be used in a general way to understand oil and oil-dispersant toxicities. A direct comparison would be inappropriate without verifying that individual PAH concentrations in the laboratory experiments match those measured in the Gulf of Mexico.

Toxicity Testing Using the Non-Standard HEWAF

A third type of oil exposure used extensively by the government but not by BP, is an experimental and non-standard variation of the WAF called the high-energy WAF or HEWAF. The HEWAF uses a commercial blender to homogenize the oil and water emulsion at very high energies. This method is new and novel, with no precedent in the scientific literature until recent publications by NOAA scientists.

Despite the consensus on the standard methods described above, this completely different HEWAF method has been used by NOAA¹³⁸ for nearly two-thirds of the toxicity tests they

conducted. Being a new, untested, and non-validated method, the HEWAF does not meet the EPA criteria of “comparability” (see Appendix D). In both the scientific and regulatory context, new methods must be proven “comparable” or otherwise “better” to be acceptable. I can find no documentation that the HEWAF method has undergone this independent validation process.

Water, EPA 821-B-00-004, July 2000, available at
http://water.epa.gov/scitech/methods/cwa/wet/upload/2007_07_10_methods_wct_wetguide.pdf.

¹³⁷ U.S. EPA. 2004. Draft National Whole Effluent Toxicity (WET) Implementation Guidance Under the NPDES Program. U.S. Environmental Protection Agency, Office of Wastewater Management, EPA 832-B-04-003, available at
http://water.epa.gov/scitech/methods/cwa/wet/upload/2004_12_28_pubs_wet_draft_guidance.pdf.

¹³⁸ Quality Assurance Project Plan: Deepwater Horizon Laboratory Toxicity Testing Version 4. Prepared for: U.S. Department of Commerce, National Oceanic and Atmospheric Administration. Prepared by: Stratus Consulting Inc. February 4, 2014, Appendix A1.

One observation that is apparent is that the HEWAF dramatically increases the concentration of PAHs in the water over a WAF or CEWAF. This is shown in Figure 1, reproduced from the NOAA HEWAF protocol,¹² where it can be seen that the HEWAF has about 10 times more PAHs than the CEWAF under otherwise identical conditions. The Y-axis is fluorescence intensity and is a measure of the PAH concentration and it is a log (base 10) scale.

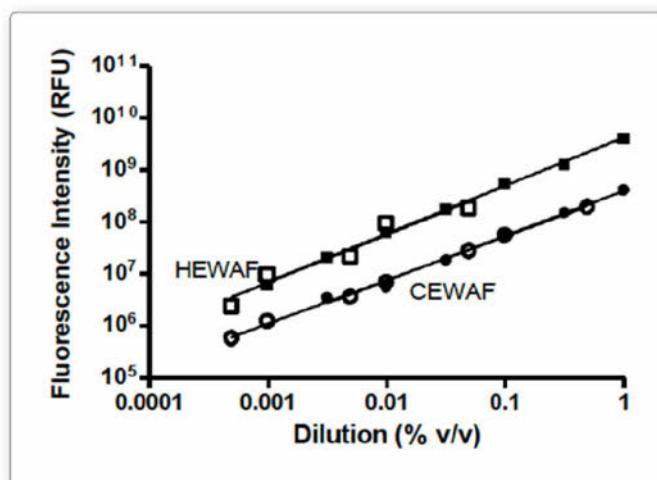


Figure 1. Relationship between standard curves prepared from stock solutions of HEWAF and CEWAF of crude oil and dilution curves for toxicity test solutions prepared from the same stock solutions and sampled at Time 0, immediately after preparation. Open symbols represent standard curve data and closed symbols represent toxicity test dilutions. The data for toxicity test solutions fall on top of standard curves because test solutions were sampled immediately after preparation.

Clearly the HEWAF increases the PAH concentration not only above the WAF, but nearly 10 times higher than a CEWAF. The HEWAF likely changes the compositions of the mixture making it a more potent toxicant, and likely creates an oil micro-droplet environment that is unique to the “blender” method. It is not known what effect this micro-droplet emulsion might have on the toxicity tests of the HEWAF.

It is inconceivable that “blender” conditions are representative of conditions that existed throughout the Gulf of Mexico (the ocean is not a blender).

As noted above, both the WAF and CEWAF are worst-case scenarios whose lack of representativeness makes direct comparison with the Gulf of Mexico inappropriate without proper analysis of the PAH data. The HEWAF method takes this lack of representativeness to an extreme.

Therefore it is my opinion that use of the HEWAF method violates the standard practices of toxicity testing that have been rigorously established over the past 40 years and is not comparable to the industry standard methods. It also is my opinion that the HEWAF method fails the test of representativeness – blender like conditions causing 10-fold increases in PAH concentrations above a CEWAF do not represent the conditions known to have existed in the Gulf of Mexico.

It is for these reasons, that I have rejected the HEWAF data in my analysis.

Appendix H. List of Toxicity Tests

Appendix H-1:
List of BP Validated Toxicity Tests Used in My Analysis

Project/ Study No.	Test ID	Test Substance	Species	Study Duration	Beg Bates	End Bates
110605	10001	GU2888-A0719-OE703 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843033	BP-HZN-2179MDL07843033
110608	10002	GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843034	BP-HZN-2179MDL07843034
110609	10003	GU2888-A0719-OE703 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843035	BP-HZN-2179MDL07843035
110610	10004	GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843036	BP-HZN-2179MDL07843036
110611	10005	GU2888-A0719-OE703 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843037	BP-HZN-2179MDL07843037
110614	10006	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843038	BP-HZN-2179MDL07843038
110615	10007	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843039	BP-HZN-2179MDL07843039
110616	10008	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843040	BP-HZN-2179MDL07843040
110617	10009	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843041	BP-HZN-2179MDL07843041
110701	10010	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	7 days	BP-HZN-2179MDL07843042	BP-HZN-2179MDL07843042
110703	10011	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843043	BP-HZN-2179MDL07843043
110704	10012	CTC-02404-04 (CTC-64% Depletion)	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	96 hrs	BP-HZN-2179MDL07843044	BP-HZN-2179MDL07843044
110801	10013	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843045	BP-HZN-2179MDL07843045
110802	10014	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843046	BP-HZN-2179MDL07843046
110803	10015	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843047	BP-HZN-2179MDL07843047
110804	10016	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843048	BP-HZN-2179MDL07843048
110805	10017	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843049	BP-HZN-2179MDL07843049
110806	10018	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843050	BP-HZN-2179MDL07843050
110807	10019	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843051	BP-HZN-2179MDL07843051
110808	10020	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843052	BP-HZN-2179MDL07843052
110809	10021	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843053	BP-HZN-2179MDL07843053
110810	10022	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843054	BP-HZN-2179MDL07843054
110811	10023	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843055	BP-HZN-2179MDL07843055
110812	10024	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843056	BP-HZN-2179MDL07843056
110813	10025	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843057	BP-HZN-2179MDL07843057

110814	10026	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843058	BP-HZN-2179MDL07843058
110901	10027	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843059	BP-HZN-2179MDL07843059
110902	10028	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843060	BP-HZN-2179MDL07843060
110903	10029	CTC-02404-04 (CTC-64% Depletion)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	96 hrs	BP-HZN-2179MDL07843061	BP-HZN-2179MDL07843061
110904	10030	CTC-02404-04 (CTC-64% Depletion)	Red drum (<i>Sciaenops ocellatus</i>)	96 hrs	BP-HZN-2179MDL07843062	BP-HZN-2179MDL07843062
110915	10031	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	7 days	BP-HZN-2179MDL07843063	BP-HZN-2179MDL07843063
111001	10032	FR-20100619-Q4000-003 (Q4000)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	96 hrs	BP-HZN-2179MDL07843064	BP-HZN-2179MDL07843064
111002	10033	FR-20100619-Q4000-003 (Q4000)	Red drum (<i>Sciaenops ocellatus</i>)	96 hrs	BP-HZN-2179MDL07843065	BP-HZN-2179MDL07843065
111003	10034	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	7 days	BP-HZN-2179MDL07843066	BP-HZN-2179MDL07843066
111004	10035	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	7 days	BP-HZN-2179MDL07843067	BP-HZN-2179MDL07843067
120305	10036	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	7 days	BP-HZN-2179MDL07843083	BP-HZN-2179MDL07843083
111008	10037	FR-20100619-Q4000-003 (Q4000)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843068	BP-HZN-2179MDL07843068
111009	10038	FR-20100619-Q4000-003 (Q4000)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843069	BP-HZN-2179MDL07843069
111102	10039	FR-20100619-Q4000-003 (Q4000)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843070	BP-HZN-2179MDL07843070
111103	10040	FR-20100619-Q4000-003 (Q4000) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843071	BP-HZN-2179MDL07843071
111104	10041	FR-20100619-Q4000-003 (Q4000) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843072	BP-HZN-2179MDL07843072
120102	10042	FR-20100619-Q4000-003 (Q4000) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843073	BP-HZN-2179MDL07843073
120103	10043	FR-20100619-Q4000-003 (Q4000)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843074	BP-HZN-2179MDL07843074
120201	10044	072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843075	BP-HZN-2179MDL07843075
120202	10045	072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843076	BP-HZN-2179MDL07843076
120203	10046	072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843077	BP-HZN-2179MDL07843077
120204	10047	072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843078	BP-HZN-2179MDL07843078
120205	10048	072610-03 (MASS) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843079	BP-HZN-2179MDL07843079
120206	10049	072610-03 (MASS) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843080	BP-HZN-2179MDL07843080
120207	10050	072610-03 (MASS) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843081	BP-HZN-2179MDL07843081
120208	10051	072610-03 (MASS) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843082	BP-HZN-2179MDL07843082
120415	10052	HCX-9500-20100820-HT59-004 (Corexit 9500)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843090	BP-HZN-2179MDL07843090
120502	10053	FR-20100619-Q4000-003 (Q4000)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843091	BP-HZN-2179MDL07843091
120716	10054	HCX-9500-20100820-HT59-004 (Corexit 9500)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843110	BP-HZN-2179MDL07843110

120722	10056	CTC-02404-04 (CTC-64% Depletion)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843113	BP-HZN-2179MDL07843113
120730	10057	CTC-02404-04 (CTC-64% Depletion)	Red drum (<i>Sciaenops ocellatus</i>)	48 hrs	BP-HZN-2179MDL07843115	BP-HZN-2179MDL07843115
120815	10062	072610-03 (MASS)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843122	BP-HZN-2179MDL07843122
120816	10063	GU2888-A0719-OE703 (Juniper)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843123	BP-HZN-2179MDL07843123
120822	10064	CTC-02404-04 (CTC-64% Depletion)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843124	BP-HZN-2179MDL07843124
120823	10065	CTC-02404-04 (CTC-64% Depletion)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843125	BP-HZN-2179MDL07843125
120825	10066	072610-03 (MASS)	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843126	BP-HZN-2179MDL07843126
130205	10069	GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843141	BP-HZN-2179MDL07843141
130206	10070	GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843142	BP-HZN-2179MDL07843142
130207	10071	GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843143	BP-HZN-2179MDL07843143
130208	10072	GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843144	BP-HZN-2179MDL07843144
130209	10073	GU2888-A0719-OE703 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843145	BP-HZN-2179MDL07843145
130210	10074	GU2888-A0719-OE703 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843146	BP-HZN-2179MDL07843146
130211	10075	GU2888-A0719-OE703 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843147	BP-HZN-2179MDL07843147
130212	10076	GU2888-A0719-OE703 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843148	BP-HZN-2179MDL07843148
130221	10077	072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843149	BP-HZN-2179MDL07843149
130222	10078	072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843150	BP-HZN-2179MDL07843150
130223	10079	072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843151	BP-HZN-2179MDL07843151
130224	10080	072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843152	BP-HZN-2179MDL07843152
130301	10081	072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843153	BP-HZN-2179MDL07843153
130302	10082	072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843154	BP-HZN-2179MDL07843154
130303	10083	072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843155	BP-HZN-2179MDL07843155
130304	10084	072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843156	BP-HZN-2179MDL07843156
130305	10085	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843157	BP-HZN-2179MDL07843157
130306	10086	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843158	BP-HZN-2179MDL07843158
130307	10087	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843159	BP-HZN-2179MDL07843159
130308	10088	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843160	BP-HZN-2179MDL07843160
130315	10089	072610-03 (MASS) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843161	BP-HZN-2179MDL07843161
130316	10090	072610-03 (MASS) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843162	BP-HZN-2179MDL07843162
130317	10091	H CX-9500-20100820-HT59-004 (Corexit 9500)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843163	BP-HZN-2179MDL07843163
130318	10092	H CX-9500-20100820-HT59-004 (Corexit 9500)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843164	BP-HZN-2179MDL07843164
130320	10093	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843165	BP-HZN-2179MDL07843165
130321	10094	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843166	BP-HZN-2179MDL07843166

130322	10095	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843167	BP-HZN-2179MDL07843167
130323	10096	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843168	BP-HZN-2179MDL07843168
822-1	20001	Source oil (Q4000)	Pacific Oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843196	BP-HZN-2179MDL07843196
822-2	20002	Source oil (Q4000) + Corexit 9500	Pacific Oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843207	BP-HZN-2179MDL07843207
822-3	20003	Weathered oil CTC-02404-04 (CTC)	Pacific Oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843218	BP-HZN-2179MDL07843218
822-4	20004	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Pacific Oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843227	BP-HZN-2179MDL07843227
822-5	20005	Source oil (Q4000)	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843235	BP-HZN-2179MDL07843235
822-6	20006	Source oil (Q4000) + Corexit 9500	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843236	BP-HZN-2179MDL07843236
822-7	20007	Weathered oil CTC-02404-04 (CTC)	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843237	BP-HZN-2179MDL07843237
822-8	20008	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843238	BP-HZN-2179MDL07843238
OSU 1-11	20009	Source oil (Q4000)	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843289	BP-HZN-2179MDL07843289
OSU 1-11	20010	Weathered oil CTC-02404-04 (CTC)	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843286	BP-HZN-2179MDL07843286
OSU 1-11	20011	Source oil (Q4000) + Corexit 9500	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843288	BP-HZN-2179MDL07843288
OSU 1-11	20012	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843287	BP-HZN-2179MDL07843287
822-9	20013	Source oil (Q4000)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843239	BP-HZN-2179MDL07843239
822-10	20014	Source oil (Q4000) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843197	BP-HZN-2179MDL07843197
822-11	20015	Weathered oil CTC-02404-04 (CTC)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843198	BP-HZN-2179MDL07843198
822-12	20016	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843199	BP-HZN-2179MDL07843199
822-13	20017	Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843200	BP-HZN-2179MDL07843200
822-14	20018	Source oil (Q4000)	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843201	BP-HZN-2179MDL07843201
822-15	20019	Source oil (Q4000) + Corexit 9500	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843202	BP-HZN-2179MDL07843202
822-16	20020	Weathered oil CTC-02404-04 (CTC)	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843203	BP-HZN-2179MDL07843203
822-17	20021	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843204	BP-HZN-2179MDL07843204
822-18	20022	Corexit 9500	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843205	BP-HZN-2179MDL07843205
OSU 3-11	20023	Source oil (Q4000)	Kumamoto oyster (<i>Crassostrea sikamea</i>)	48 hrs	BP-HZN-2179MDL07843293	BP-HZN-2179MDL07843293
OSU 3-11	20024	Weathered oil CTC02404 (CTC)	Kumamoto oyster (<i>Crassostrea sikamea</i>)	48 hrs	BP-HZN-2179MDL07843291	BP-HZN-2179MDL07843291
OSU 3-11	20025	Source oil (Q4000) + Corexit 9500	Kumamoto oyster (<i>Crassostrea sikamea</i>)	48 hrs	BP-HZN-2179MDL07843294	BP-HZN-2179MDL07843294
OSU 3-11	20026	Weathered oil CTC02404 (CTC) + Corexit 9500	Kumamoto oyster (<i>Crassostrea sikamea</i>)	48 hrs	BP-HZN-2179MDL07843292	BP-HZN-2179MDL07843292

OSU 3-11	20027	Corexit 9500	Kumamoto oyster (<i>Crassostrea sikamea</i>)	48 hrs	BP-HZN-2179MDL07843290	BP-HZN-2179MDL07843290
822-19	20028	Source oil (Q4000)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843206	BP-HZN-2179MDL07843206
822-20	20029	Source oil (Q4000) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843208	BP-HZN-2179MDL07843208
822-21	20030	Massachusetts barge oil (MASS)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843209	BP-HZN-2179MDL07843209
822-22	20031	Massachusetts barge oil (MASS) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843210	BP-HZN-2179MDL07843210
822-23	20032	Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843211	BP-HZN-2179MDL07843211
822-24	20033	Source oil (Q4000)	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843212	BP-HZN-2179MDL07843212
822-25	20034	Source oil (Q4000) + Corexit 9500	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843213	BP-HZN-2179MDL07843213
822-26	20035	Massachusetts barge oil (MASS)	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843214	BP-HZN-2179MDL07843214
822-27	20036	Massachusetts barge oil (MASS) + Corexit 9500	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843215	BP-HZN-2179MDL07843215
822-28	20037	Corexit 9500	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843216	BP-HZN-2179MDL07843216
OSU 4-11	20038	Source oil (Q4000)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843297	BP-HZN-2179MDL07843297
OSU 4-11	20039	Source oil (Q4000) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843298	BP-HZN-2179MDL07843298
OSU 4-11	20040	Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843299	BP-HZN-2179MDL07843299
OSU 4-11	20041	Massachusetts barge oil (MASS)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843295	BP-HZN-2179MDL07843295
OSU 4-11	20042	Massachusetts barge oil (MASS) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843296	BP-HZN-2179MDL07843296
822-29	20043	SINTEF (Artificially weathered oil)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843217	BP-HZN-2179MDL07843217
822-31	20044	Massachusetts barge oil (MASS)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843219	BP-HZN-2179MDL07843219
822-32	20045	Massachusetts barge oil (MASS) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843220	BP-HZN-2179MDL07843220
822-33	20046	NOAA (Artificially weathered oil)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843221	BP-HZN-2179MDL07843221
822-34	20047	NOAA (Artificially weathered oil) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843222	BP-HZN-2179MDL07843222
822-35	20048	SINTEF (Artificially weathered oil)	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843223	BP-HZN-2179MDL07843223
822-37	20049	Massachusetts barge oil (MASS)	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843224	BP-HZN-2179MDL07843224
822-38	20050	Massachusetts barge oil (MASS) + Corexit 9500	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843225	BP-HZN-2179MDL07843225
822-39	20051	NOAA (Artificially weathered oil)	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843226	BP-HZN-2179MDL07843226
822-40	20052	NOAA (Artificially weathered oil) + Corexit 9500	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843228	BP-HZN-2179MDL07843228
OSU 1-12	20053	Massachusetts barge oil (MASS)	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843319	BP-HZN-2179MDL07843319
OSU 1-12	20054	Massachusetts barge oil (MASS) + Corexit 9500	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843320	BP-HZN-2179MDL07843320
OSU 1-12	20055	NOAA (Artificially weathered oil)	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843321	BP-HZN-2179MDL07843321

OSU 1-12	20056	NOAA (Artificially weathered oil) + Corexit 9500	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843322	BP-HZN-2179MDL07843322
OSU 1-12	20057	SINTEF (Artificially weathered oil)	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843323	BP-HZN-2179MDL07843323
OSU 2-12	20058	Corexit 9500	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843327	BP-HZN-2179MDL07843327
OSU 2-12	20059	Weathered oil CTC-02404-04 (CTC)	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843328	BP-HZN-2179MDL07843328
OSU 2-12	20060	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843329	BP-HZN-2179MDL07843329
OSU 2-12	20061	Massachusetts barge oil (MASS)	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843330	BP-HZN-2179MDL07843330
OSU 2-12	20062	Massachusetts barge oil (MASS) + Corexit 9500	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843331	BP-HZN-2179MDL07843331
OSU 2-12	20063	Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843332	BP-HZN-2179MDL07843332
OSU 2-12	20064	Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843333	BP-HZN-2179MDL07843333
OSU 2-12	20065	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843334	BP-HZN-2179MDL07843334
OSU 2-12	20066	Massachusetts barge oil (MASS)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843335	BP-HZN-2179MDL07843335
OSU 2-12	20067	Massachusetts barge oil (MASS) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843336	BP-HZN-2179MDL07843336
OSU 3-12-A1	20068	Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843340 BP-HZN-2179MDL07843344	BP-HZN-2179MDL07843340 BP-HZN-2179MDL07843344
OSU 3-12-A2	20069	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843341 BP-HZN-2179MDL07843345	BP-HZN-2179MDL07843341 BP-HZN-2179MDL07843345
OSU 5-12-A1	20070	Weathered oil OFS-20100719-Juniper-001 (Juniper)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843353	BP-HZN-2179MDL07843353
OSU 5-12-A1-A	20071	Weathered oil OFS-20100719-Juniper-001 (Juniper) + Antibiotics	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843354	BP-HZN-2179MDL07843354
OSU 5-12-A2	20072	Weathered oil OFS-20100719-Juniper-001 (Juniper) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843355	BP-HZN-2179MDL07843355
OSU 5-12-A2-A	20073	Weathered oil OFS-20100719-Juniper-001 (Juniper) + Corexit 9500 + Antibiotics	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843356	BP-HZN-2179MDL07843356
OSU 5-12-A3	20074	Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843357	BP-HZN-2179MDL07843357
OSU 5-12-A3-A	20075	Corexit 9500 + Antibiotics	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843358	BP-HZN-2179MDL07843358
OSU 7-12-A1	20076	Massachusetts barge oil (MASS)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843365	BP-HZN-2179MDL07843365
OSU 7-12-A2	20077	Massachusetts barge oil (MASS) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843366	BP-HZN-2179MDL07843366
OSU 7-12-A3	20078	Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843367	BP-HZN-2179MDL07843367
OSU 8-12-A1	20079	Weathered oil CTC-02404-04 (CTC)	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843371	BP-HZN-2179MDL07843371
OSU 8-12-A2	20080	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843372	BP-HZN-2179MDL07843372
OSU 8-12-A3	20081	Massachusetts barge oil (MASS)	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843373	BP-HZN-2179MDL07843373
OSU 8-12-A4	20082	Massachusetts barge oil (MASS) + Corexit 9500	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843374	BP-HZN-2179MDL07843374
OSU 8-12-A5	20083	Corexit 9500	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843375	BP-HZN-2179MDL07843375

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OSU 3-12-C1	20084	Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	10 days	BP-HZN-2179MDL07843342	BP-HZN-2179MDL07843342
OSU 3-12-C2	20085	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	10 days	BP-HZN-2179MDL07843343	BP-HZN-2179MDL07843343
OSU 4-12-C1	20086	Weathered oil OFS-20100719-Juniper-001 (Juniper)	Eastern oyster (<i>Crassostrea virginica</i>)	10 days	BP-HZN-2179MDL07843346	BP-HZN-2179MDL07843346
OSU 4-12-C2	20087	Weathered oil OFS-20100719-Juniper-001 (Juniper) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	10 days	BP-HZN-2179MDL07843347	BP-HZN-2179MDL07843347
OSU 7-12-C1	20088	Massachusetts barge oil (MASS)	Eastern oyster (<i>Crassostrea virginica</i>)	10 days	BP-HZN-2179MDL07843368	BP-HZN-2179MDL07843368
OSU 7-12-C2	20089	Massachusetts barge oil (MASS) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	10 days	BP-HZN-2179MDL07843369	BP-HZN-2179MDL07843369
OSU 7-12-C3	20090	Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	10 days	BP-HZN-2179MDL07843370	BP-HZN-2179MDL07843370
K-092-12	30007	ENX6190B CTC Oil K-055-12	Mysid Shrimp (<i>Americamysis bahia</i>)	28 days	BP-HZN-2179MDL07843013	BP-HZN-2179MDL07843013
K-093-12	30008	ENX6190B CTC Oil K-055-12	Inland Silverside (<i>Menidia beryllina</i>)	28 days	BP-HZN-2179MDL07843014	BP-HZN-2179MDL07843014
K-135-12	30009	ENX6166 Juniper Oil K-054-12	Inland Silverside (<i>Menidia beryllina</i>)	28 days	BP-HZN-2179MDL07843023	BP-HZN-2179MDL07843023
K-206-12	30010	A0028P Mass Oil K-582-11	Mysid Shrimp (<i>Americamysis bahia</i>)	21 days	BP-HZN-2179MDL07843025	BP-HZN-2179MDL07843025
K-207-12	30011	A0028P Mass Oil K-582-11	Inland Silverside (<i>Menidia beryllina</i>)	28 days	BP-HZN-2179MDL07843026	BP-HZN-2179MDL07843026
K-233-12	30012	ENX6166 Juniper Oil K-054-12	Mysid Shrimp (<i>Americamysis bahia</i>)	21 days	BP-HZN-2179MDL07843022	BP-HZN-2179MDL07843022
K-593-12	30013	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842997	BP-HZN-2179MDL07842997
K-594-12	30014	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842997	BP-HZN-2179MDL07842997
K-591-12	30015	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842997	BP-HZN-2179MDL07842997
K-592-12	30016	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842997	BP-HZN-2179MDL07842997
K-589-12	30017	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842997	BP-HZN-2179MDL07842997
K-590-12	30018	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842997	BP-HZN-2179MDL07842997
K-653-12	30019	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842999	BP-HZN-2179MDL07842999
K-652-12	30020	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842999	BP-HZN-2179MDL07842999
K-651-12	30021	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842999	BP-HZN-2179MDL07842999
K-650-12	30022	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842999	BP-HZN-2179MDL07842999
K-649-12	30023	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842999	BP-HZN-2179MDL07842999
K-648-12	30024	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842999	BP-HZN-2179MDL07842999
K-673-12	30025	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843000	BP-HZN-2179MDL07843000
K-674-12	30026	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843000	BP-HZN-2179MDL07843000
K-671-12	30027	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843000	BP-HZN-2179MDL07843000
K-672-12	30028	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843000	BP-HZN-2179MDL07843000
K-669-12	30029	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843000	BP-HZN-2179MDL07843000
K-670-12	30030	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843000	BP-HZN-2179MDL07843000
K-633-12	30031	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842998	BP-HZN-2179MDL07842998

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K-634-12	30032	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842998	BP-HZN-2179MDL07842998
K-631-12	30033	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842998	BP-HZN-2179MDL07842998
K-632-12	30034	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842998	BP-HZN-2179MDL07842998
K-629-12	30035	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842998	BP-HZN-2179MDL07842998
K-630-12	30036	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842998	BP-HZN-2179MDL07842998
K-764-12	30037	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843005	BP-HZN-2179MDL07843005
K-765-12	30038	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843005	BP-HZN-2179MDL07843005
K-762-12	30039	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843005	BP-HZN-2179MDL07843005
K-763-12	30040	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843005	BP-HZN-2179MDL07843005
K-760-12	30041	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843005	BP-HZN-2179MDL07843005
K-761-12	30042	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843005	BP-HZN-2179MDL07843005
K-707-12	30043	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843001	BP-HZN-2179MDL07843001
K-708-12	30044	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843001	BP-HZN-2179MDL07843001
K-705-12	30045	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843001	BP-HZN-2179MDL07843001
K-706-12	30046	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843001	BP-HZN-2179MDL07843001
K-703-12	30047	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843001	BP-HZN-2179MDL07843001
K-704-12	30048	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843001	BP-HZN-2179MDL07843001
K-724-12	30049	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843003	BP-HZN-2179MDL07843003
K-725-12	30050	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843003	BP-HZN-2179MDL07843003
K-722-12	30051	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843003	BP-HZN-2179MDL07843003
K-723-12	30052	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843003	BP-HZN-2179MDL07843003
K-720-12	30053	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843003	BP-HZN-2179MDL07843003
K-721-12	30054	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843003	BP-HZN-2179MDL07843003
K-743-12	30055	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843004	BP-HZN-2179MDL07843004
K-744-12	30056	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843004	BP-HZN-2179MDL07843004
K-741-12	30057	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843004	BP-HZN-2179MDL07843004
K-742-12	30058	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843004	BP-HZN-2179MDL07843004
K-739-12	30059	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843004	BP-HZN-2179MDL07843004
K-740-12	30060	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843004	BP-HZN-2179MDL07843004
K-796-12	30061	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843006	BP-HZN-2179MDL07843006
K-797-12	30062	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843006	BP-HZN-2179MDL07843007
K-794-12	30063	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843006	BP-HZN-2179MDL07843007
K-795-12	30064	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843006	BP-HZN-2179MDL07843007

K-792-12	30065	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843006	BP-HZN-2179MDL07843007
K-793-12	30066	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843006	BP-HZN-2179MDL07843007
K-715-12	30067	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843002	BP-HZN-2179MDL07843002
K-716-12	30068	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843002	BP-HZN-2179MDL07843002
K-713-12	30069	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843002	BP-HZN-2179MDL07843002
K-714-12	30070	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843002	BP-HZN-2179MDL07843002
K-711-12	30071	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843002	BP-HZN-2179MDL07843002
K-712-12	30072	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843002	BP-HZN-2179MDL07843002
K-865-12	30073	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843011	BP-HZN-2179MDL07843011
K-866-12	30074	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843011	BP-HZN-2179MDL07843011
K-863-12	30075	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843011	BP-HZN-2179MDL07843011
K-864-12	30076	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843011	BP-HZN-2179MDL07843011
K-861-12	30077	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843011	BP-HZN-2179MDL07843011
K-862-12	30078	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843011	BP-HZN-2179MDL07843011
K-844-12	30079	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843010	BP-HZN-2179MDL07843010
K-845-12	30080	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843010	BP-HZN-2179MDL07843010
K-842-12	30081	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843010	BP-HZN-2179MDL07843010
K-843-12	30082	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843010	BP-HZN-2179MDL07843010
K-840-12	30083	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843010	BP-HZN-2179MDL07843010
K-841-12	30084	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843010	BP-HZN-2179MDL07843010
120719		CTC-02404-04 (CTC-64% Depletion)	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843111	BP-HZN-2179MDL07843111
120803		072610-03 (MASS)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843117	BP-HZN-2179MDL07843117
120806		GU2888-A0719-OE703 (Juniper)	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843118	BP-HZN-2179MDL07843118

120807		CTC-02404-04 (CTC-64% Depletion)	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843119	BP-HZN-2179MDL07843119
120811		072610-03 (MASS)	Red drum (<i>Sciaenops ocellatus</i>)	48 hrs	BP-HZN-2179MDL07843121	BP-HZN-2179MDL07843121
120930		CTC-02404-04 (CTC-64% Depletion)	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843134	BP-HZN-2179MDL07843134
120931		CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843135	BP-HZN-2179MDL07843135
K-839-11		A0028P Mass Oil K-582-11	Mysid Shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843008	BP-HZN-2179MDL07843008
K-840-11		A0028P Mass Oil K-582-11	Inland Silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843009	BP-HZN-2179MDL07843009
K-056-12		ENX6166 Juniper Oil K-054-12	Inland Silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07842993	BP-HZN-2179MDL07842993
K-057-12		ENX6166 Juniper Oil K-054-12	Mysid Shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07842994	BP-HZN-2179MDL07842994
K-058-12		ENX6190B CTC Oil K-055-12	Mysid Shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07842995	BP-HZN-2179MDL07842995
K-059-12		ENX6190B CTC Oil K-055-12	Inland Silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07842996	BP-HZN-2179MDL07842996
100505		FC GoM water sample: 2km-surf-tox	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100505		FC GoM water sample: 4km-surf-tox	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100505		FC GoM water sample: 8km-surf-tox	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100510		FC GoM water sample: 2km-surf-tox	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100510		FC GoM water sample: 4km-surf-tox	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100510		FC GoM water sample: 8km-surf-tox	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100510		FC GoM water sample: 2km-surf-tox	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100510		FC GoM water sample: 4km-surf-tox	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100510		FC GoM water sample: 8km-surf-tox	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-70nmi-surf-tox-20100522-E007	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-8km-surf-TOX-20100523-E053	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-4km-surf-TOX-20100524-E097	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-2km-surf-TOX-20100524-E125	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-70nmi-surf-tox-20100522-E007	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-8km-surf-TOX-20100523-E053	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-4km-surf-TOX-20100524-E097	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-2km-surf-TOX-20100524-E125	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100609		FC GoM water sample: JF2-70nmi-surf-tox-20100522-E007	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100609		FC GoM water sample: JF2-8km-surf-TOX-20100523-E053	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195

100609		FC GoM water sample: JF2-4km-surf-TOX-20100524-E097	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100609		FC GoM water sample: JF2-2km-surf-TOX-20100524-E125	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100611		FC GoM water sample: JF2-2km-surf-TOX-20100527-E182	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100611		FC GoM water sample: JF2-3km-surf-TOX-20100528-E244	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100611		FC GoM water sample: JF2-4km-surf-TOX-20100529-E306	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100611		FC GoM water sample: JF2-2km-surf-TOX-20100527-E182	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100611		FC GoM water sample: JF2-3km-surf-TOX-20100528-E244	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100611		FC GoM water sample: JF2-4km-surf-TOX-20100529-E306	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100612		FC GoM water sample: JF2-2km-surf-TOX-20100527-E182	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100612		FC GoM water sample: JF2-3km-surf-TOX-20100528-E244	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100612		FC GoM water sample: JF2-4km-surf-TOX-20100529-E306	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100701		FC GoM water sample: JF3-ref-TOX-20100612-surf-E030	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100701		FC GoM water sample: JF3-2km-TOX-20100613-surf-E057	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100701		FC GoM water sample: JF3-1km-TOX-20100614-surf-E141	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100701		FC GoM water sample: JF3-2kmN-TOX-20100616-surf-E313	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-ref-TOX-20100612-surf-E030	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-2km-TOX-20100613-surf-E057	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-1km-TOX-20100614-surf-E141	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-2kmN-TOX-20100616-surf-E313	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-ref-TOX-20100612-surf-E030	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-2km-TOX-20100613-surf-E057	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-1km-TOX-20100614-surf-E141	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-2kmN-TOX-20100616-surf-E313	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195

100801		FC GoM water sample: NS-MS-000-108-D3-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100801		FC GoM water sample: NS-MS-000-108-D3-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100802		FC GoM water sample: NS-MS-000-108-D3-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100901		FC GoM water sample: FD-BB-120-002-D1-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100901		FC GoM water sample: FD-BB-120-002-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100902		FC GoM water sample: FD-BB-120-002-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100903		FC GoM water sample: NS-MS-030-054-D4-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100904		FC GoM water sample: NS-MS-030-054-D4-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100904		FC GoM water sample: NS-MS-030-054-D4-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101001		FC GoM water sample: FD-BB-300-018-D1-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101001		FC GoM water sample: FD-BB-300-018-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101003		FC GoM water sample: FD-BB-300-018-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101004		FC GoM water sample: FD-BB-240-002-D1-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101004		FC GoM water sample: FD-BB-240-002-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101005		FC GoM water sample: FD-BB-240-002-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101006		FC GoM water sample: FD-BB-240-009-D1-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101006		FC GoM water sample: FD-BB-240-009-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101101		FC GoM water sample: FD-BB-240-009-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101103		FC GoM water sample: NS-MS-030-072-D4-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101103		FC GoM water sample: NS-MS-030-072-D4-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101201		FC GoM water sample: NS-MS-030-072-D4-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101202		FC GoM water sample: PD-MS-180-027-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101202/ 101203		FC GoM water sample: PD-MS-180-027-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195

101203		FC GoM water sample: FD-MS-180-027-D1-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101204		FC GoM water sample: FD-BB-300-009-D1-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101205		FC GoM water sample: FD-BB-300-009-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101205		FC GoM water sample: FD-BB-300-009-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110102		FC GoM water sample: FD-BB-210-009-D1-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110103		FC GoM water sample: FD-BB-210-009-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110103		FC GoM water sample: FD-BB-210-009-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110104		FC GoM water sample: PD-MS-150-027-D1-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110105		FC GoM water sample: PD-MS-150-027-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110105		FC GoM water sample: PD-MS-150-027-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110108		FC GoM water sample: PD-MS-210-036-D1-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110108		FC GoM water sample: PD-MS-210-036-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110109		FC GoM water sample: PD-MS-210-036-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110111		FC GoM water sample: PD-MS-240-036-D1-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110111		FC GoM water sample: PD-MS-240-036-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110112		FC GoM water sample: PD-MS-240-036-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110201		FC GoM water sample: FD-BB-090-009-D1-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110201		FC GoM water sample: FD-BB-090-009-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110202		FC GoM water sample: FD-BB-090-009-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110205		FC GoM water sample: FD-BB-030-018-D1-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110205		FC GoM water sample: FD-BB-030-018-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110206		FC GoM water sample: FD-BB-030-018-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110209		FC GoM water sample: FD-BB-240-036c-D1-CR1-TOX	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195

110209		FC GoM water sample: FD-BB-240-036c-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110210		FC GoM water sample: FD-BB-240-036c-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110211		FC GoM water sample: FD-BB-030-027-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110211		FC GoM water sample: FD-BB-030-027-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110212		FC GoM water sample: FD-BB-030-027-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110303		FC GoM water sample: WB-300-009-D5-CR2-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110303		FC GoM water sample: WB-300-009-D5-CR2-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110304		FC GoM water sample: WB-300-009-D5-CR2-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110305		FC GoM water sample: WB-300-002-D4-CR2-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110305		FC GoM water sample: WB-300-002-D4-CR2-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110306		FC GoM water sample: WB-300-002-D4-CR2-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110307		FC GoM water sample: GU2789-A0830-W5002-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110308		FC GoM water sample: GU2789-A0830-W5002-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110311		FC GoM water sample: GU2789-A0901-W5002-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110312		FC GoM water sample: GU2789-A0901-W5002-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110401		FC GoM water sample: GU2790-A0911-W5014-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110402		FC GoM water sample: GU2790-A0911-W5014-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110405		FC GoM water sample: JF-T07-S06-D5-CR3-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110406		FC GoM water sample: JF-T07-S06-D5-CR3-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110407		FC GoM water sample: JF-T16-S12-D5-CR3-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110408		FC GoM water sample: JF-T16-S12-D5-CR3-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110411		FC GoM water sample: RB-225-090-D6-CR21	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110412		FC GoM water sample: RB-225-090-D6-CR21	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110501		FC GoM water sample: SB-150-027-D5-Cr23	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195

110502		FC GoM water sample: SB-150-027-D5-Cr23	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110504		FC GoM water sample: SB-225-072-D3-Cr4	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110505		FC GoM water sample: SB-225-072-D3-Cr4	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110506		FC GoM water sample: SB-225-072-D4-Cr23	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110507		FC GoM water sample: SB-225-072-D4-Cr23	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110512		FC GoM water sample: SB-225-072-D6-Cr4	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110513		FC GoM water sample: SB-225-072-D6-Cr4	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110519		FC GoM water sample: WB-180-072-D4-CR24	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110520		FC GoM water sample: WB-180-072-D4-CR24	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
120403	072610-03 (MASS)		Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843084	BP-HZN-2179MDL07843084
120404	072610-03 (MASS)		Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843085	BP-HZN-2179MDL07843085
120405	072610-03 (MASS)		Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843086	BP-HZN-2179MDL07843086
120406	072610-03 (MASS)		Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843087	BP-HZN-2179MDL07843087
120409	072610-03 (MASS)		Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843088	BP-HZN-2179MDL07843088
120410	072610-03 (MASS)		Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843089	BP-HZN-2179MDL07843089
120504	CTC-02404-04 (CTC-64% Depletion)		Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843092	BP-HZN-2179MDL07843092
120505	CTC-02404-04 (CTC-64% Depletion)		Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843093	BP-HZN-2179MDL07843093
120506	072610-03 (MASS)		Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843092	BP-HZN-2179MDL07843092
120507	072610-03 (MASS)		Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843093	BP-HZN-2179MDL07843093
120509	CTC-02404-04 (CTC-64% Depletion)		Sheepshead minnow (<i>Cyprinodon variegatus</i>)	96 hrs	BP-HZN-2179MDL07843094	BP-HZN-2179MDL07843094
120510	CTC-02404-04 (CTC-64% Depletion)		Red drum (<i>Sciaenops ocellatus</i>)	96 hrs	BP-HZN-2179MDL07843095	BP-HZN-2179MDL07843095
120511	072610-03 (MASS)		Sheepshead minnow (<i>Cyprinodon variegatus</i>)	96 hrs	BP-HZN-2179MDL07843094	BP-HZN-2179MDL07843094
120512	072610-03 (MASS)		Red drum (<i>Sciaenops ocellatus</i>)	96 hrs	BP-HZN-2179MDL07843095	BP-HZN-2179MDL07843095
120601	CTC-02404-04 (CTC-64% Depletion)		Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843096	BP-HZN-2179MDL07843096
120602	072610-03 (MASS)		Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843096	BP-HZN-2179MDL07843096
120603	CTC-02404-04 (CTC-64% Depletion)		Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843097	BP-HZN-2179MDL07843097
120604	072610-03 (MASS)		Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843097	BP-HZN-2179MDL07843097
120615	072610-03 (MASS)		Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843098	BP-HZN-2179MDL07843098
120616	072610-03 (MASS)		Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843099	BP-HZN-2179MDL07843099
120625	CTC-02404-04 (CTC-64% Depletion)		Southern flounder (<i>Paralichthys lethostigma</i>)	24 hrs	BP-HZN-2179MDL07843100	BP-HZN-2179MDL07843100
120628	CTC-02404-04 (CTC-64% Depletion)		Mysid shrimp (<i>Americanamysis bahia</i>)	24 hrs	BP-HZN-2179MDL07843101	BP-HZN-2179MDL07843101
120629	CTC-02404-04 (CTC-64% Depletion)		Mysid shrimp (<i>Americanamysis bahia</i>)	24 hrs	BP-HZN-2179MDL07843101	BP-HZN-2179MDL07843101

120631		072610-03 (MASS)	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN- 2179MDL07843102	BP-HZN- 2179MDL07843102
120632		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN- 2179MDL07843103	BP-HZN- 2179MDL07843103
120633		072610-03 (MASS)	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN- 2179MDL07843104	BP-HZN- 2179MDL07843104
120634		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN- 2179MDL07843105	BP-HZN- 2179MDL07843105
120639		CTC-02404-04 (CTC- 64% Depletion)	Mysid shrimp (<i>Americamysis bahia</i>)	24 hrs	BP-HZN- 2179MDL07843101	BP-HZN- 2179MDL07843101
120702		CTC-02404-04 (CTC- 64% Depletion)	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN- 2179MDL07843106	BP-HZN- 2179MDL07843106
120704		CTC-02404-04 (CTC- 64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	24 hrs	BP-HZN- 2179MDL07843107	BP-HZN- 2179MDL07843107
120714		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN- 2179MDL07843108	BP-HZN- 2179MDL07843108
120715		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN- 2179MDL07843109	BP-HZN- 2179MDL07843109
120720		CTC-02404-04 (CTC- 64% Depletion)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN- 2179MDL07843112	BP-HZN- 2179MDL07843112
120721		CTC-02404-04 (CTC- 64% Depletion)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN- 2179MDL07843112	BP-HZN- 2179MDL07843112
120723		Fluoranthene	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN- 2179MDL07843112	BP-HZN- 2179MDL07843112
120728		CTC-02404-04 (CTC- 64% Depletion)	Red drum (<i>Sciaenops</i> <i>ocellatus</i>)	48 hrs	BP-HZN- 2179MDL07843114	BP-HZN- 2179MDL07843114
120729		CTC-02404-04 (CTC- 64% Depletion)	Red drum (<i>Sciaenops</i> <i>ocellatus</i>)	48 hrs	BP-HZN- 2179MDL07843114	BP-HZN- 2179MDL07843114
120731		Fluoranthene	Red drum (<i>Sciaenops</i> <i>ocellatus</i>)	48 hrs	BP-HZN- 2179MDL07843114	BP-HZN- 2179MDL07843114
120801		072610-03 (MASS)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN- 2179MDL07843116	BP-HZN- 2179MDL07843116
120802		072610-03 (MASS)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN- 2179MDL07843116	BP-HZN- 2179MDL07843116
120804		Fluoranthene	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN- 2179MDL07843116	BP-HZN- 2179MDL07843116
120809		072610-03 (MASS)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN- 2179MDL07843120	BP-HZN- 2179MDL07843120
120810		072610-03 (MASS)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN- 2179MDL07843120	BP-HZN- 2179MDL07843120
120812		Fluoranthene	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN- 2179MDL07843120	BP-HZN- 2179MDL07843120
120827		GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN- 2179MDL07843127	BP-HZN- 2179MDL07843127
120828		GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN- 2179MDL07843127	BP-HZN- 2179MDL07843127
120903		Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN- 2179MDL07843128	BP-HZN- 2179MDL07843128
120904		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN- 2179MDL07843129	BP-HZN- 2179MDL07843129
120905		Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN- 2179MDL07843128	BP-HZN- 2179MDL07843128
120906		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN- 2179MDL07843129	BP-HZN- 2179MDL07843129
120912		Fluoranthene	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN- 2179MDL07843130	BP-HZN- 2179MDL07843130
120913		Fluoranthene	Red drum (<i>Sciaenops</i> <i>ocellatus</i>)	48 hrs	BP-HZN- 2179MDL07843131	BP-HZN- 2179MDL07843131
120914		Fluoranthene	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN- 2179MDL07843130	BP-HZN- 2179MDL07843130
120915		Fluoranthene	Red drum (<i>Sciaenops</i> <i>ocellatus</i>)	48 hrs	BP-HZN- 2179MDL07843131	BP-HZN- 2179MDL07843131
120926		072610-03 (MASS)	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN- 2179MDL07843132	BP-HZN- 2179MDL07843132
120928		072610-03 (MASS)	Mysid shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN- 2179MDL07843133	BP-HZN- 2179MDL07843133

120934		HCX-9500-20100820-HT59-004 (Corexit 9500)	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843136	BP-HZN-2179MDL07843136
120935		HCX-9500-20100820-HT59-004 (Corexit 9500)	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843137	BP-HZN-2179MDL07843137
120936		HCX-9500-20100820-HT59-004 (Corexit 9500)	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843136	BP-HZN-2179MDL07843136
120937		HCX-9500-20100820-HT59-004 (Corexit 9500)	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843137	BP-HZN-2179MDL07843137
121001		CTC-02404-04 (CTC-64% Depletion)	Copepod (<i>Acartia tonsa</i>)	48 hrs	BP-HZN-2179MDL07843138	BP-HZN-2179MDL07843138
121002		CTC-02404-04 (CTC-64% Depletion)	Copepod (<i>Acartia tonsa</i>)	48 hrs	BP-HZN-2179MDL07843138	BP-HZN-2179MDL07843138
121005		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843139	BP-HZN-2179MDL07843139
130401		072610-03 (MASS)	Red snapper (<i>Pagrus pagrus</i>)	96 hrs	BP-HZN-2179MDL07843169	BP-HZN-2179MDL07843169
130402		CTC-02404-04 (CTC-64% Depletion)	Red snapper (<i>Pagrus pagrus</i>)	96 hrs	BP-HZN-2179MDL07843170	BP-HZN-2179MDL07843170
130501		CTC-02404-04 (CTC-64% Depletion)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843171	BP-HZN-2179MDL07843171
130504		CTC-02404-04 (CTC-64% Depletion)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843172	BP-HZN-2179MDL07843172
130505		CTC-02404-04 (CTC-64% Depletion)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843173	BP-HZN-2179MDL07843173
130507		072610-03 (MASS)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843174	BP-HZN-2179MDL07843174
130508		072610-03 (MASS)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843175	BP-HZN-2179MDL07843175
130511		072610-03 (MASS)	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843176	BP-HZN-2179MDL07843176
130512		072610-03 (MASS)	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843177	BP-HZN-2179MDL07843177
130513		CTC-02404-04 (CTC-64% Depletion)	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843178	BP-HZN-2179MDL07843178
130514		CTC-02404-04 (CTC-64% Depletion)	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843179	BP-HZN-2179MDL07843179
130516		072610-03 (MASS) + Corexit 9500	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843180	BP-HZN-2179MDL07843180
130519		072610-03 (MASS) + Corexit 9500	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843181	BP-HZN-2179MDL07843181
130520		HCX-9500-20100820-HT59-004 (Corexit 9500)	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843182	BP-HZN-2179MDL07843182
130608		072610-03 (MASS)	Red drum (<i>Sciaenops ocellatus</i>)	96 hrs	BP-HZN-2179MDL07843183	BP-HZN-2179MDL07843183
130708		072610-03 (MASS) + Corexit 9500	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843184	BP-HZN-2179MDL07843184
130709		HCX-9500-20100820-HT59-004 (Corexit 9500)	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843185	BP-HZN-2179MDL07843185
130712		072610-03 (MASS) + Corexit 9500	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843186	BP-HZN-2179MDL07843186
130713		HCX-9500-20100820-HT59-004 (Corexit 9500)	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843187	BP-HZN-2179MDL07843187
OSU 6-12		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843359	BP-HZN-2179MDL07843359
OSU 6-12		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843359	BP-HZN-2179MDL07843359
OSU 6-12		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843359	BP-HZN-2179MDL07843359
OSU 6-12		Fluoranthene	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843359	BP-HZN-2179MDL07843359
OSU 6-12		Fluoranthene	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843359	BP-HZN-2179MDL07843359
OSU 6-12		Fluoranthene	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843359	BP-HZN-2179MDL07843359
OSU 9-12-A1		Weathered oil CTC-02404-04 (CTC)	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843376	BP-HZN-2179MDL07843376

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OSU 9-12-A2		Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843377	BP-HZN-2179MDL07843377
OSU 9-12-A3		Corexit 9500	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843378	BP-HZN-2179MDL07843378
OSU 10-12-S1		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	28 days	BP-HZN-2179MDL07843313	BP-HZN-2179MDL07843313
OSU 10-12-S2		Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	28 days	BP-HZN-2179MDL07843314	BP-HZN-2179MDL07843314
OSU 10-12-S3		Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	28 days	BP-HZN-2179MDL07843315	BP-HZN-2179MDL07843315
OSU 11-12-A1		Naphthalene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843316	BP-HZN-2179MDL07843316
OSU 11-12-A2		Phenanthrene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843317	BP-HZN-2179MDL07843317
OSU 11-12-A3		Dibenzothiophene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843318	BP-HZN-2179MDL07843318
OSU 2-13-A1		Naphthalene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843337	BP-HZN-2179MDL07843337
OSU 2-13-A2		Phenanthrene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843338	BP-HZN-2179MDL07843338
OSU 2-13-A3		Dibenzothiophene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843339	BP-HZN-2179MDL07843339
OSU 4-13-A1-0		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A1-6		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A1-42		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A2-0		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A2-6		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A2-42		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A3-0		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A3-6		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A3-42		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A4-0		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A4-6		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A4-42		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A5-0		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A5-6		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A5-42		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 6-13-A1		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843360	BP-HZN-2179MDL07843360
OSU 6-13-A2		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843361	BP-HZN-2179MDL07843361
OSU 6-13-A3		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843362	BP-HZN-2179MDL07843362
OSU 6-13-A4		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843363	BP-HZN-2179MDL07843363
OSU 6-13-A5		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843364	BP-HZN-2179MDL07843364
OSU 8-13-A1		Weathered oil OFS-20100719-Juniper-001 (Juniper)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843303	BP-HZN-2179MDL07843303

OSU 8-13-A2		Weathered oil OFS-20100719-Juniper-001 (Juniper)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843305	BP-HZN-2179MDL07843305
OSU 8-13-A3		Weathered oil OFS-20100719-Juniper-001 (Juniper)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843306	BP-HZN-2179MDL07843306
OSU 8-13-A4		Weathered oil OFS-20100719-Juniper-001 (Juniper)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843307	BP-HZN-2179MDL07843307
OSU 8-13-A5		Weathered oil OFS-20100719-Juniper-001 (Juniper)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843308	BP-HZN-2179MDL07843308
OSU 8-13-A6		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843309	BP-HZN-2179MDL07843309
OSU 8-13-A7		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843310	BP-HZN-2179MDL07843310
OSU 8-13-A8		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843311	BP-HZN-2179MDL07843311
OSU 8-13-A9		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843312	BP-HZN-2179MDL07843312
OSU 8-13-A10		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843304	BP-HZN-2179MDL07843304
OSU 12-13-A1		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843300	BP-HZN-2179MDL07843300
OSU 12-13-A2		Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843301	BP-HZN-2179MDL07843301
OSU 12-13-A3		Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843302	BP-HZN-2179MDL07843302
OSU 13-13-S1		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	28 days	BP-HZN-2179MDL07843324	BP-HZN-2179MDL07843324
OSU 13-13-S2		Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	28 days	BP-HZN-2179MDL07843325	BP-HZN-2179MDL07843325
OSU 13-13-S3		Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	28 days	BP-HZN-2179MDL07843326	BP-HZN-2179MDL07843326
BP 288 AT		Corexit 9500	Copepod (<i>Acartia tonsa</i>)	48 hrs	BP-HZN-2179MDL07843276	BP-HZN-2179MDL07843276
BP 314 AB		Fluoranthene	Mysid shrimp (<i>Americanamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843243	BP-HZN-2179MDL07843243
BP 318 AB		Fluoranthene	Mysid shrimp (<i>Americanamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843244	BP-HZN-2179MDL07843244
BP 327 AB		Fluoranthene	Mysid shrimp (<i>Americanamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843245	BP-HZN-2179MDL07843245
BP 332 CV		Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843246	BP-HZN-2179MDL07843246
BP 362 AB		Fluoranthene	Mysid shrimp (<i>Americanamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843247	BP-HZN-2179MDL07843247
BP 385 AB		Fluoranthene	Mysid shrimp (<i>Americanamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843248	BP-HZN-2179MDL07843248
BP 386 CV		Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843249	BP-HZN-2179MDL07843249
BP 389 CV		Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843250	BP-HZN-2179MDL07843250
BP 390 CV		Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843251	BP-HZN-2179MDL07843251
BP 399 SC		Massachusetts barge oil (MASS)	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843282	BP-HZN-2179MDL07843282
BP 401 SC		Massachusetts barge oil (MASS) + Corexit 9500	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843283	BP-HZN-2179MDL07843283
BP 410 CV		Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843252	BP-HZN-2179MDL07843252
BP 416 MB		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843253	BP-HZN-2179MDL07843253

BP 417 MB	Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843254	BP-HZN-2179MDL07843254
BP 421 SC	Weathered oil CTC-02404-04 (CTC)	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843278	BP-HZN-2179MDL07843278
BP 423 SC	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843279	BP-HZN-2179MDL07843279
BP 434 MB	Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843255	BP-HZN-2179MDL07843255
BP 440 MB	Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843256	BP-HZN-2179MDL07843256
BP 446 FG	Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843257	BP-HZN-2179MDL07843257
BP 450 CV	Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843258	BP-HZN-2179MDL07843258
BP 458 SC	Weathered oil OFS-20100719-Juniper-001 (Juniper)	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843259 BP-HZN-2179MDL07843280	BP-HZN-2179MDL07843259 BP-HZN-2179MDL07843280
BP 460 SC	Weathered oil OFS-20100719-Juniper-001 (Juniper) + Corexit 9500	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843281	BP-HZN-2179MDL07843281
BP 462 MB	Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843259	BP-HZN-2179MDL07843259
BP 472 FG	Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843260	BP-HZN-2179MDL07843260
BP 488 FG	Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843262	BP-HZN-2179MDL07843262
BP 498 SC	NOAA Artificially Weathered Oil (B&B DWH6220)	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843284	BP-HZN-2179MDL07843284
BP 499 SC	NOAA Artificially Weathered Oil (B&B DWH6220) + Corexit 9500	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843285	BP-HZN-2179MDL07843285
BP 500 CV	Naphthalene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	96 hrs	BP-HZN-2179MDL07843264	BP-HZN-2179MDL07843264
BP 501 MB	Weathered oil CTC-02404-04 (CTC)	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843265	BP-HZN-2179MDL07843265
BP 502-R MB	Massachusetts barge oil (MASS)	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843266	BP-HZN-2179MDL07843266
BP 503 MB	Weathered oil OFS-20100719-Juniper-001 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843267	BP-HZN-2179MDL07843267
BP 505A MB	Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843265	BP-HZN-2179MDL07843265
BP 505B MB	Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843265	BP-HZN-2179MDL07843265
BP 506A-R MB	Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843266	BP-HZN-2179MDL07843266
BP 506B-R MB	Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843266	BP-HZN-2179MDL07843266
BP 507A MB	Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843267	BP-HZN-2179MDL07843267
BP 507B MB	Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843267	BP-HZN-2179MDL07843267
BP 516 MB	Naphthalene	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843269	BP-HZN-2179MDL07843269
BP 524 SC	Corexit 9500	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843277	BP-HZN-2179MDL07843277
BP 526 FG	Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843270	BP-HZN-2179MDL07843270
BP 532 MB	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843271	BP-HZN-2179MDL07843271
BP 534 FG	Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843272	BP-HZN-2179MDL07843272

BP 552 FG		Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843273	BP-HZN-2179MDL07843273
BP 559R MB		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843274	BP-HZN-2179MDL07843274
BP 565 CV		Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843275	BP-HZN-2179MDL07843275
822-41		Naphthalene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843229	BP-HZN-2179MDL07843229
822-42		Phenanthrene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843230	BP-HZN-2179MDL07843230
822-43		Dibenzothiophene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843231	BP-HZN-2179MDL07843231
822-47		Naphthalene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843232	BP-HZN-2179MDL07843232
822-48		Phenanthrene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843233	BP-HZN-2179MDL07843233
822-49		Dibenzothiophene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843234	BP-HZN-2179MDL07843234
K-350-11		SB9-20110525-S-D038SW-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-351-11		SB9-20110525-S-D042S-TX-002	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-352-11		SB9-20110526-S-D044S-TX-003	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-353-11		SB9-20110526-S-NF006MOD-TX-004	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-354-11		SB9-20110526-S-D040S-TX-005	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-355-11		SB9-20110527-S-LBNL14-TX-011	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-356-11		SB9-20110527-S-NF008-TX-010	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-357-11		SB9-20110528-S-LBNL3-TX-019	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-358-11		SB9-20110528-S-D034S-TX-006	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-359-11		SB9-20110528-S-D031S-TX-007	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-360-11		SB9-20110528-S-ALTNF001-TX-008	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024

K-398-11		SB9-20110529-S-LBNL1-TX-009	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843017 BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843017 BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024
K-407-11		SB-20110602-S-NF009-TX-012	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843032 BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843032 BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024
K-408-11		SB-20110603-S-NF010-TX-013	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843012 BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843012 BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024
K-409-11		SB-20110603-S-NF011-TX-014	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-410-11		SB-20110604-S-NF014-TX-017	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-411-11		SB-20110604-S-ALTNF015-TX-018	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-412-11		SB-20110605-S-D019S-TX-021	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-413-11		SB-20110605-S-LBNL4-TX-022	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-414-11		SB-20110603-S-NF012-TX-015	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-415-11		SB-20110604-S-NF013-TX-016	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-416-11		SB-20110605-S-LBNL17-TX-020	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-417-11		SB-20110605-S-FF010-TX-023	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-418-11		SB9-20110606-S-2.21-TX-026	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-419-11		SB9-20110607-S-D050S-TX-027	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-420-11		SB9-20110607-S-D024S-TX-028	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-421-11		SB9-20110607-S-D043S-TX-029	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-422-11		SB9-20110608-S-VK916-TX-030	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024

K-423-11		SB9-20110608-S-S36-TX-031	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-424-11		SB9-20110608-S-D002S-TX-032	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-425-11		SB9-20110609-S-HiPro-TX-033	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-426-11		SB9-20110609-S-LBNL9-TX-034	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-427-11		SB9-20110609-S-LBNL10-TX-035	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-428-11		SB9-20110610-S-D062S-TX-036	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-429-11		SB9-20110610-S-FFMT4-TX-037	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-430-11		SB9-20110611-S-FFMT3-TX-038	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-431-11		SB9-20110606-S-LBNL7-TX-024	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-892-11		A0028P Mass Oil K-582-11	Inland Silverside (<i>Menidia beryllina</i>)	28 days	BP-HZN-2179MDL07843027	BP-HZN-2179MDL07843027
K-610-12		ANST-T2-20120822-S-1464R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842934	BP-HZN-2179MDL07842934
K-610-12		ANST-T2-20120822-S-1464R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842934	BP-HZN-2179MDL07842934
K-611-12		ANST-T1-20120822-S-1308LI-TX-0003	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842935	BP-HZN-2179MDL07842937
K-612-12		ANST-T1-20120822-S-1183R3-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842938	BP-HZN-2179MDL07842938
K-612-12		ANST-T1-20120822-S-1183R3-TX-0001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842938	BP-HZN-2179MDL07842938
K-613-12		ANST-T1-20120822-S-1197L1-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842938	BP-HZN-2179MDL07842938
K-613-12		ANST-T1-20120822-S-1197L1-TX-0002	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842938	BP-HZN-2179MDL07842938
K-614-12		ANST-T3-20120822-S-OSAT47-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842939	BP-HZN-2179MDL07842939
K-614-12		ANST-T3-20120822-S-OSAT47-TX-0001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842939	BP-HZN-2179MDL07842939
K-615-12		ANST-T3-20120822-S-OSAT46-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842939	BP-HZN-2179MDL07842939
K-615-12		ANST-T3-20120822-S-OSAT46-TX-0003	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842940	BP-HZN-2179MDL07842940
K-616-12		ANST-T3-20120822-S-OSAT48-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842940	BP-HZN-2179MDL07842940
K-616-12		ANST-T3-20120822-S-OSAT48-TX-0002	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842940	BP-HZN-2179MDL07842940

K-617-12		ANST-T3-20120823-S-OSAT45-TX-0001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842941 BP-HZN-2179MDL07842933	BP-HZN-2179MDL07842942 BP-HZN-2179MDL07842933
K-617-12		ANST-T3-20120823-S-OSAT45-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842941 BP-HZN-2179MDL07842933	BP-HZN-2179MDL07842942 BP-HZN-2179MDL07842933
K-617-12		ANST-T3-20120823-S-OSAT45-TX-0001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842941 BP-HZN-2179MDL07842933	BP-HZN-2179MDL07842942 BP-HZN-2179MDL07842933
K-618-12		ANST-T3-20120823-S-OSAT43-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-618-12		ANST-T3-20120823-S-OSAT43-TX-0003	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-619-12		ANST-T3-20120823-S-OSAT44-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-619-12		ANST-T3-20120823-S-OSAT44-TX-0002	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-620-12		ANST-T2-20120823-S-351R1-TX-003	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-620-12		ANST-T2-20120823-S-351R1-TX-003	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-621-12		ANST-T2-20120823-S-535R2-TX-002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-621-12		ANST-T2-20120823-S-535R2-TX-002	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-622-12		ANST-T2-20120823-S-363R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842944	BP-HZN-2179MDL07842944
K-622-12		ANST-T2-20120823-S-363R1-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842944	BP-HZN-2179MDL07842944
K-623-12		ANST-T2-20120823-S-885R1-TX-004	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842945	BP-HZN-2179MDL07842945
K-623-12		ANST-T2-20120823-S-885R1-TX-004	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842945	BP-HZN-2179MDL07842945
K-624-12		ANST-T1-20120823-S-444L1-TX-0001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842946	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842946
K-624-12		ANST-T1-20120823-S-444L1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842946	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842946
K-624-12		ANST-T1-20120823-S-444L1-TX-0001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842946	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842946
K-625-12		ANST-T1-20120823-S-1179L1-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842947	BP-HZN-2179MDL07842947
K-625-12		ANST-T1-20120823-S-1179L1-TX-0003	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842947	BP-HZN-2179MDL07842947
K-626-12		ANST-T1-20120823-S-1173R1-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842947	BP-HZN-2179MDL07842947
K-626-12		ANST-T1-20120823-S-1173R1-TX-0002	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842947	BP-HZN-2179MDL07842947
K-627-12		ANST-T1-20120823-S-1355L1-TX-0004	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842948	BP-HZN-2179MDL07842948
K-627-12		ANST-T1-20120823-S-1355L1-TX-0004	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842948	BP-HZN-2179MDL07842948

K-635-12		ANST-T2-20120824-S-669R1-TX-0001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842949	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842949
K-635-12		ANST-T2-20120824-S-669R1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842949	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842949
K-635-12		ANST-T2-20120824-S-669R1-TX-0001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842949	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842949
K-636-12		ANST-T2-20120824-S-247R1-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842950	BP-HZN-2179MDL07842950
K-636-12		ANST-T2-20120824-S-247R1-TX-0002	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842950	BP-HZN-2179MDL07842950
K-637-12		ANST-T2-20120824-S-1499R1-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842951	BP-HZN-2179MDL07842951
K-637-12		ANST-T2-20120824-S-1499R1-TX-0003	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842951	BP-HZN-2179MDL07842951
K-638-12		ANST-T2-20120824-S-717L1-TX-0004	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842952	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842952
K-638-12		ANST-T2-20120824-S-717L1-TX-0004	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842952	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842952
K-638-12		ANST-T2-20120824-S-717L1-TX-0004	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842952	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842952
K-639-12		ANST-T1-20120824-S-914R1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842953	BP-HZN-2179MDL07842953
K-639-12		ANST-T1-20120824-S-914R1-TX-0001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842953	BP-HZN-2179MDL07842953
K-640-12		ANST-T1-20120824-S-1101R1-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842953	BP-HZN-2179MDL07842953
K-640-12		ANST-T1-20120824-S-1101R1-TX-0002	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842953	BP-HZN-2179MDL07842953
K-641-12		ANST-T1-20120824-S-1272L1-TX-0003	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842954	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842954
K-641-12		ANST-T1-20120824-S-1272L1-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842954	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842954
K-641-12		ANST-T1-20120824-S-1272L1-TX-0003	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842954	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842954
K-643-12		ANST-T3-20120824-S-OSAT41-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842956	BP-HZN-2179MDL07842958
K-643-12		ANST-T3-20120824-S-OSAT41-TX-0002	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842956	BP-HZN-2179MDL07842958
K-754-12		ANST-T1-20120927-S-444R1-TX-002	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842932 BP-HZN-2179MDL07842959	BP-HZN-2179MDL07842932 BP-HZN-2179MDL07842960
K-755-12		ANST-T3-20120927-S-OSAT41-TX-0001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842932 BP-HZN-2179MDL07842960	BP-HZN-2179MDL07842932 BP-HZN-2179MDL07842961

K-766-12		ANST-T3-20120928-S-914L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842962	BP-HZN-2179MDL07842962
K-766-12		ANST-T3-20120928-S-914L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842962	BP-HZN-2179MDL07842962
K-767-12		ANST-T3-20120928-S-I-04R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842962	BP-HZN-2179MDL07842962
K-767-12		ANST-T3-20120928-S-I-04R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842962	BP-HZN-2179MDL07842962
K-768-12		ANST-T3-20120928-S-I-03L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842962	BP-HZN-2179MDL07842962
K-768-12		ANST-T3-20120928-S-I-03L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842962	BP-HZN-2179MDL07842962
K-769-12		ANST-T1-20120928-S-1272R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842963	BP-HZN-2179MDL07842965
K-769-12		ANST-T1-20120928-S-1272R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842963	BP-HZN-2179MDL07842965
K-770-12		ANST-T1-20120928-S-D12L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842965	BP-HZN-2179MDL07842965
K-770-12		ANST-T1-20120928-S-D12L2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842965	BP-HZN-2179MDL07842965
K-771-12		ANST-T1-20120928-S-E14L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842965	BP-HZN-2179MDL07842965
K-771-12		ANST-T1-20120928-S-E14L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842965	BP-HZN-2179MDL07842965
K-772-12		ANST-T2-20120928-S-1183L3-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842966	BP-HZN-2179MDL07842966
K-772-12		ANST-T2-20120928-S-1183L3-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842966	BP-HZN-2179MDL07842966
K-773-12		ANST-T2-20120928-S-1197R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842966	BP-HZN-2179MDL07842966
K-773-12		ANST-T2-20120928-S-1197R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842966	BP-HZN-2179MDL07842966
K-774-12		ANST-T2-20120928-S-1478R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842966	BP-HZN-2179MDL07842966
K-774-12		ANST-T2-20120928-S-1478R2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842966	BP-HZN-2179MDL07842966
K-798-12		ANST-T1-20121002-S-726L2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842967	BP-HZN-2179MDL07842969
K-801-12		ANST-T3-20121002-S-OSAT49-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842968	BP-HZN-2179MDL07842970
K-803-12		ANST-T2-20121002-S-C-10R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842971
K-803-12		ANST-T2-20121002-S-C-10R2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842971
K-804-12		ANST-T3-20121003-S-141R2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842973
K-804-12		ANST-T3-20121003-S-141R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842973
K-804-12		ANST-T3-20121003-S-141R2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842973
K-805-12		ANST-T3-20121003-S-159L2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842974
K-805-12		ANST-T3-20121003-S-159L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842974
K-805-12		ANST-T3-20121003-S-159L2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842974

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K-806-12	ANST-T2-20121003-S-276R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842971
K-806-12	ANST-T2-20121003-S-276R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842971
K-807-12	ANST-T3-20121004-S-717R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842975
K-807-12	ANST-T3-20121004-S-717R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842975
K-807-12	ANST-T3-20121004-S-717R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842975
K-808-12	ANST-T3-20121004-S-247L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842976	BP-HZN-2179MDL07842976
K-808-12	ANST-T3-20121004-S-247L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842976	BP-HZN-2179MDL07842976
K-809-12	ANST-T3-20121004-S-669L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842976	BP-HZN-2179MDL07842978
K-809-12	ANST-T3-20121004-S-669L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842976	BP-HZN-2179MDL07842978
K-809-12	ANST-T3-20121004-S-669L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842976	BP-HZN-2179MDL07842978
K-810-12	ANST-T2-20121004-S-34R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842976	BP-HZN-2179MDL07842976
K-810-12	ANST-T2-20121004-S-34R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842976	BP-HZN-2179MDL07842976
K-811-12	ANST-T1-20121004-S-100L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842979	BP-HZN-2179MDL07842981
K-811-12	ANST-T1-20121004-S-100L2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842979	BP-HZN-2179MDL07842981
K-812-12	ANST-T1-20121004-S-48R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842980	BP-HZN-2179MDL07842980
K-812-12	ANST-T1-20121004-S-48R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842980	BP-HZN-2179MDL07842980
K-813-12	ANST-T1-20121005-S-1094R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842980	BP-HZN-2179MDL07842980
K-813-12	ANST-T1-20121005-S-1094R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842980	BP-HZN-2179MDL07842980
K-814-12	ANST-T2-20121005-S-1491R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842981	BP-HZN-2179MDL07842983
K-814-12	ANST-T2-20121005-S-1491R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842981	BP-HZN-2179MDL07842983
K-814-12	ANST-T2-20121005-S-1491R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842981	BP-HZN-2179MDL07842983
K-815-12	ANST-T2-20121005-S-1491R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842981	BP-HZN-2179MDL07842984
K-815-12	ANST-T2-20121005-S-1491R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842981	BP-HZN-2179MDL07842984
K-816-12	ANST-T3-20121005-S-B06L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842983	BP-HZN-2179MDL07842985
K-816-12	ANST-T3-20121005-S-B06L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842983	BP-HZN-2179MDL07842985
K-816-12	ANST-T3-20121005-S-B06L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842983	BP-HZN-2179MDL07842985
K-817-12	ANST-T1-20121006-S-1714R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842986	BP-HZN-2179MDL07842986
K-817-12	ANST-T1-20121006-S-1714R2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842986	BP-HZN-2179MDL07842986

K-818-12		ANST-T3-20121006-S-379L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842986	BP-HZN-2179MDL07842986
K-818-12		ANST-T3-20121006-S-379L2-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842986	BP-HZN-2179MDL07842986
K-853-12		ANST-T2-20121008-S-198L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842986	BP-HZN-2179MDL07842986
K-946-12		ANST-T1-20120910-EI1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842987	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842989
K-946-12		ANST-T1-20120910-EI1-TX-0001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842987	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842989
K-946-12		ANST-T1-20120910-EI1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842987	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842989
K-946-12		ANST-T1-20120910-EI1-TX-0001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842987	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842989
K-947-12		ANST-T1-20120910-EI2-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842990	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842992
K-947-12		ANST-T1-20120910-EI2-TX-0002	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842990	BP-HZN-2179MDL07842992
K-947-12		ANST-T1-20120910-EI2-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842990	BP-HZN-2179MDL07842992
K-947-12		ANST-T1-20120910-EI2-TX-0002	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842990	BP-HZN-2179MDL07842992
29985		ANST-T3-20120823-S-OSAT45-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29985		ANST-T3-20120823-S-OSAT45-TX-0001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29986		ANST-T3-20120822-S-OSAT46-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29986		ANST-T3-20120822-S-OSAT46-TX-0003	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29987		ANST-T3-20120822-S-OSAT47-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29987		ANST-T3-20120822-S-OSAT47-TX-0001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29991		ANST-T1-20120824-S-1272L1-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29991		ANST-T1-20120824-S-1272L1-TX-0003	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29998		ANST-T3-20120824-S-OSAT41-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29998		ANST-T3-20120824-S-OSAT41-TX-0002	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30002		ANST-T1-20120822-S-1308L1-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30002		ANST-T1-20120822-S-1308L1-TX-0003	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381

30003		ANST-T1-20120823-S-444L1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30003		ANST-T1-20120823-S-444L1-TX-0001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30004		ANST-T2-20120824-S-669R1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30004		ANST-T2-20120824-S-669R1-TX-0001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30005		ANST-T2-20120824-S-717L1-TX-0004	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30005		ANST-T2-20120824-S-717L1-TX-0004	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30255		ANST-T1-20120927-S-444R1-TX-002	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30255		ANST-T1-20120927-S-444R1-TX-002	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30256		ANST-T3-20120927-S-OSAT41-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30256		ANST-T3-20120927-S-OSAT41-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30259		ANST-T1-20120928-S-1272R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30259		ANST-T1-20120928-S-1272R1-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30265		ANST-T1-20121002-S-726L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30265		ANST-T1-20121002-S-726L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30265		ANST-T3-20121002-S-726L2-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30266		ANST-T3-20121002-S-OSAT49-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30266		ANST-T3-20121002-S-OSAT49-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30272		ANST-T3-20121003-S-141R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30272		ANST-T3-20121003-S-141R2-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30274		ANST-T3-20121004-S-669L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30274		ANST-T3-20121004-S-669L1-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30275		ANST-T1-20121004-S-100L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30275		ANST-T1-20121004-S-100L2-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381

30276		ANST-T3-20121004-S-717R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30276		ANST-T3-20121004-S-717R1-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30280		ANST-T2-20121005-S-1491R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30280		ANST-T2-20121005-S-1491R1-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30281		ANST-T3-20121005-S-H04R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30281		ANST-T3-20121005-S-H04R2-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30282		ANST-T3-20121005-S-B06L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30282		ANST-T3-20121005-S-B06L1-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381

Appendix I-2 - List of US Government Complete Definitive Toxicity Tests Used in My Analysis

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates
102	CEWAF	eastern oyster	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
103	CEWAF	eastern oyster	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
105	CEWAF	eastern oyster	veliger	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
106	CEWAF	eastern oyster	veliger	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
109	CEWAF	eastern oyster	early spat	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
110	DISP	eastern oyster	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
111	DISP	eastern oyster	veliger	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
				Juvenile exposure to spiked sediments in individual mesh chambers, growth, survival, gill/liver histopath, gene expression		
113	SPIKED SED	southern flounder	juvenile		US_PP_NOHD_18000001	US_PP_NOHD_18000001
114	SPIKED SED	Leptocheirus	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
115	SPIKED SED	Leptocheirus	juvenile	10-day amphipod	US_PP_NOHD_18000001	US_PP_NOHD_18000001
124	CEWAF	eastern oyster	gamete/embryo/ veliger	fertilization	US_PP_NOHD_18000001	US_PP_NOHD_18000001
130	CEWAF	sheepshead minnow	adult	mortality, growth, microflora of gill and gut	US_PP_NOHD_18000001	US_PP_NOHD_18000001
132	CEWAF	eastern oyster	veliger	salinity/temperature interactions	US_PP_NOHD_18000001	US_PP_NOHD_18000001
136	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
137	CEWAF	sheepshead minnow	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
138	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
139	CEWAF	sheepshead minnow	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
142	CEWAF	speckled sea trout	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
143	CEWAF	speckled sea trout	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
144	CEWAF	blue crab	zoea	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
148	CEWAF	blue crab	zoea	Acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
152	CEWAF	Gulf killifish	embryo	Acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
155	CEWAF	sheepshead minnow	larvae	acute toxicity, variable salinity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
156	SPIKED SED	eastern oyster	adult	Survival, immunotox, fertilization, abnormalities, larval survival	US_PP_NOHD_18000001	US_PP_NOHD_18000001
158	CEWAF	Gulf killifish	embryo	acute toxicity, heart rate, hatch	US_PP_NOHD_18000001	US_PP_NOHD_18000001
161	CEWAF	mahi-mahi	embryo	UV acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
163	SPIKED SED	grass shrimp	adult	chronic toxicity, reproduction, days to hatch, % hatch, growth	US_PP_NOHD_18000001	US_PP_NOHD_18000001
165	CEWAF	Gulf killifish	larvae	acute toxicity, heart rate	US_PP_NOHD_18000001	US_PP_NOHD_18000001
167	CEWAF	sheepshead minnow	larvae	mortality, temperature interaction	US_PP_NOHD_18000001	US_PP_NOHD_18000001
171	CEWAF-VARDISP	sheepshead minnow	larvae	chronic toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
175	CEWAF	eastern oyster	veliger	acute toxicity, growth	US_PP_NOHD_18000001	US_PP_NOHD_18000001

178	DISP	eastern oyster	veliger	growth, abnormality, mortality	US_PP_NOHD_18000001	US_PP_NOHD_18000001
184	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
188	Algae + oil	eastern oyster	adult	acute toxicity, histology	US_PP_NOHD_18000001	US_PP_NOHD_18000001
189	LEWAF	eastern oyster	gamete/ embryo/ veliger	Fertilization, abnormalities, development, growth, acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
190	LEWAF	eastern oyster	embryo	Abnormalities, development, growth, acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
191	LEWAF	eastern oyster	veliger	Abnormalities, development, growth, acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
193	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
195	SPIKED SED	Gulf killifish	embryo	acute toxicity, heart rate	US_PP_NOHD_18000001	US_PP_NOHD_18000001
199	SLICK	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
202	CEWAF	red drum	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
204	DISP	red drum	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
207	CEWAF	red drum	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
209	DISP	red drum	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
211	CEWAF	inland silverside	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
213	CEWAF	inland silverside	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
214	CEWAF	red drum	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
215	CEWAF	sheepshead minnow	adult	chronic lifecycle test, repro, gene expression	US_PP_NOHD_18000001	US_PP_NOHD_18000001
218	SPIKED SED	eastern oyster	adult	acute toxicity, fertilization, bioaccumulation, histology	US_PP_NOHD_18000001	US_PP_NOHD_18000001
227	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
231	CEWAF	mahi-mahi	embryo	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
233	CEWAF	eastern oyster	pediveliger	acute toxicity, settlement	US_PP_NOHD_18000001	US_PP_NOHD_18000001
238	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
239	Slick	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
247	SPIKED SED	Leptocheirus	Neonates	survival, growth, reproduction, reburial	US_PP_NOHD_18000001	US_PP_NOHD_18000001
250	CEWAF	sheepshead minnow	embryo	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
252	CEWAF	sheepshead minnow	larvae	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
253	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
255	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
256	SPIKED SED	eastern oyster	pediveliger	settlement	US_PP_NOHD_18000001	US_PP_NOHD_18000001
258	CEWAF	mahi-mahi	embryo	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
260	Slick	mahi-mahi	embryo	acute mortality	US_PP_NOHD_18000001	US_PP_NOHD_18000001
262	SPIKED SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
267	DISP	white shrimp	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
268	CEWAF	white shrimp	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
272	SPIKED SED	Leptocheirus	Neonates	survival, growth, reproduction, reburial	US_PP_NOHD_18000001	US_PP_NOHD_18000001
283	CEWAF	grass shrimp	adult	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
285	CEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001

288	CEWAF	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
291	CEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
293	CEWAF	grass shrimp	adult	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
294	CEWAF	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
296	DISP	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
302	Algae + CEWAF	eastern oyster	adult	long-term algae/oil/dispersant slurry	US_PP_NOHD_18000001	US_PP_NOHD_18000001
304	DISP	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
305	CEWAF	eastern oyster	early spat	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
306	DISP	eastern oyster	early spat	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
311	CEWAF	sheepshead minnow	larvae	variable renewal frequency, 24, 48 h	US_PP_NOHD_18000001	US_PP_NOHD_18000001
312	CEWAF	sheepshead minnow	larvae	variable dispersant/dispersant only	US_PP_NOHD_18000001	US_PP_NOHD_18000001
316	CEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
318	Algae + oil	eastern oyster	adult	immune response, disease susceptibility	US_PP_NOHD_18000001	US_PP_NOHD_18000001
321	CEWAF	sheepshead minnow	larvae	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
323	CEWAF	blue crab	Zoea	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
325	CEWAF	blue crab	zoea	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
340	SPIKED SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
342	SPIKED SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
343	SPIKED SED	eastern oyster	adult	acute toxicity, immune response, histology.	US_PP_NOHD_18000001	US_PP_NOHD_18000001
400	DISP	eastern oyster	gamete/ embryo/ veliger	fertilization	US_PP_NOHD_18000001	US_PP_NOHD_18000001
515	CEWAF	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
519	CEWAF	eastern oyster	gamete/ embryo/ veliger	fertilization	US_PP_NOHD_18000001	US_PP_NOHD_18000001
534	FIELD SED	eastern oyster	adult	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
535	SED CLEAN + Surface Oiling	fiddler crab	adult	behavior test with oiled sediment	US_PP_NOHD_18000001	US_PP_NOHD_19000001
540	FIELD SED	southern flounder	juvenile	chronic sediment- histo, gene expression	US_PP_NOHD_18000001	US_PP_NOHD_18000001
541	Algae + oil	eastern oyster	adult - F2	long-term algae/oil/dispersant slurry	US_PP_NOHD_18000001	US_PP_NOHD_18000001
542	Algae + oil + dispersant	eastern oyster	adult - F2	long-term algae/oil/dispersant slurry	US_PP_NOHD_18000001	US_PP_NOHD_18000001
547	CEWAF	sheepshead minnow	larvae	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
558	Algae + oil	eastern oyster	veliger	Dietary protocol	US_PP_NOHD_18000001	US_PP_NOHD_18000001
568	CEWAF	grass shrimp	adult, embryos, larvae	chronic lifecycle test, repro, gene expression	US_PP_NOHD_18000001	US_PP_NOHD_18000001
569	FIELD SED	blue crab	juvenile	mortality, growth, molting	US_PP_NOHD_18000001	US_PP_NOHD_18000001
572	SED CLEAN + Surface Oiling	fiddler crab	adult	Reproduction/Fertilization	US_PP_NOHD_18000001	US_PP_NOHD_19000001
573	Algae + oil	eastern oyster	adult - F2	Histology, fertilization, embryo development, survival	US_PP_NOHD_18000001	US_PP_NOHD_18000001
576	SED ELUTRIATE	eastern oyster	embryo	acute toxicity - sediment elutriate	US_PP_NOHD_18000001	US_PP_NOHD_18000001
578	SED CLEAN + Surface Oiling	fiddler crab	zoea	maternal exposure	US_PP_NOHD_18000001	US_PP_NOHD_18000001
579	SED CLEAN + Surface Oiling	fiddler crab	zoea	maternal exposure to oil and UV exposure to zoea	US_PP_NOHD_18000001	US_PP_NOHD_18000001

582	CEWAF	eastern oyster	embryo	acute toxicity - temp. salinity interactions	US_PP_NOHD_18000001	US_PP_NOHD_18000001
586	FIELD SED	grass shrimp	adult	28 day sediment	US_PP_NOHD_18000001	US_PP_NOHD_18000001
609	SED ELUTRIATE	eastern oyster	gamete/ embryo/ veliger	acute toxicity - sediment elutriate	US_PP_NOHD_18000001	US_PP_NOHD_18000001
610	SED ELUTRIATE	eastern oyster	veliger	acute toxicity - sediment elutriate	US_PP_NOHD_18000001	US_PP_NOHD_18000001
615	NA	yellowfin tuna	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
628	CEWAF	eastern oyster	gamete/ embryo/ veliger	acute toxicity - temp. salinity interactions	US_PP_NOHD_18000001	US_PP_NOHD_18000001
630	FIELD SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
631	FIELD SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
634	SPIKED SED	southern flounder	larvae	acute toxicity during metamorphosis	US_PP_NOHD_18000001	US_PP_NOHD_18000001
888	CEWAF	red drum	juvenile	behavior	US_PP_NOHD_18000001	US_PP_NOHD_19000001
889	DISP	red drum	juvenile	behavior	US_PP_NOHD_18000001	US_PP_NOHD_19000001
890	CEWAF	red drum	juvenile	behavior	US_PP_NOHD_18000001	US_PP_NOHD_19000001
891	CEWAF	red drum	juvenile	behavior	US_PP_NOHD_18000001	US_PP_NOHD_19000001

Appendix I. Description of Spatial Statistics and Additional Maps

For the mapping shown in Figure 14 and below, the chronic toxic unit values were estimated across space and time using the ordinary kriging method of geostatistics. The numerical implementation of ordinary kriging was performed using BMElib,¹³⁹ a MATLAB numerical toolbox of Modern Spatiotemporal Geostatistics.¹⁴⁰ BMElib was selected because it has the capability to perform both spatial and space/time geostatistical analysis, it is used in about 40 countries, and it has been cited in over 196 studies (according to google scholar), including the water quality studies by Akita et al. (2007),¹⁴¹ LoBuglio et al. (2007),¹⁴² Coulliette et al. (2009),¹⁴³ Sanders et al (2012),¹⁴⁴ and Messier et al. (2012).¹⁴⁵ The analysis was performed using the approach described in Akita et al. (2007) as follows:

First a transformation of the log-transformed data was performed by removing an additive space/time offset obtained by smoothing out the data using an exponential kernel. An exponential space/time covariance model was then fit to the log-transformed offset-removed data, and using this covariance model, ordinary kriging was performed to calculate the kriging mean and variance across space and time, which were then back-transformed for visual purposes to produce maps of the variable at specific times of interest. For each time of interest, the map of the kriging mean provides a point estimate of the variable, and the corresponding map of the kriging variance provides an assessment of uncertainty associated with that point estimate. As seen in Figure 14 in the report and reproduced below in Map 1, the map shows where the EPA PAH TU exceeds 1.0 (red areas), and thus there is the potential for harm to sensitive aquatic life. This is for the worst-case-scenario in May 2010 and for 0-200 meters – the time and location where oil and PAH concentrations were at their highest. Map I.1 also uses a conservative 50%

¹³⁹ Christakos, G., Bogaert, P., and Serre. M.L. 2002. Temporal GIS: Advanced Functions for Field-Based Applications. Springer-Verlag, New York, N.Y., 217 pp.

¹⁴⁰ Serre, M. L., and Christakos, G. 1999. Modern geostatistics: Computational BME in the light of uncertain physical knowledge--the Equus Beds Study. Stochastic Environmental Research and Risk Assessment 13(1):1-26.

¹⁴¹ Akita, Y., Carter, G., and Serre, M.L. 2007. Spatiotemporal Non-Attainment Assessment of Surface Water Tetrachloroethene in New Jersey. Journal of Environmental Quality 36(2):508-520.

¹⁴² LoBuglio, J. N., Characklis, G.W., and Serre,M.L. 2007. Cost-effective water quality assessment through the integration of monitoring data and modeling results. Water Resoures Research 43(W03435):1-16, doi:10.1029/2006WR005020.

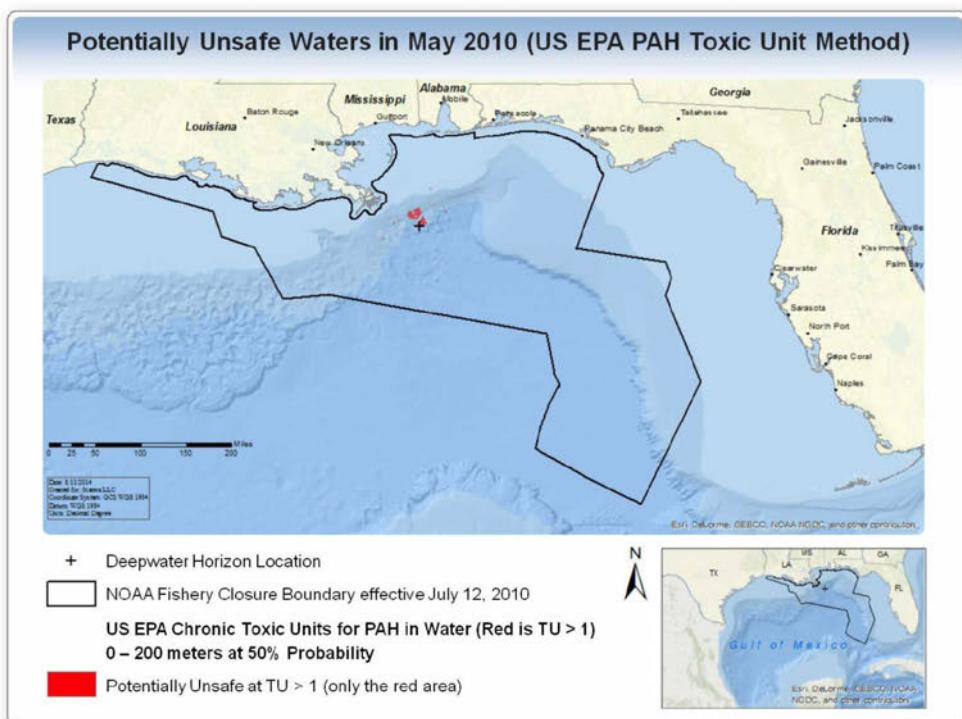
¹⁴³ Coulliette, A.D., Money, E., Serre, M.L., Noble, R.T. 2009. Space/Time Analyses of Fecal Pollution and Rainfall in an Eastern North Carolina Estuary. Environmental Science & Technology 43(10):3728-3735.

¹⁴⁴ Sanders, A.P., Messier, K.P., Shehee, M., Rudo, K., Serre, M.L., and Fry, R.C. 2012. Arsenic in North Carolina: Public Health Implications. Environment International 38:10-16.

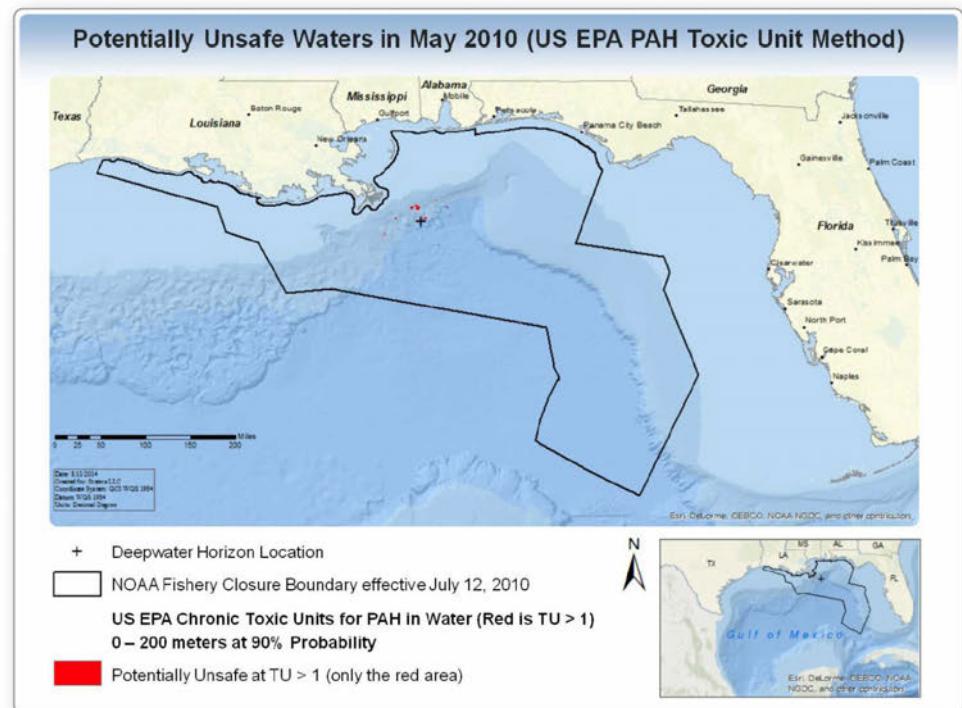
¹⁴⁵ Messier; K.P., Akita, Y., and Serre, M.L. 2012. Integrating address geocoding, land use regression, and spatiotemporal geostatistical estimation for groundwater tetrachloroethylene. Environmental Science & Technology 46(5):2772-2780.

probability that TU exceeds 1.0. This can be interpreted as a “50:50” chance where TU exceeds 1.0. A more likely scenario is shown in Map I.2 where the probability is set at 90%, which can be interpreted as it is “highly likely” that those red areas exceed a TU of 1.0. Note that Map 2 has a smaller total area than Map 1. Both Maps show that the potential areas of concern are near the wellhead.

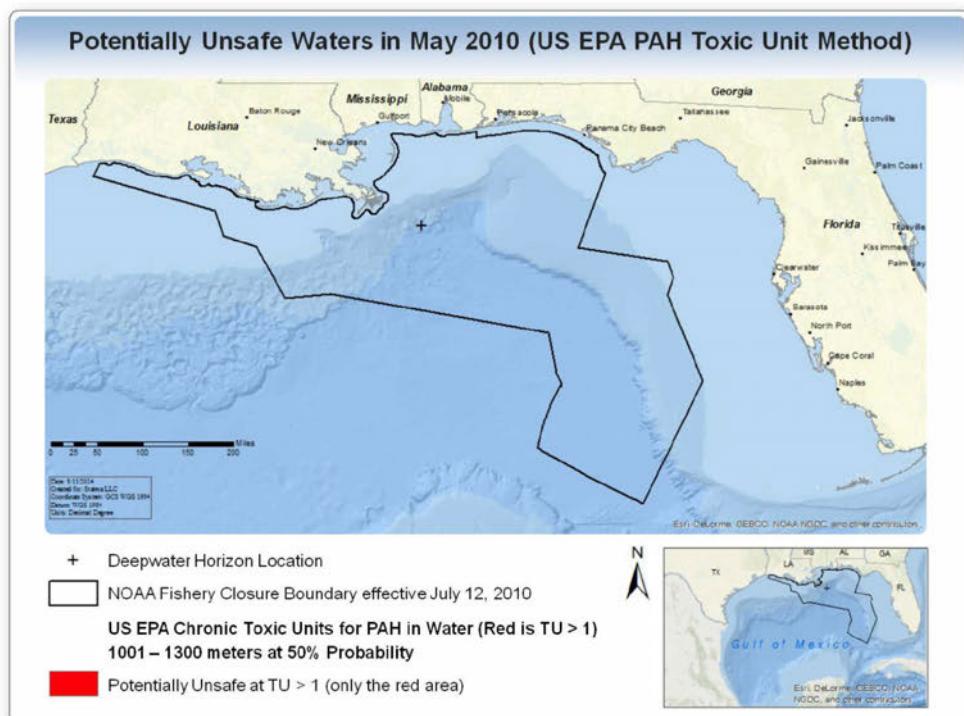
In Maps I.3 and I.4, I show the same thing for the water depth range of 1000-1300 meters, where there were reports of a deepwater layer of small oil droplets and dissolved oil chemicals. There are no visible red areas on these maps at all. This does not mean there was no exceedance of the EPA TU benchmark in May 2010 at this water depth range, but that the frequency of these exceedances was too low to register on a probability map and that region of water was predominantly safe for aquatic life.



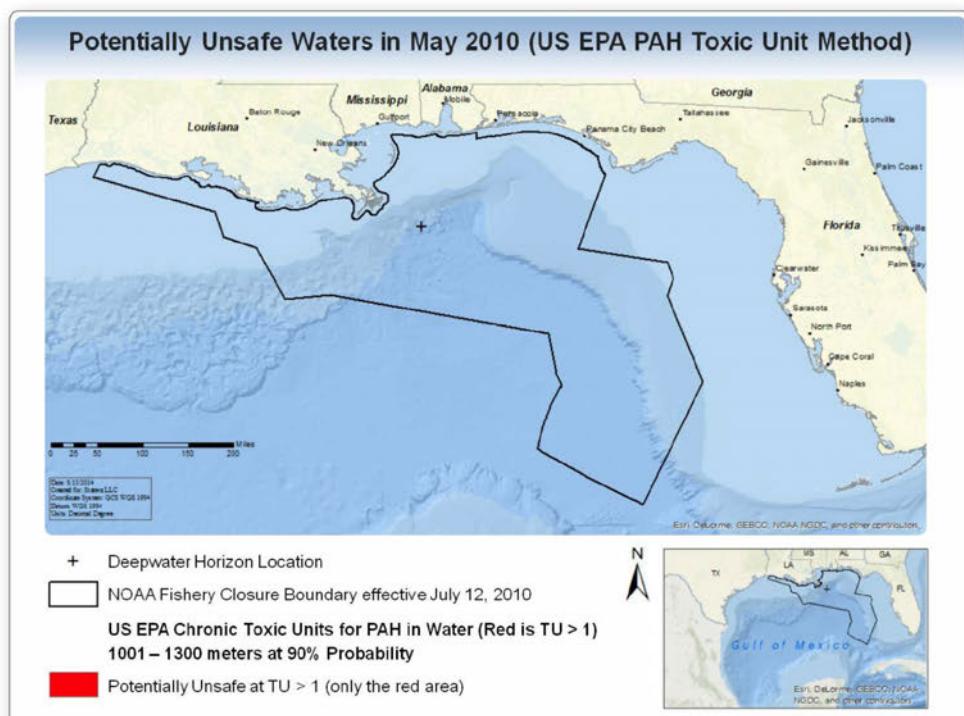
Map I.1. (also shown in Figure 14 in report). This map shows the maximum NOAA fishery closure area (boundary drawn with black line) compared to the most conservative estimate of the area that is potentially harmful to aquatic life: May 2010, 0-200 meters, using a 50% probability.



Map I.2. This map shows a more probable scenario than that shown in Map 1. The same data are mapped at a 90% probability. Notice this more realistic scenario has a much smaller area potentially unsafe (less red area).



Map I.3. This map shows the most conservative estimate of the area that is potentially harmful to aquatic life at 1000-1300 meters: May 2010, using a 50% probability. Notice at this depth there is no visible red area.



Map I.4. This map shows a more probable scenario than that shown in Map 3. The same data are mapped at a 90% probability. Notice at this depth there is no visible red area.

Appendix J. Discussion of Florescence Data

The small area of potentially toxic oil exposure demonstrated by my analysis in the body of the report is further confirmed by the analysis of fluorescence data performed by the Joint Analysis Group for the Deepwater Horizon Oil Spill (JAG) at the direction of the National Incident Commander for the spill. An increase in fluorescence indicates the presence of compounds that fluoresce, including some components of oil. In their August 2011¹⁴⁶ report, that focused on fluorescence data collected between 1,000 and 1,300 m water depth (Figure J.1.), the JAG found that elevated fluorescence detection was shown to be concentrated within 10 km of the wellhead. Beyond 15 km from the wellhead, mean and maximum detections of fluorescence above background were rare.

¹⁴⁶ Joint Analysis Group for the Deepwater Horizon Oil Spill. 2011. Review of Preliminary Data to Examine Subsurface Oil in the Vicinity of MC252#1, May 19 to June 19, 2010.

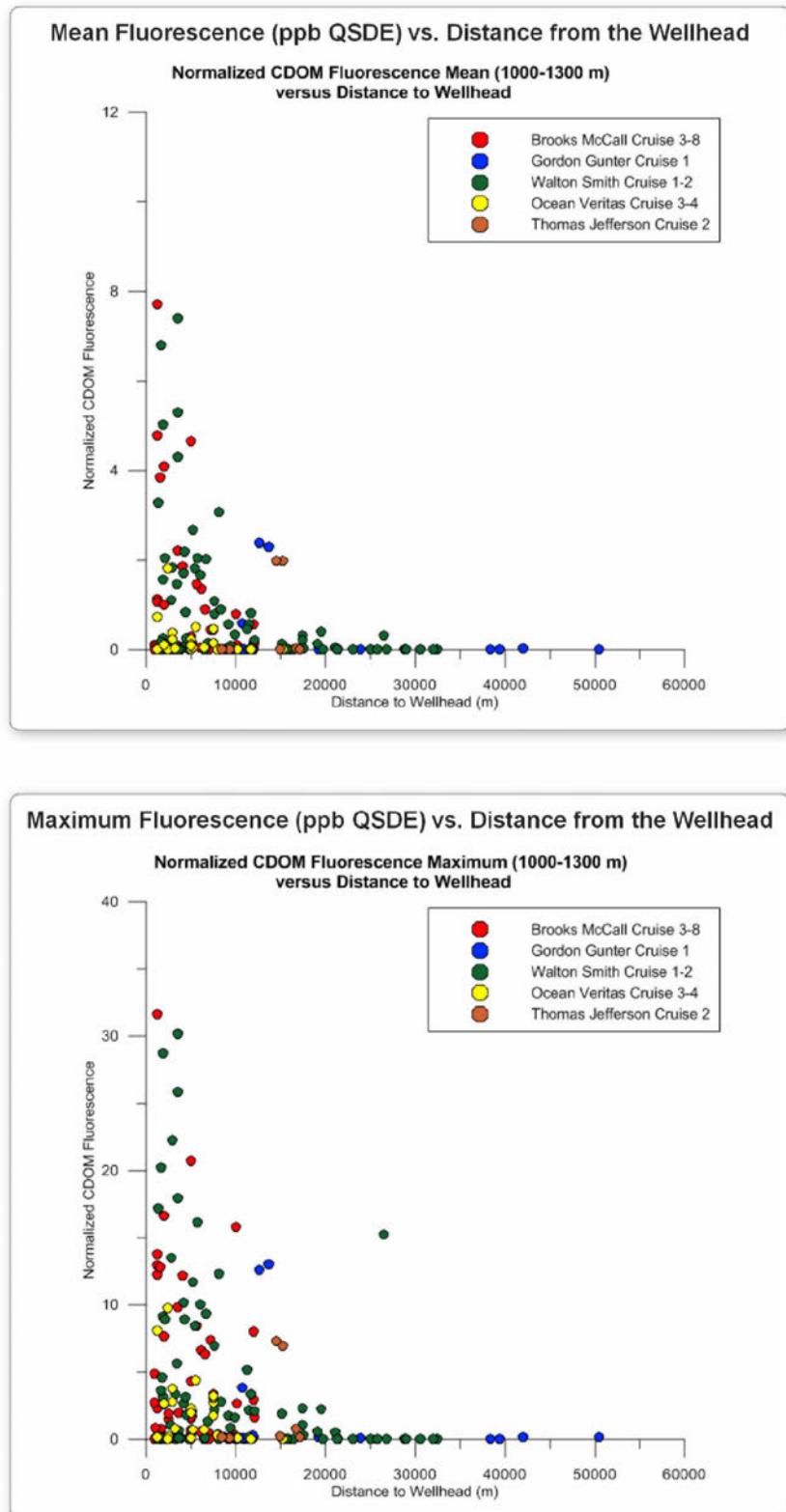


Figure 16. These graphs, taken from the August 2011 JAG Report show that elevated fluorescence, indicating the presence of oil, was concentrated within 10 km of the well head. These measurements were taken between May 19 and June 19, 2010, before the well was capped. The results are consistent with chemistry data, which show that a limited area of water was potentially harmful to aquatic life.

Appendix K. Other Consideration Materials

A full list of all the materials I have considered in connection with completing this report will also be provided in electronic format as a Microsoft excel document. The documents listed there include:

- (1) Confidential reports, deposition transcripts, and other materials (Appendix K-1)
- (2) Books, papers, reports, and photographs in the public domain (Appendix K-2)
- (3) Data in the public domain (Gulf Science Data website data) (Appendix K-3)
- (4) All BP and United States toxicity studies (including those that I did not use in my analysis)
 - a. Validated toxicity tests from BP relied on in this report (Appendix K-4)
 - b. Unvalidated toxicity tests from BP considered but not relied on in this report (Appendix K-5)
 - c. Complete definitive toxicity tests from the United States relied on in this report (Appendix K-6)
 - d. Complete definitive toxicity tests from the United States (Appendix K-7)
 - e. Terminated toxicity tests from the United States considered but not relied on in this report (Appendix K-8)

Appendix K-1:
Confidential Reports, Deposition Transcripts, and Other Material

Date	Description
2011-00-00	Deepwater Horizon Quality Assurance Project Plan For The BP MC252 Incident Sample Management Group. BP-MC252-QAPP. 2011. 55 pp + Appendices
2014-06-11	Deposition of Dr. Amy Merten
2014-07-10	Deposition of Dr. Jane Lubchenco
2014-00-00	General Laboratory Protocols and Procedures: Deepwater Horizon Laboratory Toxicity Testing. Prepared for: U.S. Department of Commerce, National Oceanic and Atmospheric Administration. Prepared by: Stratus Consulting Inc. 2014
2010-11	NOAA/BP-ENTRIX NRDA Cooperative Deep Tow Cruise 1, November 2010 Arctic-HOS Davis 4 Cruise Plan. Study Reference No. 140. Page 1
2014-02-04	Quality Assurance Project Plan: Deepwater Horizon Laboratory Toxicity Testing Version 4. Prepared for: U.S. Department of Commerce, National Oceanic and Atmospheric Administration. Prepared by: Stratus Consulting Inc. February 4, 2014. 34 pp + Appendices

Appendix K-2:
Books, Papers, Reports, and Photographs in the Public Domain

Date	Description
2007-03-01	Akita, Y., Carter, G., and Serre, M.L. 2007. Spatiotemporal Non-Attainment Assessment of Surface Water Tetrachloroethene in New Jersey. <i>Journal of Environmental Quality</i> 36(2):508-520.
2012-11-15	Analytical Quality Assurance Plan Mississippi Canyon 252 (Deepwater Horizon) Natural Resource Damage Assessment. Version 3.1, 2012, 38pp.
2012-00-00	Bælum, J., Borglin, S., Chakraborty, R., Fortney, J.L., Lamendella, R., Mason O.U., Auer, M., Zemla, M., Bill, M., Conrad, M.E., Malfatti, S.A., Tringe S.G., Holman H.Y., Hazen T.C., and Jansson J.K. 2012. Deep-sea bacteria enriched by oil and dispersant from the Deepwater Horizon spill. <i>Environmental Microbiology</i> , doi:10.1111/j.1462-2920.2012.02780.
2013-00-00	Bejarano, A.C., Levine, E., Mearns, A.J. 2013. Effectiveness and potential ecological effects of offshore surface dispersant use during the Deepwater Horizon oil spill: a retrospective analysis of monitoring data. <i>Environmental Monitoring and Assessment</i> 185:10281-10295
2010-05-08	BP, Part I, Dispersed Plume Characterization Plan, Proof of Concept (May 8, 2010), available at http://www.epa.gov/bpspill/dispersants/subsurface-dispersant-directive-final.pdf
2010-00-00	Camilli, R., Reddy, C.R., Yoerger, D.R., Van Mooy,B.A.S., Jakuba, M.V., Kinsey, J.C., McIntyre, C.P., Sylva, S.P., and Maloney, J.V. 2010. Tracking Hydrocarbon Plume Transport and Biodegradation at Deepwater Horizon. <i>Science</i> 330:201-204.
2012-00-00	Chakraborty, R., Borglin, S.E., Dubinsky, E.A., Andersen, G.L., and Hazen, T.C. 2012. Microbial response to the MC-252 oil and Corexit 9500 in the Gulf of Mexico. <i>Frontiers in Microbiology, Microbiotechnology, Ecotoxicology and Bioremediation</i> 3(357):1-6, 4 doi: 10.3389/fmicb.2012.00357.
1999-00-00	Chiles, J-P. and Delfiner, P. 1999. <i>Geostatistics: Modeling Spatial Uncertainty</i> . ISBN: 0-471-08315-1.
2002-00-00	Christakos, G., Bogaert, P., and Serre, M.L. 2002. <i>Temporal GIS: Advanced Functions for Field-Based Applications</i> , Springer-Verlag, New York, N.Y., 217pp. ISBN: 978-3-540-41476-6.

Date	Description
2000-00-00	Christakos, G. 2000. Modern Spatiotemporal Geostatistics. ISBN: 978-0486488189.
1997-00-00	Coelho, G.M. and Aurand, D.V. (eds.). 1998. Proceedings of the Seventh Meeting of the Chemical Response to Oil Spills: Ecological Effects Research Forum. November 13-14, 1997. Ecosystem Management & Associates, Inc., Purcellville, VA. EM&A Report 97-02, p. 53.
2006-00-00	Continental Shelf Associates, Inc. 2006. Effects of Oil and Gas Exploration and Development at Selected Continental Slope Sites in the Gulf of Mexico. Volume I: Executive Summary. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study MMS 2006-044. 45 pp
2009-00-00	Coulliette, A.D., Money, E., Serre, M.L., and Noble, R.T. 2009. Space/Time Analyses of Fecal Pollution and Rainfall in an Eastern North Carolina Estuary. Environmental Science & Technology 43(10):3728-3735.
1993-00-00	Cressie, N., Statistics for Spatial Data. 1993. ISBN: 978-0471002550.
2010-10-21	Diercks, A.R., Highsmith, R.C., Asper, V.L., Joung, D-J., Zhou, Z., Guo, L., Shiller, A.M., Joye, S.B., Teske A.P., Guinaso N., Wade, T.L., and Lohrenz, S.E. 2010. Characterization of Subsurface Polycyclic Aromatic Hydrocarbons at the Deepwater Horizon Site. Geophysical Research Letters 37(L20602):1-6, doi:10.1029/2010GL045046.
2011-08-03	Edwards, B.R., Reddy, C.M., Camilli, R., Carmichael, C.A., Longnecker, K., Van Mooy, B.A.S. 2011. Rapid microbial respiration of oil from the Deepwater Horizon spill in offshore surface waters of the Gulf of Mexico. Environmental Research Letters 6(035301), doi:10.1088/1748-9326/6/3/035301, 9 pp.
2010-06-23	Explanation of PAH benchmark calculations using EPA PAH ESB approach, originally developed by Dave Mount (ORD Duluth), available at http://www.epa.gov/bpspill/water/explanation-of-pah-benchmark-calculations-20100622.pdf .
2014-06-27	Farrington, J.W. 2014. Oil Pollution in the Marine Environment II: Fates and Effects of Oil Spills. Environment: Science and Policy for Sustainable Development 56:16, 20.

Date	Description
2010-11-00	Federal Interagency Solutions Group, Oil Budget Calculator Science and Engineering Team. Oil Budget Calculator, Deepwater Horizon (November 2010).
2011-09-00	Federal On-Scene Coordinator. On Scene Coordinator Report, Deepwater Horizon Oil Spill, Submitted to the National Response Team (September 2011).
2013-00-00	Gardiner, W.W., Word, J.Q., Word, J.D., Perkins, R.A., McFarlin, K.M., Hester B.W., Word, L.S., and Ray, C.M. 2013. The acute toxicity of chemically and physically dispersed crude oil to key arctic species under arctic conditions during the open water season. Environmental Toxicology and Chemistry 32(10):2284–2300.
1997-05-00	Griffin, L.F. and Calder, J.A. 1977. Toxic effect of water-soluble fractions of crude, refined, and weathered oils on the growth of a marine bacterium. Applied and Environmental Microbiology 33(5):1092–1096.
N/A	Gulf Science Data website Submerged Sediment Data Publication Summary Report, available at https://www.piersystem.com/go/doc/6145/2076530/SedimentChemistry-S-01v01-02-zip .
N/A	Gulf Science Data website Water Chemistry Data Publication Summary Report, available at https://www.piersystem.com/go/doc/6145/2171870/WaterChemistry-W-01v02-02-zip .
2010-10-08	Hazen, T.C., Dubinsky, E.A., DeSantis, T.Z., Andersen, G.L., Piceno, Y.M., Singh, N., Jansson, J.K., Probst, A., Borglin, S.E., Fortney, J.L., Stringfellow, W.T., Bill, M., Conrad, M.E., Tom, L.M., Chavarria, K.L., Alusi, T.R., Lamendella, R., Joyner, D.C., Spier, C., Baelum, J., Auer, M., Zemla, M.L., Chakraborty, R., Sonnenthal, E.L., D'Haeseleer, P., Holman, H.Y.N., Osman, S., Lu, Z.M., Van Nostrand, J., Deng, Y., Zhou, J.Z., and Mason, O U. 2010. Deep-sea oil plume enriches indigenous oil-degrading bacteria. Science 330:204-208.
2008-00-00	Hudson, P., Khan, C., Saravanabhanav ,G., Clarke, L., Shaw, B., Nabeta, K., Helferty, A., Brown, S., Wang, Z., Hollebone, B., Lee, K., and Short, J. 2008. What Compounds in Crude Oil Cause Chronic Toxicity to Larval Fish? Oil Spill Response: A Global Perspective. NATO Science for Peace and Security Series C: Environmental Security, pp 193-194.
2011-08-00	Joint Analysis Group for the Deepwater Horizon Oil Spill. Review of Preliminary Data to Examine Subsurface Oil in the Vicinity of MC252#1, May 19 to June 19, 2010 (August 2011).

Date	Description
2010-08-16	Joint Analysis Group, Review of Preliminary Data to Examine Oxygen Levels In the Vicinity of MC252#1, May 8 to August 9, 2010 (Aug. 16, 2010).
2010-00-00	Judson, R.S., et al. 2010. Analysis of Eight Oil Spill Dispersants Using Rapid, In Vitro Tests for Endocrine and Other Biological Activity. Environmental Science & Technology 44:5979-5985.
2011-01-21	Kessler, J.D., Valentine, D.L., Redmond, M.C., Du, M., Chan, E.W., Mendes, S.D., Quiroz, E.W., Villanueva, C.J., Shusta, S.S., Werra, L.M., Yvon-Lewis, S.A., and Weber, T.C. 2011. A Persistent Oxygen Anomaly Reveals the Fate of Spilled Methane in the Deep Gulf of Mexico. Science 331:312-15.
2003-10-03	Kvenvolden, K. A. and Cooper, C. K. 2003. Natural seepage of crude oil into the marine environment. Geo-Marine Letters 23(140).
2001-00-00	Lanoil, B.D., et al. 2001. Bacteria and Archaea physically associated with Gulf of Mexico gas hydrates. Applied and Environmental Microbiology 67(11):5143-5153.
2014-06-18	Lewan, M.D., Warden, A., Dias, R.F., Lowry, Z.K., Hannah, T.L., Lillis, P.G., Kokaly, R.F., Hoefen, T.M., Swayze, G.A., Mills, C.T., Harris, S.H., and Plumlee, G.S. 2014. Asphaltene content and composition as a measure of Deepwater Horizon oil spill losses within the first 80 days. Organic Geochemistry 75:54-60, doi:10.1016/j.orggeochem.2014.06.004.
2007-00-00	LoBuglio, J. N., Characklis, G. W., and Serre, M. L. 2007. Cost-effective water quality assessment through the integration of monitoring data and modeling results. Water Resources Research 43(W03435):1-16, doi:10.1029/2006WR005020.
2012-00-00	Lubchenco, J., McNutt, M.K., Dreyfus, G., Murawski, S.A., Kennedy, D.M., Anastas, P.T., Chu, S., and Hunter, T. 2012. Science in support of the Deepwater Horizon response. PNAS 109(50), doi:10.1073/pnas.1204729109.
1903-00-00	Macdonald I. R., Guinasso N. L. Jr., Ackleson S. G., Amos J. F., Duckworth R., Sassen R., Brooks J. M, "Natural Oil Slicks In The Gulf Of Mexico Visible From Space," Journal of Geophysical Research (Sept. 15, 1993), Vol. 98, No. C9, Pages 16,351-16,364

Date	Description
2010-05-13	Memorandum from Captain J.E. Hanzalik to RRT VI Consensus Network Participants re: RRT Call to Discuss Proposal for Criteria and Consensus to Resume a Proposed 3-5 Day Operation Trial of Sub Sea Disp (May 13, 2010) .
2012-01-19	Messier, K.P., Akita, Y., and Serre, M.L. 2012. Integrating address geocoding, land use regression, and spatiotemporal geostatistical estimation for groundwater tetrachloroethylene. Environmental Science & Technology 46(5):2772-2780.
2002-10-00	Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. Fifth Edition. October 2002. EPA-821-R-02-012, 208 pp + Appendices.
N/A	Mousse Image, available at http://incidentnews.noaa.gov/incident/8220/526518/DSC07724.JPG
2003-00-00	National Research Council. 2003. Oil on the Sea III: Inputs, Fates and Effects at 191, available at http://www.nap.edu/catalog.php?record_id=10388 .
2005-00-00	National Research Council. 2005. Oil Spill Dispersants: Efficacy and Effects Committee on Understanding Oil Spill Dispersants: Efficacy and Effects, Ocean Studies Board, Division on Earth and Life Studies. National Academies Press, 400pp.
1995-00-00	Neff, J.M. and Stubblefield, W.A. 1995. Chemical and toxicological evaluation of water quality following the Exxon Valdez oil spill. In Wells, P.G., Butler, J.N. and Hughes, J.S. (eds.) Exxon Valdez oil spill: fate and effects in Alaskan waters. ASTM Special Technical Publication No. 1219. American Society of Testing and Materials, Philadelphia, pp. 141-177.
1976-00-00	Neff, J.M., Cox, B.A., Dixit, D., and Anderson J.W. 1976. Accumulation and release of petroleum-derived aromatic hydrocarbons by four species of marine animals. Marine Biology 38:279-289.
2010-05-15	NOAA Office of Response and Restoration, Emergency Response Division, Deepwater Horizon Oil: Characteristics and Concerns (May 15, 2010).
N/A	NOAA Office of Response and Restoration, Training: Aerial Observation of Oil Spills, available at http://response.restoration.noaa.gov/training-and-education/training/workshops/aerial-observation-training.html .

Date	Description
N/A	NOAA, Type of Preassessment Information Available, Appendix G, available at http://www.darrp.noaa.gov/library/pdf/PPD_AP-G.PDF .
2011-00-00	Nowell, L.H., Luttko, A.S., Mueller, D.K., and Scott, J.C. 2011. In: U.S. Geological Survey (Ed.), Organic Contaminants, Trace and Major Elements, and Nutrients in Water and Sediment Sampled in Response to the Deepwater Horizon Oil Spill. U.S. Department of the Interior, Reston, Virginia, p. 128. Open-File Report 2011-1271.
1999-00-00	Olea, R.A. Geostatistics for Engineers and Earth Scientists (1999). ISBN-10: 0792385233.
2010-12-17	Operational Science Advisory Team (OSAT) Unified Area Command Summary Report for Sub-Sea and Sub-Surface Oil and Dispersant Detection: Sampling and Monitoring, December 17, 2010 (OSAT-1)
2011-07-08	Operational Science Advisory Team (OSAT) Summary Report for Sub-Sea and Sub-Surface Oil and Dispersant Detection: Ecotoxicity Addendum (July 8, 2011)
1905-06-17	Rand, G., et al. (Eds.). 1995. Fundamentals of Aquatic Toxicology: Effects, Environmental Fate and Risk Assessment, 2nd Edition. New York, N.Y., 1125 pp. ISBN: 978-1560320913.
2012-12-11	Reddy, C.M., Arey, J.S., Seewald, J.S., Sylva, S.P., Lemkau, K.L., Nelson, R.K., Carmichael, C.A., McIntyre, C.P., Fenwick, J., Ventura, G.T., Van Mooy, B.A.S., and Camilli, R. 2012. Composition and fate of gas and oil released to the water column during the Deepwater Horizon oil spill. PNAS 109(50):20229-20234.
2012-00-00	Redmond, M.C. and Valentine, D.L. 2011. Natural gas and temperature structured a microbial community response to the Deepwater Horizon oil spill. PNAS 109:20292-20297.
2009-07-00	Rowe, G.T. and Kennicutt, M.C. 2009. Northern Gulf of Mexico Continental Slope Habitats and Benthic Ecology Study, Final Report. OCS Study, MMS 2009-039.
2012-00-00	Ryerson, T.B., Camilli, R., Kessler, J.D., Kujawinski, E.B., Reddy, C.M., Valentine, D.L., Atlas, E., Blake, D.B., Joost de Gouwa, M.S., Parrish, D.D., Peischla, J., Seewald, J.S., and Warneke, C. 2012. Chemical data quantify Deepwater Horizon hydrocarbon flow rate and environmental distribution. PNAS 109(50):20246-20253.

Date	Description
2012-00-00	Sanders, A.P., Messier, K.P., Shehee, M., Rudo, K., Serre, M.L., Fry, R.C. 2012. Arsenic in North Carolina: Public Health Implications. <i>Environment International</i> 38:10-16.
1999-00-00	Serre, M. L., and Christakos, G. 1999. Modern geostatistics: Computational BME in the light of uncertain physical knowledge--the Equus Beds Study. <i>Stochastic Environmental Research and Risk Assessment</i> 13(1):1-26.
2001-00-00	Singer, M.M., Aurand, D.V., Coelho, G.M., Sowby, M., Bragin, G.E., Clark, J.R., and Tjeerden, R.S. 2001. Making, measuring and using water accommodated fractions of petroleum for toxicity testing. In: <i>Proceedings, 2001 International Oil Spill Conference</i> , American Petroleum Institute, Washington, DC, pp. 1269-1274.
2010-04-00	SINTEF. 2010. Chemical and toxicological characterization of water accommodated fraction (WAF) of crude oils, available at http://www.sintef.no/upload/Materialer_kjemi/Marin%20milj%C3%B8teknologi/faktaark/WAF-web.pdf .
1995-00-00	Siron, R., Pelletier E., and Brochu C. Environmental Factors Influencing the Biodegradation of Petroleum Hydrocarbons in Cold Seawater. <i>Archives of Environmental Contamination and Toxicology</i> 28(4):406-416.
2014-00-00	Smith, A.S., Flemings, P.B., and Fulton, P.M. 2014. Hydrocarbon flux from natural deepwater Gulf of Mexico vents. <i>Earth and Planetary Science Letters</i> 395:241-253.
2014-04-01	Smith R.H., Johns E.M., Goni G.J., Trinanes J., Lumpkin R., Wood A.M., Kelble C.R., Cummings S.R., Lamkin J.T., Privoznik S., Oceanographic conditions in the Gulf of Mexico in July 2010, during the Deepwater Horizon oil spill, <i>Continental Shelf Research</i> , Volume 77, 1 April 2014, Pages 118-131
2011-05-12	Socolofsky, S.A., Adams, E.E., Sherwood, C.R. Formation dynamics of subsurface hydrocarbon intrusions following the Deepwater Horizon blowout. <i>Geophysical Research Letters</i> 38:L09602.
2013-00-00	Spier, C., Stringfellow, W.T., Hazen, T.C., and Conrad, M. Distribution of hydrocarbons released during the 2010 MC252 oil spill in deep offshore waters. <i>Environmental Pollution</i> 173:224-30.
N/A	Surface Slick Image, available at http://response.restoration.noaa.gov/training-and-education/training/workshops/aerial-observation-training.html
2010-05-10	U.S. Coast Guard and U.S. EPA, Dispersant Monitoring and Assessment Directive for Subsurface Dispersant Application at 3 (May 10, 2010).

Date	Description
2003-11-00	U.S. EPA. 2003. Procedures for the derivation of equilibrium partitioning sediment benchmarks (ESBs) for the protection of benthic organisms: PAH mixtures. EPA-600-R-02-013, available at http://www.epa.gov/nheerl/download_files/publications/PAHESB.pdf .
2004-00-00	U.S. EPA. 2004. National Whole Effluent Toxicity (WET) Implementation Guidance EPA 832-B-04-003.
2000-07-00	U.S. EPA. 2000. Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136), EPA 821-B-00-004.
2010-05-30	U.S. EPA Region 6 Quality Assurance Sampling Plan, p 3-5.
2010-06-30	U.S. EPA Off. Of Res. Develop., Comparative Toxicity of Eight Oil Dispersant Products on Two Gulf of Mexico Aquatic Test Species at 7 (June 30, 2010), available at http://www.epa.gov/bpsspill/reports/ComparativeToxTest.Final.6.30.10.pdf
N/A	U.S. EPA. BP's Analysis of Subsurface Dispersant Use, available at http://www.epa.gov/bpsspill/dispersants-bp.html .
N/A	U.S. EPA. Methods for Detecting Dispersants in Water, available at http://www.epa.gov/bpsspill/dispersant-methods.html .
N/A	U.S. EPA. Water Quality Benchmarks for Aquatic Life, available at http://www.epa.gov/bpsspill/water-benchmarks.html#gen2 .
N/A	U.S. EPA. Whole Efluent Toxicity, available at http://water.epa.gov/scitech/methods/cwa/wet/ .
2001-03-00	U.S. EPA. 2001. EPA Requirements for Quality Assurance Project Plans, (EPA QA/R-5) EPA/240/B-01/003. U.S. Environmental Protection Agency, Office of Environmental Information. Washington, DC, March 2001, available at http://www.epa.gov/quality/qs-docs/r5-final.pdf .
2002-12-00	U.S. EPA, 2002. Guidance for Quality Assurance Project Plans, (EPA QA/G-5) EPA/240/R-02/009, December 2002, available at http://www.epa.gov/quality/qs-docs/g5-final.pdf

Date	Description
2002-00-00	U.S. EPA. 2002. Guidance on Environmental Data Verification and Data Validation, (EPA QA/G-8) EPA/240-R-02/004. U.S. Environmental Protection Agency, Office of Environmental Information. Washington, DC, available at http://www.epa.gov/QUALITY/qs-docs/g8-final.pdf .
2008-00-00	U.S. EPA. 2008. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-08/01. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. Washington, DC.
2010-06-23	U.S. EPA. 2010. Explanation of PAH benchmark calculations using EPA PAH ESB approach, available at http://www.epa.gov/bpspill/water/explanation-of-pah-benchmark-calculations-20100622.pdf .
2000-07-00	U.S. EPA. 2000. Guidance for Data Quality Assessment, Practice Methods for Data Analysis, (EPA QA/G-9) EPA/600/R-96/084. U.S. Environmental Protection Agency, Office of Environmental Information. Washington, DC, July 2000.
2010-09-16	Valentine D.L., et al. 2010. Propane respiration jump-starts microbial response to a deep oil spill. Science 330:208-211.
2012-00-00	Valentine, D.L., Mezic, I., Macešić, S., Crnjaric-Žic, N., Ivic, S., Hogand, P.K., Fonoberove, V.A., and Loireb, S. 2012. Dynamic autoinoculation and the microbial ecology of a deep water hydrocarbon irruption. PNAS 100:20286.
10/20/2013	Vilcaez, J., Li, L., and Hubbard, S.S. 2013. A new model for the biodegradation kinetics of oil droplets: application to the Deepwater Horizon oil spill in the Gulf of Mexico. Geochemical Transactions 14:4.
2008-09-05	Wade, T.I., et al. 2008. Trace elements and polycyclic aromatic hydrocarbons (PAHs) concentrations in deep Gulf of Mexico sediments. Deep-Sea Research II 55:2585-2593.

Appendix K-3:
Data in the Public Domain (Gulf Science Data)

Description
BP. Gulf Science Data, Water Chemistry Data File. Website: http://gulfsciencedata.bp.com/ , directory: Water; subdirectory: Water Chemistry; filename: WaterChemistry_W-01v02-01.csv (zipped). Last modified May 2014
BP. Gulf Science Data Dispersant Marker Water Chemistry Data. Website: http://gulfsciencedata.bp.com/ , directory: Water; subdirectory: Dispersant Marker WaterChemistry; filename: WaterChemistry_W-02v01-01.zip. Last modified January 24, 2014
BP. Gulf Science Data, Submerged Sediment Chemistry Data File. Website: http://gulfsciencedata.bp.com/ , directory: Offshore Sediment; subdirectory: Sediment Chemistry; filename: SedimentChemistry_S-01v01-01.zip. Last modified January 22, 2014
BP. Gulf Science Data, Dispersant Marker Submerged Sediment Chemistry Data File. Website: http://gulfsciencedata.bp.com/ , directory: Offshore Sediments; subdirectory: Dispersant Marker Sediment Chemistry; filename: SedimentChemistry_S-02v01-01.csv (zipped). Last modified July 2, 2014
BP. "Gulf Science Data MC-252 Oil Characterization Data File." Reference No. O-01v01-01. Last modified November 12, 2013. http://gulfsciencedata.bp.com/go/doctype/6145/178706
BP. Gulf Science Data Reference Oil Characterization Data. Website: http://gulfsciencedata.bp.com/ , directory: Oil; subdirectory: Oil Characteristics – additional reference oils; filename: OilChemistry_O-04v01-01.zip. Last modified January 22, 2014.
BP. Gulf Science Data Laboratory QC Control Oil Chemistry Data. Website: http://gulfsciencedata.bp.com/ , directory: Oil; subdirectory: Laboratory QC Control Oil Chemistry; filename: OilChemistry_O-02v02-01.zip. Last modified January 24, 2014.
BP. Gulf Science Data Oil, Oil Source Interpretations Data File. Website: http://gulfsciencedata.bp.com/ , directory: Oil; subdirectory: Oil Source Interpretations; filename: OilSourceInterpretations_O-03v01-01.zip. Last modified February 12, 2014.

Appendix K-4:
Validated Toxicity Tests from BP Used in This Report

Project/Study No.	Test ID	Test Substance	Species	Study Duration	Beg Bates	End Bates
110605	10001	GU2888-A0719-OE703 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843033	BP-HZN-2179MDL07843033
110608	10002	GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843034	BP-HZN-2179MDL07843034
110609	10003	GU2888-A0719-OE703 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843035	BP-HZN-2179MDL07843035
110610	10004	GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843036	BP-HZN-2179MDL07843036
110611	10005	GU2888-A0719-OE703 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843037	BP-HZN-2179MDL07843037
110614	10006	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843038	BP-HZN-2179MDL07843038
110615	10007	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843039	BP-HZN-2179MDL07843039
110616	10008	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843040	BP-HZN-2179MDL07843040
110617	10009	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843041	BP-HZN-2179MDL07843041
110701	10010	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	7 days	BP-HZN-2179MDL07843042	BP-HZN-2179MDL07843042
110703	10011	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843043	BP-HZN-2179MDL07843043
110704	10012	CTC-02404-04 (CTC-64% Depletion)	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	96 hrs	BP-HZN-2179MDL07843044	BP-HZN-2179MDL07843044
110801	10013	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843045	BP-HZN-2179MDL07843045
110802	10014	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843046	BP-HZN-2179MDL07843046
110803	10015	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843047	BP-HZN-2179MDL07843047
110804	10016	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843048	BP-HZN-2179MDL07843048
110805	10017	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843049	BP-HZN-2179MDL07843049
110806	10018	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843050	BP-HZN-2179MDL07843050
110807	10019	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843051	BP-HZN-2179MDL07843051
110808	10020	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843052	BP-HZN-2179MDL07843052
110809	10021	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843053	BP-HZN-2179MDL07843053
110810	10022	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843054	BP-HZN-2179MDL07843054
110811	10023	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843055	BP-HZN-2179MDL07843055

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110812	10024	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843056	BP-HZN-2179MDL07843056
110813	10025	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843057	BP-HZN-2179MDL07843057
110814	10026	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843058	BP-HZN-2179MDL07843058
110901	10027	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843059	BP-HZN-2179MDL07843059
110902	10028	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843060	BP-HZN-2179MDL07843060
110903	10029	CTC-02404-04 (CTC-64% Depletion)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	96 hrs	BP-HZN-2179MDL07843061	BP-HZN-2179MDL07843061
110904	10030	CTC-02404-04 (CTC-64% Depletion)	Red drum (<i>Sciaenops ocellatus</i>)	96 hrs	BP-HZN-2179MDL07843062	BP-HZN-2179MDL07843062
110915	10031	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	7 days	BP-HZN-2179MDL07843063	BP-HZN-2179MDL07843063
111001	10032	FR-20100619-Q4000-003 (Q4000)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	96 hrs	BP-HZN-2179MDL07843064	BP-HZN-2179MDL07843064
111002	10033	FR-20100619-Q4000-003 (Q4000)	Red drum (<i>Sciaenops ocellatus</i>)	96 hrs	BP-HZN-2179MDL07843065	BP-HZN-2179MDL07843065
111003	10034	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	7 days	BP-HZN-2179MDL07843066	BP-HZN-2179MDL07843066
111004	10035	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	7 days	BP-HZN-2179MDL07843067	BP-HZN-2179MDL07843067
120305	10036	CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	7 days	BP-HZN-2179MDL07843083	BP-HZN-2179MDL07843083
111008	10037	FR-20100619-Q4000-003 (Q4000)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843068	BP-HZN-2179MDL07843068
111009	10038	FR-20100619-Q4000-003 (Q4000)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843069	BP-HZN-2179MDL07843069
111102	10039	FR-20100619-Q4000-003 (Q4000)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843070	BP-HZN-2179MDL07843070
111103	10040	FR-20100619-Q4000-003 (Q4000) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843071	BP-HZN-2179MDL07843071
111104	10041	FR-20100619-Q4000-003 (Q4000) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843072	BP-HZN-2179MDL07843072
120102	10042	FR-20100619-Q4000-003 (Q4000) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843073	BP-HZN-2179MDL07843073
120103	10043	FR-20100619-Q4000-003 (Q4000)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843074	BP-HZN-2179MDL07843074
120201	10044	072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843075	BP-HZN-2179MDL07843075
120202	10045	072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843076	BP-HZN-2179MDL07843076
120203	10046	072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843077	BP-HZN-2179MDL07843077
120204	10047	072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843078	BP-HZN-2179MDL07843078

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120205	10048	072610-03 (MASS) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843079	BP-HZN-2179MDL07843079
120206	10049	072610-03 (MASS) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843080	BP-HZN-2179MDL07843080
120207	10050	072610-03 (MASS) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843081	BP-HZN-2179MDL07843081
120208	10051	072610-03 (MASS) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843082	BP-HZN-2179MDL07843082
120415	10052	HCX-9500-20100820-HT59-004 (Corexit 9500)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843090	BP-HZN-2179MDL07843090
120502	10053	FR-20100619-Q4000-003 (Q4000)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843091	BP-HZN-2179MDL07843091
120716	10054	HCX-9500-20100820-HT59-004 (Corexit 9500)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843110	BP-HZN-2179MDL07843110
120722	10056	CTC-02404-04 (CTC-64% Depletion)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843113	BP-HZN-2179MDL07843113
120730	10057	CTC-02404-04 (CTC-64% Depletion)	Red drum (<i>Sciaenops ocellatus</i>)	48 hrs	BP-HZN-2179MDL07843115	BP-HZN-2179MDL07843115
120815	10062	072610-03 (MASS)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843122	BP-HZN-2179MDL07843122
120816	10063	GU2888-A0719-OE703 (Juniper)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843123	BP-HZN-2179MDL07843123
120822	10064	CTC-02404-04 (CTC-64% Depletion)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843124	BP-HZN-2179MDL07843124
120823	10065	CTC-02404-04 (CTC-64% Depletion)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843125	BP-HZN-2179MDL07843125
120825	10066	072610-03 (MASS)	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843126	BP-HZN-2179MDL07843126
130205	10069	GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843141	BP-HZN-2179MDL07843141
130206	10070	GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843142	BP-HZN-2179MDL07843142
130207	10071	GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843143	BP-HZN-2179MDL07843143
130208	10072	GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843144	BP-HZN-2179MDL07843144
130209	10073	GU2888-A0719-OE703 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843145	BP-HZN-2179MDL07843145
130210	10074	GU2888-A0719-OE703 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843146	BP-HZN-2179MDL07843146
130211	10075	GU2888-A0719-OE703 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843147	BP-HZN-2179MDL07843147
130212	10076	GU2888-A0719-OE703 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843148	BP-HZN-2179MDL07843148
130221	10077	072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843149	BP-HZN-2179MDL07843149
130222	10078	072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843150	BP-HZN-2179MDL07843150

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130223	10079	072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843151	BP-HZN-2179MDL07843151
130224	10080	072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843152	BP-HZN-2179MDL07843152
130301	10081	072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843153	BP-HZN-2179MDL07843153
130302	10082	072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843154	BP-HZN-2179MDL07843154
130303	10083	072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843155	BP-HZN-2179MDL07843155
130304	10084	072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843156	BP-HZN-2179MDL07843156
130305	10085	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843157	BP-HZN-2179MDL07843157
130306	10086	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843158	BP-HZN-2179MDL07843158
130307	10087	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843159	BP-HZN-2179MDL07843159
130308	10088	CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843160	BP-HZN-2179MDL07843160
130315	10089	072610-03 (MASS) + Corexit 9500	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843161	BP-HZN-2179MDL07843161
130316	10090	072610-03 (MASS) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843162	BP-HZN-2179MDL07843162
130317	10091	HCX-9500-20100820-HT59-004 (Corexit 9500)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843163	BP-HZN-2179MDL07843163
130318	10092	HCX-9500-20100820-HT59-004 (Corexit 9500)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843164	BP-HZN-2179MDL07843164
130320	10093	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843165	BP-HZN-2179MDL07843165
130321	10094	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843166	BP-HZN-2179MDL07843166
130322	10095	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843167	BP-HZN-2179MDL07843167
130323	10096	CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843168	BP-HZN-2179MDL07843168
822-1	20001	Source oil (Q4000)	Pacific Oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843196	BP-HZN-2179MDL07843196
822-2	20002	Source oil (Q4000) + Corexit 9500	Pacific Oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843207	BP-HZN-2179MDL07843207
822-3	20003	Weathered oil CTC-02404-04 (CTC)	Pacific Oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843218	BP-HZN-2179MDL07843218
822-4	20004	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Pacific Oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843227	BP-HZN-2179MDL07843227
822-5	20005	Source oil (Q4000)	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843235	BP-HZN-2179MDL07843235
822-6	20006	Source oil (Q4000) + Corexit 9500	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843236	BP-HZN-2179MDL07843236

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822-7	20007	Weathered oil CTC-02404-04 (CTC)	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843237	BP-HZN-2179MDL07843237
822-8	20008	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843238	BP-HZN-2179MDL07843238
OSU 1-11	20009	Source oil (Q4000)	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843289	BP-HZN-2179MDL07843289
OSU 1-11	20010	Weathered oil CTC-02404-04 (CTC)	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843286	BP-HZN-2179MDL07843286
OSU 1-11	20011	Source oil (Q4000) + Corexit 9500	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843288	BP-HZN-2179MDL07843288
OSU 1-11	20012	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843287	BP-HZN-2179MDL07843287
822-9	20013	Source oil (Q4000)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843239	BP-HZN-2179MDL07843239
822-10	20014	Source oil (Q4000) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843197	BP-HZN-2179MDL07843197
822-11	20015	Weathered oil CTC-02404-04 (CTC)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843198	BP-HZN-2179MDL07843198
822-12	20016	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843199	BP-HZN-2179MDL07843199
822-13	20017	Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843200	BP-HZN-2179MDL07843200
822-14	20018	Source oil (Q4000)	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843201	BP-HZN-2179MDL07843201
822-15	20019	Source oil (Q4000) + Corexit 9500	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843202	BP-HZN-2179MDL07843202
822-16	20020	Weathered oil CTC-02404-04 (CTC)	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843203	BP-HZN-2179MDL07843203
822-17	20021	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843204	BP-HZN-2179MDL07843204
822-18	20022	Corexit 9500	Sand Dollar (<i>Dendraster excentricus</i>)	48-96 hrs	BP-HZN-2179MDL07843205	BP-HZN-2179MDL07843205
OSU 3-11	20023	Source oil (Q4000)	Kumamoto oyster (<i>Crassostrea sikamea</i>)	48 hrs	BP-HZN-2179MDL07843293	BP-HZN-2179MDL07843293
OSU 3-11	20024	Weathered oil CTC02404 (CTC)	Kumamoto oyster (<i>Crassostrea sikamea</i>)	48 hrs	BP-HZN-2179MDL07843291	BP-HZN-2179MDL07843291
OSU 3-11	20025	Source oil (Q4000) + Corexit 9500	Kumamoto oyster (<i>Crassostrea sikamea</i>)	48 hrs	BP-HZN-2179MDL07843294	BP-HZN-2179MDL07843294
OSU 3-11	20026	Weathered oil CTC02404 (CTC) + Corexit 9500	Kumamoto oyster (<i>Crassostrea sikamea</i>)	48 hrs	BP-HZN-2179MDL07843292	BP-HZN-2179MDL07843292
OSU 3-11	20027	Corexit 9500	Kumamoto oyster (<i>Crassostrea sikamea</i>)	48 hrs	BP-HZN-2179MDL07843290	BP-HZN-2179MDL07843290
822-19	20028	Source oil (Q4000)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843206	BP-HZN-2179MDL07843206
822-20	20029	Source oil (Q4000) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843208	BP-HZN-2179MDL07843208
822-21	20030	Massachusetts barge oil (MASS)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843209	BP-HZN-2179MDL07843209

Project/Study No.	Test ID	Test Substance	Species	Study Duration	Beg Bates	End Bates
822-22	20031	Massachusetts barge oil (MASS) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843210	BP-HZN-2179MDL07843210
822-23	20032	Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843211	BP-HZN-2179MDL07843211
822-24	20033	Source oil (Q4000)	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843212	BP-HZN-2179MDL07843212
822-25	20034	Source oil (Q4000) + Corexit 9500	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843213	BP-HZN-2179MDL07843213
822-26	20035	Massachusetts barge oil (MASS)	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843214	BP-HZN-2179MDL07843214
822-27	20036	Massachusetts barge oil (MASS) + Corexit 9500	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843215	BP-HZN-2179MDL07843215
822-28	20037	Corexit 9500	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843216	BP-HZN-2179MDL07843216
OSU 4-11	20038	Source oil (Q4000)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843297	BP-HZN-2179MDL07843297
OSU 4-11	20039	Source oil (Q4000) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843298	BP-HZN-2179MDL07843298
OSU 4-11	20040	Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843299	BP-HZN-2179MDL07843299
OSU 4-11	20041	Massachusetts barge oil (MASS)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843295	BP-HZN-2179MDL07843295
OSU 4-11	20042	Massachusetts barge oil (MASS) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843296	BP-HZN-2179MDL07843296
822-29	20043	SINTEF (Artificially weathered oil)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843217	BP-HZN-2179MDL07843217
822-31	20044	Massachusetts barge oil (MASS)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843219	BP-HZN-2179MDL07843219
822-32	20045	Massachusetts barge oil (MASS) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843220	BP-HZN-2179MDL07843220
822-33	20046	NOAA (Artificially weathered oil)	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843221	BP-HZN-2179MDL07843221
822-34	20047	NOAA (Artificially weathered oil) + Corexit 9500	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843222	BP-HZN-2179MDL07843222
822-35	20048	SINTEF (Artificially weathered oil)	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843223	BP-HZN-2179MDL07843223
822-37	20049	Massachusetts barge oil (MASS)	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843224	BP-HZN-2179MDL07843224
822-38	20050	Massachusetts barge oil (MASS) + Corexit 9500	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843225	BP-HZN-2179MDL07843225
822-39	20051	NOAA (Artificially weathered oil)	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843226	BP-HZN-2179MDL07843226
822-40	20052	NOAA (Artificially weathered oil) + Corexit 9500	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843228	BP-HZN-2179MDL07843228
OSU 1-12	20053	Massachusetts barge oil (MASS)	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843319	BP-HZN-2179MDL07843319
OSU 1-12	20054	Massachusetts barge oil (MASS) + Corexit 9500	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843320	BP-HZN-2179MDL07843320

Project/Study No.	Test ID	Test Substance	Species	Study Duration	Beg Bates	End Bates
OSU 1-12	20055	NOAA (Artificially weathered oil)	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843321	BP-HZN-2179MDL07843321
OSU 1-12	20056	NOAA (Artificially weathered oil) + Corexit 9500	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843322	BP-HZN-2179MDL07843322
OSU 1-12	20057	SINTEF (Artificially weathered oil)	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843323	BP-HZN-2179MDL07843323
OSU 2-12	20058	Corexit 9500	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843327	BP-HZN-2179MDL07843327
OSU 2-12	20059	Weathered oil CTC-02404-04 (CTC)	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843328	BP-HZN-2179MDL07843328
OSU 2-12	20060	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843329	BP-HZN-2179MDL07843329
OSU 2-12	20061	Massachusetts barge oil (MASS)	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843330	BP-HZN-2179MDL07843330
OSU 2-12	20062	Massachusetts barge oil (MASS) + Corexit 9500	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843331	BP-HZN-2179MDL07843331
OSU 2-12	20063	Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843332	BP-HZN-2179MDL07843332
OSU 2-12	20064	Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843333	BP-HZN-2179MDL07843333
OSU 2-12	20065	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843334	BP-HZN-2179MDL07843334
OSU 2-12	20066	Massachusetts barge oil (MASS)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843335	BP-HZN-2179MDL07843335
OSU 2-12	20067	Massachusetts barge oil (MASS) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843336	BP-HZN-2179MDL07843336
OSU 3-12-A1	20068	Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843340 BP-HZN-2179MDL07843344	BP-HZN-2179MDL07843340 BP-HZN-2179MDL07843344
OSU 3-12-A2	20069	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843341 BP-HZN-2179MDL07843345	BP-HZN-2179MDL07843341 BP-HZN-2179MDL07843345
OSU 5-12-A1	20070	Weathered oil OFS-20100719-Juniper-001 (Juniper)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843353	BP-HZN-2179MDL07843353
OSU 5-12-A1-A	20071	Weathered oil OFS-20100719-Juniper-001 (Juniper) + Antibiotics	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843354	BP-HZN-2179MDL07843354
OSU 5-12-A2	20072	Weathered oil OFS-20100719-Juniper-001 (Juniper) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843355	BP-HZN-2179MDL07843355
OSU 5-12-A2-A	20073	Weathered oil OFS-20100719-Juniper-001 (Juniper) + Corexit 9500 + Antibiotics	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843356	BP-HZN-2179MDL07843356
OSU 5-12-A3	20074	Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843357	BP-HZN-2179MDL07843357
OSU 5-12-A3-A	20075	Corexit 9500 + Antibiotics	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843358	BP-HZN-2179MDL07843358
OSU 7-12-A1	20076	Massachusetts barge oil (MASS)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843365	BP-HZN-2179MDL07843365
OSU 7-12-A2	20077	Massachusetts barge oil (MASS) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843366	BP-HZN-2179MDL07843366
OSU 7-12-A3	20078	Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843367	BP-HZN-2179MDL07843367

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OSU 8-12-A1	20079	Weathered oil CTC-02404-04 (CTC)	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843371	BP-HZN-2179MDL07843371
OSU 8-12-A2	20080	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843372	BP-HZN-2179MDL07843372
OSU 8-12-A3	20081	Massachusetts barge oil (MASS)	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843373	BP-HZN-2179MDL07843373
OSU 8-12-A4	20082	Massachusetts barge oil (MASS) + Corexit 9500	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843374	BP-HZN-2179MDL07843374
OSU 8-12-A5	20083	Corexit 9500	Quahog (<i>Mercenaria mercenaria</i>)	48 hrs	BP-HZN-2179MDL07843375	BP-HZN-2179MDL07843375
OSU 3-12-C1	20084	Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	10 days	BP-HZN-2179MDL07843342	BP-HZN-2179MDL07843342
OSU 3-12-C2	20085	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	10 days	BP-HZN-2179MDL07843343	BP-HZN-2179MDL07843343
OSU 4-12-C1	20086	Weathered oil OFS-20100719-Juniper-001 (Juniper)	Eastern oyster (<i>Crassostrea virginica</i>)	10 days	BP-HZN-2179MDL07843346	BP-HZN-2179MDL07843346
OSU 4-12-C2	20087	Weathered oil OFS-20100719-Juniper-001 (Juniper) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	10 days	BP-HZN-2179MDL07843347	BP-HZN-2179MDL07843347
OSU 7-12-C1	20088	Massachusetts barge oil (MASS)	Eastern oyster (<i>Crassostrea virginica</i>)	10 days	BP-HZN-2179MDL07843368	BP-HZN-2179MDL07843368
OSU 7-12-C2	20089	Massachusetts barge oil (MASS) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	10 days	BP-HZN-2179MDL07843369	BP-HZN-2179MDL07843369
OSU 7-12-C3	20090	Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	10 days	BP-HZN-2179MDL07843370	BP-HZN-2179MDL07843370
K-092-12	30007	ENX6190B CTC Oil K-055-12	Mysid Shrimp (<i>Americanamysis bahia</i>)	28 days	BP-HZN-2179MDL07843013	BP-HZN-2179MDL07843013
K-093-12	30008	ENX6190B CTC Oil K-055-12	Inland Silverside (<i>Menidia beryllina</i>)	28 days	BP-HZN-2179MDL07843014	BP-HZN-2179MDL07843014
K-135-12	30009	ENX6166 Juniper Oil K-054-12	Inland Silverside (<i>Menidia beryllina</i>)	28 days	BP-HZN-2179MDL07843023	BP-HZN-2179MDL07843023
K-206-12	30010	A0028P Mass Oil K-582-11	Mysid Shrimp (<i>Americanamysis bahia</i>)	21 days	BP-HZN-2179MDL07843025	BP-HZN-2179MDL07843025
K-207-12	30011	A0028P Mass Oil K-582-11	Inland Silverside (<i>Menidia beryllina</i>)	28 days	BP-HZN-2179MDL07843026	BP-HZN-2179MDL07843026
K-233-12	30012	ENX6166 Juniper Oil K-054-12	Mysid Shrimp (<i>Americanamysis bahia</i>)	21 days	BP-HZN-2179MDL07843022	BP-HZN-2179MDL07843022
K-593-12	30013	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842997	BP-HZN-2179MDL07842997
K-594-12	30014	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842997	BP-HZN-2179MDL07842997
K-591-12	30015	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842997	BP-HZN-2179MDL07842997
K-592-12	30016	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842997	BP-HZN-2179MDL07842997
K-589-12	30017	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842997	BP-HZN-2179MDL07842997
K-590-12	30018	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842997	BP-HZN-2179MDL07842997
K-653-12	30019	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842999	BP-HZN-2179MDL07842999
K-652-12	30020	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842999	BP-HZN-2179MDL07842999
K-651-12	30021	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842999	BP-HZN-2179MDL07842999
K-650-12	30022	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842999	BP-HZN-2179MDL07842999
K-649-12	30023	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842999	BP-HZN-2179MDL07842999
K-648-12	30024	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842999	BP-HZN-2179MDL07842999
K-673-12	30025	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843000	BP-HZN-2179MDL07843000
K-674-12	30026	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843000	BP-HZN-2179MDL07843000
K-671-12	30027	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843000	BP-HZN-2179MDL07843000
K-672-12	30028	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843000	BP-HZN-2179MDL07843000
K-669-12	30029	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843000	BP-HZN-2179MDL07843000
K-670-12	30030	Mass Oil (07262010-03, DWH7690)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843000	BP-HZN-2179MDL07843000
K-633-12	30031	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842998	BP-HZN-2179MDL07842998
K-634-12	30032	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842998	BP-HZN-2179MDL07842998
K-631-12	30033	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842998	BP-HZN-2179MDL07842998
K-632-12	30034	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842998	BP-HZN-2179MDL07842998

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K-629-12	30035	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842998	BP-HZN-2179MDL07842998
K-630-12	30036	Mass Oil (07262010-03, DWH7690)	Analytical Chemistry Only	--	BP-HZN-2179MDL07842998	BP-HZN-2179MDL07842998
K-764-12	30037	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843005	BP-HZN-2179MDL07843005
K-765-12	30038	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843005	BP-HZN-2179MDL07843005
K-762-12	30039	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843005	BP-HZN-2179MDL07843005
K-763-12	30040	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843005	BP-HZN-2179MDL07843005
K-760-12	30041	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843005	BP-HZN-2179MDL07843005
K-761-12	30042	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843005	BP-HZN-2179MDL07843005
K-707-12	30043	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843001	BP-HZN-2179MDL07843001
K-708-12	30044	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843001	BP-HZN-2179MDL07843001
K-705-12	30045	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843001	BP-HZN-2179MDL07843001
K-706-12	30046	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843001	BP-HZN-2179MDL07843001
K-703-12	30047	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843001	BP-HZN-2179MDL07843001
K-704-12	30048	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843001	BP-HZN-2179MDL07843001
K-724-12	30049	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843003	BP-HZN-2179MDL07843003
K-725-12	30050	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843003	BP-HZN-2179MDL07843003
K-722-12	30051	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843003	BP-HZN-2179MDL07843003
K-723-12	30052	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843003	BP-HZN-2179MDL07843003
K-720-12	30053	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843003	BP-HZN-2179MDL07843003
K-721-12	30054	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843003	BP-HZN-2179MDL07843003
K-743-12	30055	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843004	BP-HZN-2179MDL07843004
K-744-12	30056	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843004	BP-HZN-2179MDL07843004
K-741-12	30057	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843004	BP-HZN-2179MDL07843004
K-742-12	30058	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843004	BP-HZN-2179MDL07843004
K-739-12	30059	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843004	BP-HZN-2179MDL07843004
K-740-12	30060	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843004	BP-HZN-2179MDL07843004
K-796-12	30061	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843006	BP-HZN-2179MDL07843006
K-797-12	30062	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843006	BP-HZN-2179MDL07843007
K-794-12	30063	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843006	BP-HZN-2179MDL07843007
K-795-12	30064	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843006	BP-HZN-2179MDL07843007
K-792-12	30065	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843006	BP-HZN-2179MDL07843007
K-793-12	30066	CTC Oil (CTC02404-04)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843006	BP-HZN-2179MDL07843007
K-715-12	30067	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843002	BP-HZN-2179MDL07843002
K-716-12	30068	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843002	BP-HZN-2179MDL07843002
K-713-12	30069	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843002	BP-HZN-2179MDL07843002
K-714-12	30070	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843002	BP-HZN-2179MDL07843002
K-711-12	30071	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843002	BP-HZN-2179MDL07843002
K-712-12	30072	CTC Oil (CTC02404-04)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843002	BP-HZN-2179MDL07843002
K-865-12	30073	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843011	BP-HZN-2179MDL07843011
K-866-12	30074	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843011	BP-HZN-2179MDL07843011
K-863-12	30075	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843011	BP-HZN-2179MDL07843011

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K-864-12	30076	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843011	BP-HZN-2179MDL07843011
K-861-12	30077	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843011	BP-HZN-2179MDL07843011
K-862-12	30078	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843011	BP-HZN-2179MDL07843011
K-844-12	30079	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843010	BP-HZN-2179MDL07843010
K-845-12	30080	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843010	BP-HZN-2179MDL07843010
K-842-12	30081	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843010	BP-HZN-2179MDL07843010
K-843-12	30082	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843010	BP-HZN-2179MDL07843010
K-840-12	30083	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843010	BP-HZN-2179MDL07843010
K-841-12	30084	CTC-02404-04 (CTC064% Depletion) + Dispersant (Corexit 9500)	Analytical Chemistry Only	--	BP-HZN-2179MDL07843010	BP-HZN-2179MDL07843010
120719		CTC-02404-04 (CTC-64% Depletion)	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843111	BP-HZN-2179MDL07843111
120803		072610-03 (MASS)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843117	BP-HZN-2179MDL07843117
120806		GU2888-A0719-OE703 (Juniper)	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843118	BP-HZN-2179MDL07843118
120807		CTC-02404-04 (CTC-64% Depletion)	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843119	BP-HZN-2179MDL07843119
120811		072610-03 (MASS)	Red drum (<i>Sciaenops ocellatus</i>)	48 hrs	BP-HZN-2179MDL07843121	BP-HZN-2179MDL07843121
120930		CTC-02404-04 (CTC-64% Depletion)	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843134	BP-HZN-2179MDL07843134
120931		CTC-02404-04 (CTC-64% Depletion) + Corexit 9500	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843135	BP-HZN-2179MDL07843135
K-839-11		A0028P Mass Oil K-582-11	Mysid Shrimp (<i>Americanamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843008	BP-HZN-2179MDL07843008
K-840-11		A0028P Mass Oil K-582-11	Inland Silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843009	BP-HZN-2179MDL07843009
K-056-12		ENX6166 Juniper Oil K-054-12	Inland Silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07842993	BP-HZN-2179MDL07842993
K-057-12		ENX6166 Juniper Oil K-054-12	Mysid Shrimp (<i>Americanamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07842994	BP-HZN-2179MDL07842994
K-058-12		ENX6190B CTC Oil K-055-12	Mysid Shrimp (<i>Americanamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07842995	BP-HZN-2179MDL07842995
K-059-12		ENX6190B CTC Oil K-055-12	Inland Silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07842996	BP-HZN-2179MDL07842996
100505		FC GoM water sample: 2km-surf-tox	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100505		FC GoM water sample: 4km-surf-tox	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195

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100505		FC GoM water sample: 8km-surf-tox	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100510		FC GoM water sample: 2km-surf-tox	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100510		FC GoM water sample: 4km-surf-tox	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100510		FC GoM water sample: 8km-surf-tox	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100510		FC GoM water sample: 2km-surf-tox	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100510		FC GoM water sample: 4km-surf-tox	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100510		FC GoM water sample: 8km-surf-tox	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-70nmi-surf-tox-20100522-E007	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-8km-surf-TOX-20100523-E053	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-4km-surf-TOX-20100524-E097	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-2km-surf-TOX-20100524-E125	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-70nmi-surf-tox-20100522-E007	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-8km-surf-TOX-20100523-E053	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-4km-surf-TOX-20100524-E097	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100602		FC GoM water sample: JF2-2km-surf-TOX-20100524-E125	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100609		FC GoM water sample: JF2-70nmi-surf-tox-20100522-E007	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100609		FC GoM water sample: JF2-8km-surf-TOX-20100523-E053	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100609		FC GoM water sample: JF2-4km-surf-TOX-20100524-E097	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100609		FC GoM water sample: JF2-2km-surf-TOX-20100524-E125	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100611		FC GoM water sample: JF2-2km-surf-TOX-20100527-E182	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100611		FC GoM water sample: JF2-3km-surf-TOX-20100528-E244	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100611		FC GoM water sample: JF2-4km-surf-TOX-20100529-E306	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100611		FC GoM water sample: JF2-2km-surf-TOX-20100527-E182	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100611		FC GoM water sample: JF2-3km-surf-TOX-20100528-E244	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100611		FC GoM water sample: JF2-4km-surf-TOX-20100529-E306	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100612		FC GoM water sample: JF2-2km-surf-TOX-20100527-E182	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100612		FC GoM water sample: JF2-3km-surf-TOX-20100528-E244	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100612		FC GoM water sample: JF2-4km-surf-TOX-20100529-E306	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195

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100701		FC GoM water sample: JF3-ref-TOX-20100612-surf-E030	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100701		FC GoM water sample: JF3-2km-TOX-20100613-surf-E057	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100701		FC GoM water sample: JF3-1km-TOX-20100614-surf-E141	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100701		FC GoM water sample: JF3-2kmN-TOX-20100616-surf-E313	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-ref-TOX-20100612-surf-E030	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-2km-TOX-20100613-surf-E057	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-1km-TOX-20100614-surf-E141	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-2kmN-TOX-20100616-surf-E313	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-ref-TOX-20100612-surf-E030	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-2km-TOX-20100613-surf-E057	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-1km-TOX-20100614-surf-E141	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100703		FC GoM water sample: JF3-2kmN-TOX-20100616-surf-E313	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100801		FC GoM water sample: NS-MS-000-108-D3-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100801		FC GoM water sample: NS-MS-000-108-D3-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100802		FC GoM water sample: NS-MS-000-108-D3-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100901		FC GoM water sample: FD-BB-120-002-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100901		FC GoM water sample: FD-BB-120-002-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100902		FC GoM water sample: FD-BB-120-002-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100903		FC GoM water sample: NS-MS-030-054-D4-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100904		FC GoM water sample: NS-MS-030-054-D4-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
100904		FC GoM water sample: NS-MS-030-054-D4-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101001		FC GoM water sample: FD-BB-300-018-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101001		FC GoM water sample: FD-BB-300-018-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101003		FC GoM water sample: FD-BB-300-018-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195

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101004		FC GoM water sample: FD-BB-240-002-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101004		FC GoM water sample: FD-BB-240-002-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101005		FC GoM water sample: FD-BB-240-002-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101006		FC GoM water sample: FD-BB-240-009-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101006		FC GoM water sample: FD-BB-240-009-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101101		FC GoM water sample: FD-BB-240-009-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101103		FC GoM water sample: NS-MS-030-072-D4-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101103		FC GoM water sample: NS-MS-030-072-D4-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101201		FC GoM water sample: NS-MS-030-072-D4-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101202		FC GoM water sample: PD-MS-180-027-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101202/ 101203		FC GoM water sample: PD-MS-180-027-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101203		FC GoM water sample: PD-MS-180-027-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101204		FC GoM water sample: FD-BB-300-009-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101205		FC GoM water sample: FD-BB-300-009-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
101205		FC GoM water sample: FD-BB-300-009-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110102		FC GoM water sample: FD-BB-210-009-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110103		FC GoM water sample: FD-BB-210-009-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110103		FC GoM water sample: FD-BB-210-009-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110104		FC GoM water sample: PD-MS-150-027-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110105		FC GoM water sample: PD-MS-150-027-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110105		FC GoM water sample: PD-MS-150-027-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110108		FC GoM water sample: PD-MS-210-036-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110108		FC GoM water sample: PD-MS-210-036-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110109		FC GoM water sample: PD-MS-210-036-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195

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110111		FC GoM water sample: PD-MS-240-036-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110111		FC GoM water sample: PD-MS-240-036-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110112		FC GoM water sample: PD-MS-240-036-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110201		FC GoM water sample: FD-BB-090-009-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110201		FC GoM water sample: FD-BB-090-009-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110202		FC GoM water sample: FD-BB-090-009-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110205		FC GoM water sample: FD-BB-030-018-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110205		FC GoM water sample: FD-BB-030-018-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110206		FC GoM water sample: FD-BB-030-018-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110209		FC GoM water sample: FD-BB-240-036c-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110209		FC GoM water sample: FD-BB-240-036c-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110210		FC GoM water sample: FD-BB-240-036c-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110211		FC GoM water sample: FD-BB-030-027-D1-CR1-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110211		FC GoM water sample: FD-BB-030-027-D1-CR1-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110212		FC GoM water sample: FD-BB-030-027-D1-CR1-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110303		FC GoM water sample: WB-300-009-D5-CR2-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110303		FC GoM water sample: WB-300-009-D5-CR2-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110304		FC GoM water sample: WB-300-009-D5-CR2-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110305		FC GoM water sample: WB-300-002-D4-CR2-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110305		FC GoM water sample: WB-300-002-D4-CR2-TOX	Microtox (<i>Vibrio fisheri</i>)	15 min	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110306		FC GoM water sample: WB-300-002-D4-CR2-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110307		FC GoM water sample: GU2789-A0830-W5002-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110308		FC GoM water sample: GU2789-A0830-W5002-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110311		FC GoM water sample: GU2789-A0901-W5002-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195

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110312		FC GoM water sample: GU2789-A0901-W5002-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110401		FC GoM water sample: GU2790-A0911-W5014-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110402		FC GoM water sample: GU2790-A0911-W5014-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110405		FC GoM water sample: JF-T07-S06-D5-CR3-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110406		FC GoM water sample: JF-T07-S06-D5-CR3-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110407		FC GoM water sample: JF-T16-S12-D5-CR3-TOX	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110408		FC GoM water sample: JF-T16-S12-D5-CR3-TOX	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110411		FC GoM water sample: RB-225-090-D6-CR21	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110412		FC GoM water sample: RB-225-090-D6-CR21	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110501		FC GoM water sample: SB-150-027-D5-Cr23	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110502		FC GoM water sample: SB-150-027-D5-Cr23	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110504		FC GoM water sample: SB-225-072-D3-Cr4	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110505		FC GoM water sample: SB-225-072-D3-Cr4	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110506		FC GoM water sample: SB-225-072-D4-Cr23	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110507		FC GoM water sample: SB-225-072-D4-Cr23	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110512		FC GoM water sample: SB-225-072-D6-Cr4	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110513		FC GoM water sample: SB-225-072-D6-Cr4	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110519		FC GoM water sample: WB-180-072-D4-CR24	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
110520		FC GoM water sample: WB-180-072-D4-CR24	Inland Silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843188	BP-HZN-2179MDL07843195
120403		072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843084	BP-HZN-2179MDL07843084
120404		072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843085	BP-HZN-2179MDL07843085
120405		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843086	BP-HZN-2179MDL07843086
120406		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843087	BP-HZN-2179MDL07843087
120409		072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843088	BP-HZN-2179MDL07843088

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120410		072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843089	BP-HZN-2179MDL07843089
120504		CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843092	BP-HZN-2179MDL07843092
120505		CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843093	BP-HZN-2179MDL07843093
120506		072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843092	BP-HZN-2179MDL07843092
120507		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843093	BP-HZN-2179MDL07843093
120509		CTC-02404-04 (CTC-64% Depletion)	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	96 hrs	BP-HZN-2179MDL07843094	BP-HZN-2179MDL07843094
120510		CTC-02404-04 (CTC-64% Depletion)	Red drum (<i>Sciaenops ocellatus</i>)	96 hrs	BP-HZN-2179MDL07843095	BP-HZN-2179MDL07843095
120511		072610-03 (MASS)	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	96 hrs	BP-HZN-2179MDL07843094	BP-HZN-2179MDL07843094
120512		072610-03 (MASS)	Red drum (<i>Sciaenops ocellatus</i>)	96 hrs	BP-HZN-2179MDL07843095	BP-HZN-2179MDL07843095
120601		CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843096	BP-HZN-2179MDL07843096
120602		072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843096	BP-HZN-2179MDL07843096
120603		CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843097	BP-HZN-2179MDL07843097
120604		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843097	BP-HZN-2179MDL07843097
120615		072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843098	BP-HZN-2179MDL07843098
120616		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843099	BP-HZN-2179MDL07843099
120625		CTC-02404-04 (CTC-64% Depletion)	Southern flounder (<i>Paralichthys lethostigma</i>)	24 hrs	BP-HZN-2179MDL07843100	BP-HZN-2179MDL07843100
120628		CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	24 hrs	BP-HZN-2179MDL07843101	BP-HZN-2179MDL07843101
120629		CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	24 hrs	BP-HZN-2179MDL07843101	BP-HZN-2179MDL07843101
120631		072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843102	BP-HZN-2179MDL07843102
120632		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843103	BP-HZN-2179MDL07843103
120633		072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843104	BP-HZN-2179MDL07843104
120634		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843105	BP-HZN-2179MDL07843105
120639		CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	24 hrs	BP-HZN-2179MDL07843101	BP-HZN-2179MDL07843101
120702		CTC-02404-04 (CTC-64% Depletion)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843106	BP-HZN-2179MDL07843106

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120704		CTC-02404-04 (CTC-64% Depletion)	Inland silverside (<i>Menidia beryllina</i>)	24 hrs	BP-HZN-2179MDL07843107	BP-HZN-2179MDL07843107
120714		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843108	BP-HZN-2179MDL07843108
120715		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843109	BP-HZN-2179MDL07843109
120720		CTC-02404-04 (CTC-64% Depletion)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843112	BP-HZN-2179MDL07843112
120721		CTC-02404-04 (CTC-64% Depletion)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843112	BP-HZN-2179MDL07843112
120723		Fluoranthene	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843112	BP-HZN-2179MDL07843112
120728		CTC-02404-04 (CTC-64% Depletion)	Red drum (<i>Sciaenops ocellatus</i>)	48 hrs	BP-HZN-2179MDL07843114	BP-HZN-2179MDL07843114
120729		CTC-02404-04 (CTC-64% Depletion)	Red drum (<i>Sciaenops ocellatus</i>)	48 hrs	BP-HZN-2179MDL07843114	BP-HZN-2179MDL07843114
120731		Fluoranthene	Red drum (<i>Sciaenops ocellatus</i>)	48 hrs	BP-HZN-2179MDL07843114	BP-HZN-2179MDL07843114
120801		072610-03 (MASS)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843116	BP-HZN-2179MDL07843116
120802		072610-03 (MASS)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843116	BP-HZN-2179MDL07843116
120804		Fluoranthene	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843116	BP-HZN-2179MDL07843116
120809		072610-03 (MASS)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843120	BP-HZN-2179MDL07843120
120810		072610-03 (MASS)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843120	BP-HZN-2179MDL07843120
120812		Fluoranthene	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843120	BP-HZN-2179MDL07843120
120827		GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americanysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843127	BP-HZN-2179MDL07843127
120828		GU2888-A0719-OE703 (Juniper)	Mysid shrimp (<i>Americanysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843127	BP-HZN-2179MDL07843127
120903		Fluoranthene	Mysid shrimp (<i>Americanysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843128	BP-HZN-2179MDL07843128
120904		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843129	BP-HZN-2179MDL07843129
120905		Fluoranthene	Mysid shrimp (<i>Americanysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843128	BP-HZN-2179MDL07843128
120906		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843129	BP-HZN-2179MDL07843129
120912		Fluoranthene	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843130	BP-HZN-2179MDL07843130
120913		Fluoranthene	Red drum (<i>Sciaenops ocellatus</i>)	48 hrs	BP-HZN-2179MDL07843131	BP-HZN-2179MDL07843131
120914		Fluoranthene	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843130	BP-HZN-2179MDL07843130

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120915		Fluoranthene	Red drum (<i>Sciaenops ocellatus</i>)	48 hrs	BP-HZN-2179MDL07843131	BP-HZN-2179MDL07843131
120926		072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843132	BP-HZN-2179MDL07843132
120928		072610-03 (MASS)	Mysid shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843133	BP-HZN-2179MDL07843133
120934		HCX-9500-20100820-HT59-004 (Corexit 9500)	Mysid shrimp (<i>Americanamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843136	BP-HZN-2179MDL07843136
120935		HCX-9500-20100820-HT59-004 (Corexit 9500)	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843137	BP-HZN-2179MDL07843137
120936		HCX-9500-20100820-HT59-004 (Corexit 9500)	Mysid shrimp (<i>Americanamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843136	BP-HZN-2179MDL07843136
120937		HCX-9500-20100820-HT59-004 (Corexit 9500)	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843137	BP-HZN-2179MDL07843137
121001		CTC-02404-04 (CTC-64% Depletion)	Copepod (<i>Acartia tonsa</i>)	48 hrs	BP-HZN-2179MDL07843138	BP-HZN-2179MDL07843138
121002		CTC-02404-04 (CTC-64% Depletion)	Copepod (<i>Acartia tonsa</i>)	48 hrs	BP-HZN-2179MDL07843138	BP-HZN-2179MDL07843138
121005		072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843139	BP-HZN-2179MDL07843139
130401		072610-03 (MASS)	Red porgy (<i>Pagrus pagrus</i>)	96 hrs	BP-HZN-2179MDL07843169	BP-HZN-2179MDL07843169
130402		CTC-02404-04 (CTC-64% Depletion)	Red porgy (<i>Pagrus pagrus</i>)	96 hrs	BP-HZN-2179MDL07843170	BP-HZN-2179MDL07843170
130501		CTC-02404-04 (CTC-64% Depletion)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843171	BP-HZN-2179MDL07843171
130504		CTC-02404-04 (CTC-64% Depletion)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843172	BP-HZN-2179MDL07843172
130505		CTC-02404-04 (CTC-64% Depletion)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843173	BP-HZN-2179MDL07843173
130507		072610-03 (MASS)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843174	BP-HZN-2179MDL07843174
130508		072610-03 (MASS)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843175	BP-HZN-2179MDL07843175
130511		072610-03 (MASS)	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843176	BP-HZN-2179MDL07843176
130512		072610-03 (MASS)	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843177	BP-HZN-2179MDL07843177
130513		CTC-02404-04 (CTC-64% Depletion)	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843178	BP-HZN-2179MDL07843178
130514		CTC-02404-04 (CTC-64% Depletion)	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843179	BP-HZN-2179MDL07843179
130516		072610-03 (MASS) + Corexit 9500	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843180	BP-HZN-2179MDL07843180
130519		072610-03 (MASS) + Corexit 9500	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843181	BP-HZN-2179MDL07843181
130520		HCX-9500-20100820-HT59-004 (Corexit 9500)	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843182	BP-HZN-2179MDL07843182

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130608		072610-03 (MASS)	Red drum (<i>Sciaenops ocellatus</i>)	96 hrs	BP-HZN-2179MDL07843183	BP-HZN-2179MDL07843183
130708		072610-03 (MASS) + Corexit 9500	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843184	BP-HZN-2179MDL07843184
130709		HCX-9500-20100820-HT59-004 (Corexit 9500)	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843185	BP-HZN-2179MDL07843185
130712		072610-03 (MASS) + Corexit 9500	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843186	BP-HZN-2179MDL07843186
130713		HCX-9500-20100820-HT59-004 (Corexit 9500)	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843187	BP-HZN-2179MDL07843187
OSU 6-12		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843359	BP-HZN-2179MDL07843359
OSU 6-12		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843359	BP-HZN-2179MDL07843359
OSU 6-12		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843359	BP-HZN-2179MDL07843359
OSU 6-12		Fluoranthene	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843359	BP-HZN-2179MDL07843359
OSU 6-12		Fluoranthene	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843359	BP-HZN-2179MDL07843359
OSU 6-12		Fluoranthene	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843359	BP-HZN-2179MDL07843359
OSU 9-12-A1		Weathered oil CTC-02404-04 (CTC)	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843376	BP-HZN-2179MDL07843376
OSU 9-12-A2		Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843377	BP-HZN-2179MDL07843377
OSU 9-12-A3		Corexit 9500	Pacific oyster (<i>Crassostrea gigas</i>)	48 hrs	BP-HZN-2179MDL07843378	BP-HZN-2179MDL07843378
OSU 10-12-S1		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	28 days	BP-HZN-2179MDL07843313	BP-HZN-2179MDL07843313
OSU 10-12-S2		Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	28 days	BP-HZN-2179MDL07843314	BP-HZN-2179MDL07843314
OSU 10-12-S3		Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	28 days	BP-HZN-2179MDL07843315	BP-HZN-2179MDL07843315
OSU 11-12-A1		Naphthalene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843316	BP-HZN-2179MDL07843316
OSU 11-12-A2		Phenanthrene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843317	BP-HZN-2179MDL07843317
OSU 11-12-A3		Dibenzothiophene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843318	BP-HZN-2179MDL07843318
OSU 2-13-A1		Naphthalene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843337	BP-HZN-2179MDL07843337
OSU 2-13-A2		Phenanthrene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843338	BP-HZN-2179MDL07843338
OSU 2-13-A3		Dibenzothiophene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843339	BP-HZN-2179MDL07843339
OSU 4-13-A1-0		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A1-6		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A1-42		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A2-0		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A2-6		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A2-42		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A3-0		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352

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OSU 4-13-A3-6		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A3-42		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A4-0		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A4-6		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A4-42		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A5-0		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A5-6		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 4-13-A5-42		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843348	BP-HZN-2179MDL07843352
OSU 6-13-A1		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843360	BP-HZN-2179MDL07843360
OSU 6-13-A2		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843361	BP-HZN-2179MDL07843361
OSU 6-13-A3		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843362	BP-HZN-2179MDL07843362
OSU 6-13-A4		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843363	BP-HZN-2179MDL07843363
OSU 6-13-A5		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843364	BP-HZN-2179MDL07843364
OSU 8-13-A1		Weathered oil OFS-20100719-Juniper-001 (Juniper)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843303	BP-HZN-2179MDL07843303
OSU 8-13-A2		Weathered oil OFS-20100719-Juniper-001 (Juniper)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843305	BP-HZN-2179MDL07843305
OSU 8-13-A3		Weathered oil OFS-20100719-Juniper-001 (Juniper)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843306	BP-HZN-2179MDL07843306
OSU 8-13-A4		Weathered oil OFS-20100719-Juniper-001 (Juniper)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843307	BP-HZN-2179MDL07843307
OSU 8-13-A5		Weathered oil OFS-20100719-Juniper-001 (Juniper)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843308	BP-HZN-2179MDL07843308
OSU 8-13-A6		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843309	BP-HZN-2179MDL07843309
OSU 8-13-A7		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843310	BP-HZN-2179MDL07843310
OSU 8-13-A8		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843311	BP-HZN-2179MDL07843311
OSU 8-13-A9		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843312	BP-HZN-2179MDL07843312
OSU 8-13-A10		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843304	BP-HZN-2179MDL07843304
OSU 12-13-A1		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843300	BP-HZN-2179MDL07843300

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OSU 12-13-A2		Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843301	BP-HZN-2179MDL07843301
OSU 12-13-A3		Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843302	BP-HZN-2179MDL07843302
OSU 13-13-S1		Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	28 days	BP-HZN-2179MDL07843324	BP-HZN-2179MDL07843324
OSU 13-13-S2		Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	28 days	BP-HZN-2179MDL07843325	BP-HZN-2179MDL07843325
OSU 13-13-S3		Corexit 9500	Eastern oyster (<i>Crassostrea virginica</i>)	28 days	BP-HZN-2179MDL07843326	BP-HZN-2179MDL07843326
BP 288 AT		Corexit 9500	Copepod (<i>Acartia tonsa</i>)	48 hrs	BP-HZN-2179MDL07843276	BP-HZN-2179MDL07843276
BP 314 AB		Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843243	BP-HZN-2179MDL07843243
BP 318 AB		Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843244	BP-HZN-2179MDL07843244
BP 327 AB		Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843245	BP-HZN-2179MDL07843245
BP 332 CV		Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843246	BP-HZN-2179MDL07843246
BP 362 AB		Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843247	BP-HZN-2179MDL07843247
BP 385 AB		Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843248	BP-HZN-2179MDL07843248
BP 386 CV		Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843249	BP-HZN-2179MDL07843249
BP 389 CV		Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843250	BP-HZN-2179MDL07843250
BP 390 CV		Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843251	BP-HZN-2179MDL07843251
BP 399 SC		Massachusetts barge oil (MASS)	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843282	BP-HZN-2179MDL07843282
BP 401 SC		Massachusetts barge oil (MASS) + Corexit 9500	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843283	BP-HZN-2179MDL07843283
BP 410 CV		Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843252	BP-HZN-2179MDL07843252
BP 416 MB		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843253	BP-HZN-2179MDL07843253
BP 417 MB		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843254	BP-HZN-2179MDL07843254
BP 421 SC		Weathered oil CTC-02404-04 (CTC)	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843278	BP-HZN-2179MDL07843278
BP 423 SC		Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843279	BP-HZN-2179MDL07843279
BP 434 MB		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843255	BP-HZN-2179MDL07843255
BP 440 MB		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843256	BP-HZN-2179MDL07843256
BP 446 FG		Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843257	BP-HZN-2179MDL07843257
BP 450 CV		Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843258	BP-HZN-2179MDL07843258

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BP 458 SC		Weathered oil OFS-20100719-Juniper-001 (Juniper)	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843259 BP-HZN-2179MDL07843280	BP-HZN-2179MDL07843259 BP-HZN-2179MDL07843280
BP 460 SC		Weathered oil OFS-20100719-Juniper-001 (Juniper) + Corexit 9500	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843281	BP-HZN-2179MDL07843281
BP 462 MB		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843259	BP-HZN-2179MDL07843259
BP 472 FG		Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843260	BP-HZN-2179MDL07843260
BP 488 FG		Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843262	BP-HZN-2179MDL07843262
BP 498 SC		NOAA Artificially Weathered Oil (B&B DWH6220)	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843284	BP-HZN-2179MDL07843284
BP 499 SC		NOAA Artificially Weathered Oil (B&B DWH6220) + Corexit 9500	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843285	BP-HZN-2179MDL07843285
BP 500 CV		Naphthalene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	96 hrs	BP-HZN-2179MDL07843264	BP-HZN-2179MDL07843264
BP 501 MB		Weathered oil CTC-02404-04 (CTC)	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843265	BP-HZN-2179MDL07843265
BP 502-R MB		Massachusetts barge oil (MASS)	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843266	BP-HZN-2179MDL07843266
BP 503 MB		Weathered oil OFS-20100719-Juniper-001 (Juniper)	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843267	BP-HZN-2179MDL07843267
BP 505A MB		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843265	BP-HZN-2179MDL07843265
BP 505B MB		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843265	BP-HZN-2179MDL07843265
BP 506A-R MB		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843266	BP-HZN-2179MDL07843266
BP 506B-R MB		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843266	BP-HZN-2179MDL07843266
BP 507A MB		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843267	BP-HZN-2179MDL07843267
BP 507B MB		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843267	BP-HZN-2179MDL07843267
BP 516 MB		Naphthalene	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843269	BP-HZN-2179MDL07843269
BP 524 SC		Corexit 9500	Diatom (<i>Skeletonema costatum</i>)	72 hrs	BP-HZN-2179MDL07843277	BP-HZN-2179MDL07843277
BP 526 FG		Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843270	BP-HZN-2179MDL07843270
BP 532 MB		Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843271	BP-HZN-2179MDL07843271
BP 534 FG		Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843272	BP-HZN-2179MDL07843272
BP 552 FG		Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843273	BP-HZN-2179MDL07843273
BP 559R MB		Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	48 hrs	BP-HZN-2179MDL07843274	BP-HZN-2179MDL07843274

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BP 565 CV		Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843275	BP-HZN-2179MDL07843275
822-41		Naphthalene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843229	BP-HZN-2179MDL07843229
822-42		Phenanthrene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843230	BP-HZN-2179MDL07843230
822-43		Dibenzothiophene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843231	BP-HZN-2179MDL07843231
822-47		Naphthalene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843232	BP-HZN-2179MDL07843232
822-48		Phenanthrene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843233	BP-HZN-2179MDL07843233
822-49		Dibenzothiophene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843234	BP-HZN-2179MDL07843234
K-350-11		SB9-20110525-S-D038SW-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-351-11		SB9-20110525-S-D042S-TX-002	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-352-11		SB9-20110526-S-D044S-TX-003	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-353-11		SB9-20110526-S-NF006MOD-TX-004	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-354-11		SB9-20110526-S-D040S-TX-005	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-355-11		SB9-20110527-S-LBNL14-TX-011	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-356-11		SB9-20110527-S-NF008-TX-010	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-357-11		SB9-20110528-S-LBNL3-TX-019	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024

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K-358-11		SB9-20110528-S-D034S-TX-006	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-359-11		SB9-20110528-S-D031S-TX-007	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-360-11		SB9-20110528-S-ALTNF001-TX-008	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-398-11		SB9-20110529-S-LBNL1-TX-009	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843017 BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843017 BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024
K-407-11		SB-20110602-S-NF009-TX-012	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843032 BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843032 BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024
K-408-11		SB-20110603-S-NF010-TX-013	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843012 BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843012 BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024
K-409-11		SB-20110603-S-NF011-TX-014	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-410-11		SB-20110604-S-NF014-TX-017	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-411-11		SB-20110604-S-ALTNF015-TX-018	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-412-11		SB-20110605-S-D019S-TX-021	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024

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K-413-11		SB-20110605-S-LBNL4-TX-022	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-414-11		SB-20110603-S-NF012-TX-015	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-415-11		SB-20110604-S-NF013-TX-016	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-416-11		SB-20110605-S-LBNL17-TX-020	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-417-11		SB-20110605-S-FF010-TX-023	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-418-11		SB9-20110606-S-2.21-TX-026	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-419-11		SB9-20110607-S-D050S-TX-027	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-420-11		SB9-20110607-S-D024S-TX-028	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-421-11		SB9-20110607-S-D043S-TX-029	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-422-11		SB9-20110608-S-VK916-TX-030	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-423-11		SB9-20110608-S-S36-TX-031	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-424-11		SB9-20110608-S-D002S-TX-032	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024

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K-425-11		SB9-20110609-S-HiPro-TX-033	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-426-11		SB9-20110609-S-LBNL9-TX-034	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-427-11		SB9-20110609-S-LBNL10-TX-035	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-428-11		SB9-20110610-S-D062S-TX-036	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-429-11		SB9-20110610-S-FFMT4-TX-037	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-430-11		SB9-20110611-S-FFMT3-TX-038	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-431-11		SB9-20110606-S-LBNL7-TX-024	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843019 BP-HZN-2179MDL07843024	BP-HZN-2179MDL07843020 BP-HZN-2179MDL07843024
K-892-11		A0028P Mass Oil K-582-11	Inland Silverside (<i>Menidia beryllina</i>)	28 days	BP-HZN-2179MDL07843027	BP-HZN-2179MDL07843027
K-610-12		ANST-T2-20120822-S-1464R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842934	BP-HZN-2179MDL07842934
K-610-12		ANST-T2-20120822-S-1464R1-TX-001	Mysid Shrimp (<i>Americanysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842934	BP-HZN-2179MDL07842934
K-611-12		ANST-T1-20120822-S-1308LI-TX-0003	Mysid Shrimp (<i>Americanysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842935	BP-HZN-2179MDL07842937
K-612-12		ANST-T1-20120822-S-1183R3-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842938	BP-HZN-2179MDL07842938
K-612-12		ANST-T1-20120822-S-1183R3-TX-0001	Mysid Shrimp (<i>Americanysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842938	BP-HZN-2179MDL07842938
K-613-12		ANST-T1-20120822-S-1197L1-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842938	BP-HZN-2179MDL07842938
K-613-12		ANST-T1-20120822-S-1197L1-TX-0002	Mysid Shrimp (<i>Americanysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842938	BP-HZN-2179MDL07842938
K-614-12		ANST-T3-20120822-S-OSAT47-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842939	BP-HZN-2179MDL07842939
K-614-12		ANST-T3-20120822-S-OSAT47-TX-0001	Mysid Shrimp (<i>Americanysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842939	BP-HZN-2179MDL07842939
K-615-12		ANST-T3-20120822-S-OSAT46-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842939	BP-HZN-2179MDL07842939

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K-615-12		ANST-T3-20120822-S-OSAT46-TX-0003	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842940	BP-HZN-2179MDL07842940
K-616-12		ANST-T3-20120822-S-OSAT48-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842940	BP-HZN-2179MDL07842940
K-616-12		ANST-T3-20120822-S-OSAT48-TX-0002	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842940	BP-HZN-2179MDL07842940
K-617-12		ANST-T3-20120823-S-OSAT45-TX-0001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842941 BP-HZN-2179MDL07842933	BP-HZN-2179MDL07842942 BP-HZN-2179MDL07842933
K-617-12		ANST-T3-20120823-S-OSAT45-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842941 BP-HZN-2179MDL07842933	BP-HZN-2179MDL07842942 BP-HZN-2179MDL07842933
K-617-12		ANST-T3-20120823-S-OSAT45-TX-0001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842941 BP-HZN-2179MDL07842933	BP-HZN-2179MDL07842942 BP-HZN-2179MDL07842933
K-618-12		ANST-T3-20120823-S-OSAT43-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-618-12		ANST-T3-20120823-S-OSAT43-TX-0003	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-619-12		ANST-T3-20120823-S-OSAT44-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-619-12		ANST-T3-20120823-S-OSAT44-TX-0002	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-620-12		ANST-T2-20120823-S-351R1-TX-003	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-620-12		ANST-T2-20120823-S-351R1-TX-003	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-621-12		ANST-T2-20120823-S-535R2-TX-002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-621-12		ANST-T2-20120823-S-535R2-TX-002	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842943	BP-HZN-2179MDL07842943
K-622-12		ANST-T2-20120823-S-363R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842944	BP-HZN-2179MDL07842944
K-622-12		ANST-T2-20120823-S-363R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842944	BP-HZN-2179MDL07842944
K-623-12		ANST-T2-20120823-S-885R1-TX-004	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842945	BP-HZN-2179MDL07842945
K-623-12		ANST-T2-20120823-S-885R1-TX-004	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842945	BP-HZN-2179MDL07842945
K-624-12		ANST-T1-20120823-S-444L1-TX-0001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842946	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842946

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K-624-12		ANST-T1-20120823-S-444L1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842946	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842946
K-624-12		ANST-T1-20120823-S-444L1-TX-0001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842946	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842946
K-625-12		ANST-T1-20120823-S-1179L1-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842947	BP-HZN-2179MDL07842947
K-625-12		ANST-T1-20120823-S-1179L1-TX-0003	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842947	BP-HZN-2179MDL07842947
K-626-12		ANST-T1-20120823-S-1173R1-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842947	BP-HZN-2179MDL07842947
K-626-12		ANST-T1-20120823-S-1173R1-TX-0002	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842947	BP-HZN-2179MDL07842947
K-627-12		ANST-T1-20120823-S-1355L1-TX-0004	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842948	BP-HZN-2179MDL07842948
K-627-12		ANST-T1-20120823-S-1355L1-TX-0004	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842948	BP-HZN-2179MDL07842948
K-635-12		ANST-T2-20120824-S-669R1-TX-0001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842949	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842949
K-635-12		ANST-T2-20120824-S-669R1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842949	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842949
K-635-12		ANST-T2-20120824-S-669R1-TX-0001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842949	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842949
K-636-12		ANST-T2-20120824-S-247R1-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842950	BP-HZN-2179MDL07842950
K-636-12		ANST-T2-20120824-S-247R1-TX-0002	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842950	BP-HZN-2179MDL07842950
K-637-12		ANST-T2-20120824-S-1499R1-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842951	BP-HZN-2179MDL07842951
K-637-12		ANST-T2-20120824-S-1499R1-TX-0003	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842951	BP-HZN-2179MDL07842951
K-638-12		ANST-T2-20120824-S-717L1-TX-0004	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842952	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842952
K-638-12		ANST-T2-20120824-S-717L1-TX-0004	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842952	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842952

Project/Study No.	Test ID	Test Substance	Species	Study Duration	Beg Bates	End Bates
K-638-12		ANST-T2-20120824-S-717L1-TX-0004	Mysid Shrimp (<i>Americanaysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842952	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842952
K-639-12		ANST-T1-20120824-S-914R1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842953	BP-HZN-2179MDL07842953
K-639-12		ANST-T1-20120824-S-914R1-TX-0001	Mysid Shrimp (<i>Americanaysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842953	BP-HZN-2179MDL07842953
K-640-12		ANST-T1-20120824-S-1101R1-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842953	BP-HZN-2179MDL07842953
K-640-12		ANST-T1-20120824-S-1101R1-TX-0002	Mysid Shrimp (<i>Americanaysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842953	BP-HZN-2179MDL07842953
K-641-12		ANST-T1-20120824-S-1272L1-TX-0003	Mysid Shrimp (<i>Americanaysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842954	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842954
K-641-12		ANST-T1-20120824-S-1272L1-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842954	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842954
K-641-12		ANST-T1-20120824-S-1272L1-TX-0003	Mysid Shrimp (<i>Americanaysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842954	BP-HZN-2179MDL07842933 BP-HZN-2179MDL07842954
K-643-12		ANST-T3-20120824-S-OSAT41-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842956	BP-HZN-2179MDL07842958
K-643-12		ANST-T3-20120824-S-OSAT41-TX-0002	Mysid Shrimp (<i>Americanaysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842956	BP-HZN-2179MDL07842958
K-754-12		ANST-T1-20120927-S-444R1-TX-002	Mysid Shrimp (<i>Americanaysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842932 BP-HZN-2179MDL07842959	BP-HZN-2179MDL07842932 BP-HZN-2179MDL07842960
K-755-12		ANST-T3-20120927-S-OSAT41-TX-0001	Mysid Shrimp (<i>Americanaysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842932 BP-HZN-2179MDL07842960	BP-HZN-2179MDL07842932 BP-HZN-2179MDL07842961
K-766-12		ANST-T3-20120928-S-914L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842962	BP-HZN-2179MDL07842962
K-766-12		ANST-T3-20120928-S-914L1-TX-001	Mysid Shrimp (<i>Americanaysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842962	BP-HZN-2179MDL07842962
K-767-12		ANST-T3-20120928-S-I-04R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842962	BP-HZN-2179MDL07842962
K-767-12		ANST-T3-20120928-S-I-04R1-TX-001	Mysid Shrimp (<i>Americanaysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842962	BP-HZN-2179MDL07842962
K-768-12		ANST-T3-20120928-S-I-03L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842962	BP-HZN-2179MDL07842962

Project/Study No.	Test ID	Test Substance	Species	Study Duration	Beg Bates	End Bates
K-768-12		ANST-T3-20120928-S-I-03L1-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842962	BP-HZN-2179MDL07842962
K-769-12		ANST-T1-20120928-S-1272R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842963	BP-HZN-2179MDL07842965
K-769-12		ANST-T1-20120928-S-1272R1-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842963	BP-HZN-2179MDL07842965
K-770-12		ANST-T1-20120928-S-D12L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842965	BP-HZN-2179MDL07842965
K-770-12		ANST-T1-20120928-S-D12L2-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842965	BP-HZN-2179MDL07842965
K-771-12		ANST-T1-20120928-S-E14L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842965	BP-HZN-2179MDL07842965
K-771-12		ANST-T1-20120928-S-E14L1-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842965	BP-HZN-2179MDL07842965
K-772-12		ANST-T2-20120928-S-1183L3-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842966	BP-HZN-2179MDL07842966
K-772-12		ANST-T2-20120928-S-1183L3-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842966	BP-HZN-2179MDL07842966
K-773-12		ANST-T2-20120928-S-1197R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842966	BP-HZN-2179MDL07842966
K-773-12		ANST-T2-20120928-S-1197R1-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842966	BP-HZN-2179MDL07842966
K-774-12		ANST-T2-20120928-S-1478R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842966	BP-HZN-2179MDL07842966
K-774-12		ANST-T2-20120928-S-1478R2-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842966	BP-HZN-2179MDL07842966
K-798-12		ANST-T1-20121002-S-726L2-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842967	BP-HZN-2179MDL07842969
K-801-12		ANST-T3-20121002-S-OSAT49-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842968	BP-HZN-2179MDL07842970
K-803-12		ANST-T2-20121002-S-C-10R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842971
K-803-12		ANST-T2-20121002-S-C-10R2-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842971
K-804-12		ANST-T3-20121003-S-141R2-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842973
K-804-12		ANST-T3-20121003-S-141R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842973
K-804-12		ANST-T3-20121003-S-141R2-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842973
K-805-12		ANST-T3-20121003-S-159L2-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842974
K-805-12		ANST-T3-20121003-S-159L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842974
K-805-12		ANST-T3-20121003-S-159L2-TX-001	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842974
K-806-12		ANST-T2-20121003-S-276R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842971

Project/Study No.	Test ID	Test Substance	Species	Study Duration	Beg Bates	End Bates
K-806-12		ANST-T2-20121003-S-276R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842971
K-807-12		ANST-T3-20121004-S-717R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842975
K-807-12		ANST-T3-20121004-S-717R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842975
K-807-12		ANST-T3-20121004-S-717R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842971	BP-HZN-2179MDL07842975
K-808-12		ANST-T3-20121004-S-247L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842976	BP-HZN-2179MDL07842976
K-808-12		ANST-T3-20121004-S-247L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842976	BP-HZN-2179MDL07842976
K-809-12		ANST-T3-20121004-S-669L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842976	BP-HZN-2179MDL07842978
K-809-12		ANST-T3-20121004-S-669L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842976	BP-HZN-2179MDL07842978
K-809-12		ANST-T3-20121004-S-669L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842976	BP-HZN-2179MDL07842978
K-810-12		ANST-T2-20121004-S-34R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842976	BP-HZN-2179MDL07842976
K-810-12		ANST-T2-20121004-S-34R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842976	BP-HZN-2179MDL07842976
K-811-12		ANST-T1-20121004-S-100L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842979	BP-HZN-2179MDL07842981
K-811-12		ANST-T1-20121004-S-100L2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842979	BP-HZN-2179MDL07842981
K-812-12		ANST-T1-20121004-S-48R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842980	BP-HZN-2179MDL07842980
K-812-12		ANST-T1-20121004-S-48R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842980	BP-HZN-2179MDL07842980
K-813-12		ANST-T1-20121005-S-1094R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842980	BP-HZN-2179MDL07842980
K-813-12		ANST-T1-20121005-S-1094R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842980	BP-HZN-2179MDL07842980
K-814-12		ANST-T2-20121005-S-1491R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842981	BP-HZN-2179MDL07842983
K-814-12		ANST-T2-20121005-S-1491R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842981	BP-HZN-2179MDL07842983
K-814-12		ANST-T2-20121005-S-1491R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842981	BP-HZN-2179MDL07842983
K-815-12		ANST-T2-20121005-S-1491R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842981	BP-HZN-2179MDL07842984
K-815-12		ANST-T2-20121005-S-1491R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842981	BP-HZN-2179MDL07842984
K-816-12		ANST-T3-20121005-S-B06L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842983	BP-HZN-2179MDL07842985
K-816-12		ANST-T3-20121005-S-B06L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842983	BP-HZN-2179MDL07842985

Project/Study No.	Test ID	Test Substance	Species	Study Duration	Beg Bates	End Bates
K-816-12		ANST-T3-20121005-S-B06L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842983	BP-HZN-2179MDL07842985
K-817-12		ANST-T1-20121006-S-1714R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842986	BP-HZN-2179MDL07842986
K-817-12		ANST-T1-20121006-S-1714R2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842986	BP-HZN-2179MDL07842986
K-818-12		ANST-T3-20121006-S-379L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842986	BP-HZN-2179MDL07842986
K-818-12		ANST-T3-20121006-S-379L2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842986	BP-HZN-2179MDL07842986
K-853-12		ANST-T2-20121008-S-198L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842986	BP-HZN-2179MDL07842986
K-946-12		ANST-T1-20120910-EI1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842987	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842989
K-946-12		ANST-T1-20120910-EI1-TX-0001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842987	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842989
K-946-12		ANST-T1-20120910-EI1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842987	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842989
K-946-12		ANST-T1-20120910-EI1-TX-0001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842987	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842989
K-947-12		ANST-T1-20120910-EI2-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842990	BP-HZN-2179MDL07843018 BP-HZN-2179MDL07842992
K-947-12		ANST-T1-20120910-EI2-TX-0002	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07842990	BP-HZN-2179MDL07842992
K-947-12		ANST-T1-20120910-EI2-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07842990	BP-HZN-2179MDL07842992
29985		ANST-T3-20120823-S-OSAT45-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29985		ANST-T3-20120823-S-OSAT45-TX-0001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29986		ANST-T3-20120822-S-OSAT46-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29986		ANST-T3-20120822-S-OSAT46-TX-0003	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29987		ANST-T3-20120822-S-OSAT47-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29987		ANST-T3-20120822-S-OSAT47-TX-0001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29991		ANST-T1-20120824-S-1272L1-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381

Project/Study No.	Test ID	Test Substance	Species	Study Duration	Beg Bates	End Bates
29991		ANST-T1-20120824-S-1272L1-TX-0003	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29998		ANST-T3-20120824-S-OSAT41-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
29998		ANST-T3-20120824-S-OSAT41-TX-0002	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30002		ANST-T1-20120822-S-1308L1-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30002		ANST-T1-20120822-S-1308L1-TX-0003	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30003		ANST-T1-20120823-S-444L1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30003		ANST-T1-20120823-S-444L1-TX-0001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30004		ANST-T2-20120824-S-669R1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30004		ANST-T2-20120824-S-669R1-TX-0001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30005		ANST-T2-20120824-S-717L1-TX-0004	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30005		ANST-T2-20120824-S-717L1-TX-0004	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30255		ANST-T1-20120927-S-444R1-TX-002	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30255		ANST-T1-20120927-S-444R1-TX-002	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30256		ANST-T3-20120927-S-OSAT41-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30256		ANST-T3-20120927-S-OSAT41-TX-0001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30259		ANST-T1-20120928-S-1272R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30259		ANST-T1-20120928-S-1272R1-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30265		ANST-T1-20121002-S-726L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30265		ANST-T1-20121002-S-726L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30265		ANST-T3-20121002-S-726L2-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30266		ANST-T3-20121002-S-OSAT49-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30266		ANST-T3-20121002-S-OSAT49-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30272		ANST-T3-20121003-S-141R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30272		ANST-T3-20121003-S-141R2-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381

Project/Study No.	Test ID	Test Substance	Species	Study Duration	Beg Bates	End Bates
30274		ANST-T3-20121004-S-669L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30274		ANST-T3-20121004-S-669L1-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30275		ANST-T1-20121004-S-100L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30275		ANST-T1-20121004-S-100L2-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30276		ANST-T3-20121004-S-717R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30276		ANST-T3-20121004-S-717R1-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30280		ANST-T2-20121005-S-1491R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30280		ANST-T2-20121005-S-1491R1-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30281		ANST-T3-20121005-S-H04R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30281		ANST-T3-20121005-S-H04R2-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30282		ANST-T3-20121005-S-B06L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381
30282		ANST-T3-20121005-S-B06L1-TX-001	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	72 hrs	BP-HZN-2179MDL07843379	BP-HZN-2179MDL07843381

Appendix K-5:
Unvalidated Toxicity Tests from BP

Project/Study No.	Test Substance	Species	Study Duration	Beg Bates	End Bates
120515	Potassium chloride (KCl)	Red drum (<i>Sciaenops ocellatus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
120713	Potassium chloride (KCl)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
120724	Potassium chloride (KCl)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
120725	Potassium chloride (KCl)	Florida pompano (<i>Trachinotus carolinus</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
120732	Potassium chloride (KCl)	Red drum (<i>Sciaenops ocellatus</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
120805	Potassium chloride (KCl)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
120813	Potassium chloride (KCl)	Red drum (<i>Sciaenops ocellatus</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
120814	Potassium chloride (KCl)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
120824	Potassium chloride (KCl)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
120826	Potassium chloride (KCl)	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
120910	Potassium chloride (KCl)	Spotted sea trout (<i>Cynoscion nebulosus</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
120911	Potassium chloride (KCl)	Red drum (<i>Sciaenops ocellatus</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
120919	Potassium chloride (KCl)	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
120933	Potassium chloride (KCl)	Cobia (<i>Rachycentron canadum</i>)	24 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
121004	Potassium chloride (KCl)	Florida pompano (<i>Trachinotus carolinus</i>)	72 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
121006	072610-03 (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
121008	072610-03 (MASS)	Copepod (<i>Acartia tonsa</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
121009	3,5-Dichlorophenol	Copepod (<i>Acartia tonsa</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
121105	Potassium chloride (KCl)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130412	Copper sulfate	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130413	Cadmium chloride	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130414	Copper sulfate	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130415	Cadmium chloride	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130417	Cadmium chloride	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130418	Copper sulfate	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130506	Potassium chloride (KCl)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130515	Copper sulfate	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130517	072610-03 (MASS) + Corexit 9500	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130518	Potassium chloride (KCl)	Florida pompano (<i>Trachinotus carolinus</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130521	Copper sulfate	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130609	Potassium chloride (KCl)	Red drum (<i>Sciaenops ocellatus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130711	Copper sulfate	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103

Project/Study No.	Test Substance	Species	Study Duration	Beg Bates	End Bates
130714	Copper sulfate	Blue crab (<i>Callinectes sapidus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130801	Corexit 9500	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130901	Cadmium chloride	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130902	Cadmium chloride	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130903	Sodium dodecyl sulfate	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130904	Cadmium chloride	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130905	Cadmium chloride	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130906	Cadmium chloride	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130908	Cadmium chloride	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130909	Cadmium chloride	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130911	Sodium dodecyl sulfate	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130912	Cadmium chloride	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
130913	Cadmium chloride	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131002	072610-03 (MASS)	Florida pompano (<i>Trachinotus carolinus</i>)	72 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131003	072610-03 (MASS)	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131004	CTC-02404-04 (CTC-64% Depletion)	Sheepshead minnow (<i>Cyprinodon</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131005	GU2888-A0719-OE703 (Juniper)	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131009	CTC-02404-04 (CTC-64% Depletion)	Florida pompano (<i>Trachinotus carolinus</i>)	8 hr	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131010	CTC-02404-04 (CTC-64% Depletion)	Florida pompano (<i>Trachinotus carolinus</i>)	8 hr	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131011	072610-03 (MASS)	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	9 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131014	CTC-02404-04 (CTC-64% Depletion)	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131018	072610-03 (MASS)	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131019	072610-03 (MASS) + Corexit 9500	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131103	Corexit 9500	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131104	072610-03 (MASS) + Corexit 9500	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131105	072610-03 (MASS)	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131107	Corexit 9500	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131108	CTC-02404-04 (CTC-64% Depletion)	Moon jelly (<i>Aurelia aurita</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
131110	SO-20100815-MASS-001 (Mass)	Florida pompano (<i>Trachinotus carolinus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
OSU 3-13-A1	Weathered oil CTC-02404-04 (CTC)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
OSU 3-13-A2	Massachusetts barge oil (MASS)	Eastern oyster (<i>Crassostrea virginica</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
OSU 15-13-A1	Naphthalene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
OSU 15-13-A2	Phenanthrene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
OSU 15-13-A3	Dibenzothiophene	Mussel (<i>Mytilus galloprovincialis</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
OSU 15-13-A4	Naphthalene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
OSU 15-13-A5	Phenanthrene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103

Project/Study No.	Test Substance	Species	Study Duration	Beg Bates	End Bates
OSU 15-13-A6	Dibenzothiophene	Sea urchin (<i>Strongylocentrotus purpuratus</i>)	48-96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 302b AB	Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 326 AB	Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 373 CV	Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 405 CV	Fluoranthene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 427 FG	Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 448 FG	Massachusetts barge oil (MASS)	Gulf killifish (<i>Fundulus grandis</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 461 MB	Massachusetts barge oil (MASS)	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 473 AB	Weathered oil CTC-02404-04 (CTC)	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 474A AB	Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 474B AB	Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 475 AB	Massachusetts barge oil (MASS)	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 476A AB	Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 476B AB	Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 493 AB	Weathered oil OFS-20100719-Juniper-001 (Juniper)	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 494A AB	Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 494B AB	Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 514 AB	Massachusetts barge oil (MASS)	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 515A AB	Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 515B AB	Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 530 CV	Naphthalene	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	37 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 535-R AB	Weathered oil CTC-02404-04 (CTC) + Corexit 9500	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 536A-R AB	Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 536B-R AB	Fluoranthene	Mysid shrimp (<i>Americamysis bahia</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 615 FG	Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 616 FG	Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
BP 635 FG	Fluoranthene	Gulf killifish (<i>Fundulus grandis</i>)	48 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-371-12	Naphthalene	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-371-12	Naphthalene	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-372-12	Phenanthrene	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-372-12	Phenanthrene	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-396-12	Fluoranthene	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-398-12	Dibenzothiophene	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-398-12	Dibenzothiophene	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-407-12	Pyrene	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-407-12	Pyrene	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-408-12	Chrysene	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-408-12	Chrysene	Mysid Shrimp (<i>Americamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103

Project/Study No.	Test Substance	Species	Study Duration	Beg Bates	End Bates
K-611-12	ANST-T1-20120822-S-1308L1-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-611-12	ANST-T1-20120822-S-1308L1-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-611-12	ANST-T1-20120822-S-1308L1-TX-0003	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-617-12	ANST-T3-20120823-S-OSAT45-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-624-12	ANST-T1-20120823-S-444L1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-635-12	ANST-T2-20120824-S-669R1-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-638-12	ANST-T2-20120824-S-717L1-TX-0004	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-641-12	ANST-T1-20120824-S-1272L1-TX-0003	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-642-12	ANST-T3-20120824-S-OSAT42-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-642-12	ANST-T3-20120824-S-OSAT42-TX-0001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-643-12	ANST-T3-20120824-S-OSAT41-TX-0002	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-643-12	ANST-T3-20120824-S-OSAT41-TX-0002	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-751-12	ANST-T2-20120927-S-1179L1-TX-002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-751-12	ANST-T2-20120927-S-1179L1-TX-002	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-752-12	ANST-T2-20120927-S-1090R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-752-12	ANST-T2-20120927-S-1090R2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-753-12	ANST-T1-20120927-S-1355R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-753-12	ANST-T1-20120927-S-1355R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-754-12	ANST-T1-20120927-S-444R1-TX-002	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-754-12	ANST-T1-20120927-S-444R1-TX-002	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-754-12	ANST-T1-20120927-S-444R1-TX-002	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-755-12	ANST-T3-20120927-S-OSAT41-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-755-12	ANST-T3-20120927-S-OSAT41-TX-0001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-755-12	ANST-T3-20120927-S-OSAT41-TX-0001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103

Project/Study No.	Test Substance	Species	Study Duration	Beg Bates	End Bates
K-769-12	ANST-T1-20120928-S-1272R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-769-12	ANST-T1-20120928-S-1272R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-798-12	ANST-T1-20121002-S-726L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-798-12	ANST-T1-20121002-S-726L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-798-12	ANST-T1-20121002-S-726L2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-799-12	ANST-T1-20121002-S-1045L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-799-12	ANST-T1-20121002-S-1045L2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-800-12	ANST-T1-20121002-S-1499L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-800-12	ANST-T1-20121002-S-1499L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-801-12	ANST-T3-20121002-S-OSAT49-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-801-12	ANST-T3-20121002-S-OSAT49-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-801-12	ANST-T3-20121002-S-OSAT49-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-802-12	ANST-T2-20121002-S-I-01R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-802-12	ANST-T2-20121002-S-I-01R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-804-12	ANST-T3-20121003-S-141R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-805-12	ANST-T3-20121003-S-159L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-807-12	ANST-T3-20121004-S-717R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-809-12	ANST-T3-20121004-S-669L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-811-12	ANST-T1-20121004-S-100L2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-811-12	ANST-T1-20121004-S-100L2-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-814-12	ANST-T2-20121005-S-1491R1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-815-12	ANST-T3-20121005-S-H04R2-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-815-12	ANST-T2-20121005-S-1491R1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-816-12	ANST-T3-20121005-S-B06L1-TX-001	Amphipod (<i>Leptocheirus plumulosus</i>)	10 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-853-12	ANST-T2-20121008-S-198L1-TX-001	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-1004-12	Naphthalene	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-1004-12	Naphthalene	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-1008-12	Phenanthrene	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-1008-12	Phenanthrene	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-1009-12	Dibenzothiophene	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-1009-12	Dibenzothiophene	Inland silverside (<i>Menidia beryllina</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-1016-12	Dibenzothiophene	Mysid Shrimp (<i>Americanamysis bahia</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-028-13	Dibenzothiophene	Mysid Shrimp (<i>Americanamysis bahia</i>)	21 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-029-13	Dibenzothiophene	Inland silverside (<i>Menidia beryllina</i>)	28 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103

Project/Study No.	Test Substance	Species	Study Duration	Beg Bates	End Bates
K-088-13	Phenanthrene	Mysid Shrimp (<i>Americamysis bahia</i>)	21 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-157-13	Phenanthrene	Inland silverside (<i>Menidia beryllina</i>)	28 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-231-13	Naphthalene	Inland silverside (<i>Menidia beryllina</i>)	28 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-244-13	Naphthalene	Mysid Shrimp (<i>Americamysis bahia</i>)	21 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-312-13	Chrysene	Inland silverside (<i>Menidia beryllina</i>)	28 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-313-13	Chrysene	Mysid Shrimp (<i>Americamysis bahia</i>)	21 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-430-13	Pyrene	Inland silverside (<i>Menidia beryllina</i>)	28 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-431-13	Pyrene	Mysid Shrimp (<i>Americamysis bahia</i>)	21 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-539-13	Fluoranthene	Inland silverside (<i>Menidia beryllina</i>)	28 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
K-614-13	Fluoranthene	Mysid Shrimp (<i>Americamysis bahia</i>)	21 days	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6105	Weathered Oil Sample 1 (Q4000)	Diatom (<i>Skeletonema costatum</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6105	Weathered Oil Sample 2 (MASS)	Diatom (<i>Skeletonema costatum</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6105	Weathered Oil Sample 2 and Dispersant (MASS + Corexit 9500)	Diatom (<i>Skeletonema costatum</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6105	Weathered Oil Sample 3 (Juniper)	Diatom (<i>Skeletonema costatum</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6105	Weathered Oil Sample 3 and Dispersant (Juniper + Corexit 9500)	Diatom (<i>Skeletonema costatum</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6105	Weathered Oil Sample 4 (CTC)	Diatom (<i>Skeletonema costatum</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6105	Weathered Oil Sample 4 and Dispersant (CTC + Corexit 9500)	Diatom (<i>Skeletonema costatum</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6105	Dispersant Sample (Corexit 9500)	Diatom (<i>Skeletonema costatum</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6106	Weathered Oil Sample 1 (Q4000)	Green Algae (<i>Dunaliella tertiolecta</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6106	Weathered Oil Sample 2 (MASS)	Green Algae (<i>Dunaliella tertiolecta</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6106	Weathered Oil Sample 2 and Dispersant (MASS + Corexit 9500)	Green Algae (<i>Dunaliella tertiolecta</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6106	Weathered Oil Sample 3 (Juniper)	Green Algae (<i>Dunaliella tertiolecta</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6106	Weathered Oil Sample 3 and Dispersant (Juniper + Corexit 9500)	Green Algae (<i>Dunaliella tertiolecta</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6106	Weathered Oil Sample 4 (CTC)	Green Algae (<i>Dunaliella tertiolecta</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6106	Weathered Oil Sample 4 and Dispersant (CTC + Corexit 9500)	Green Algae (<i>Dunaliella tertiolecta</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6106	Dispersant Sample (Corexit 9500)	Green Algae (<i>Dunaliella tertiolecta</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6110	Weathered Oil Sample 2 (MASS)	Diatom (<i>Skeletonema costatum</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6110	Weathered Oil Sample 4 (CTC)	Diatom (<i>Skeletonema costatum</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6110	Weathered Oil Sample 4 and Dispersant (CTC + Corexit 9500)	Diatom (<i>Skeletonema costatum</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6111	Dispersant Sample (Corexit 9500)	Diatom (<i>Thalassiosira pseudonana</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6111	Weathered Oil Sample 2 (MASS)	Diatom (<i>Thalassiosira pseudonana</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6111	Weathered Oil Sample 4 (CTC)	Diatom (<i>Thalassiosira pseudonana</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6111	Weathered Oil Sample 4 and Dispersant (CTC + Corexit 9500)	Diatom (<i>Thalassiosira pseudonana</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6112	Dispersant Sample (Corexit 9500)	Marine Algae (<i>Isochrysis galbana</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6112	Weathered Oil Sample 2 (MASS)	Marine Algae (<i>Isochrysis galbana</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6112	Weathered Oil Sample 4 (CTC)	Marine Algae (<i>Isochrysis galbana</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103
614.6112	Weathered Oil Sample 4 and Dispersant (CTC + Corexit 9500)	Marine Algae (<i>Isochrysis galbana</i>)	96 hrs	BP-HZN-2179MDL07843382	BP-HZN-2179MDL07844103

Appendix K-6:
Complete Definitive Toxicity Tests from the United States Used in This Report

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates
102	CEWAF	eastern oyster	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
103	CEWAF	eastern oyster	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
105	CEWAF	eastern oyster	veliger	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
106	CEWAF	eastern oyster	veliger	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
109	CEWAF	eastern oyster	early spat	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
110	DISP	eastern oyster	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
111	DISP	eastern oyster	veliger	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
113	SPIKED SED	southern flounder	juvenile	Juvenile exposure to spiked sediments in individual mesh chambers, growth, survival, gill/liver histopath, gene expression	US_PP_NOHD_18000001	US_PP_NOHD_18000001
114	SPIKED SED	Leptocheirus	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
115	SPIKED SED	Leptocheirus	juvenile	10-day amphipod	US_PP_NOHD_18000001	US_PP_NOHD_18000001
124	CEWAF	eastern oyster	gamete/ embryo/ veliger	fertilization	US_PP_NOHD_18000001	US_PP_NOHD_18000001
130	CEWAF	sheepshead minnow	adult	mortality, growth, microflora of gill and gut	US_PP_NOHD_18000001	US_PP_NOHD_18000001
132	CEWAF	eastern oyster	veliger	salinity/temperature interactions	US_PP_NOHD_18000001	US_PP_NOHD_18000001
136	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
137	CEWAF	sheepshead minnow	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
138	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
139	CEWAF	sheepshead minnow	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
142	CEWAF	speckled sea trout	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
143	CEWAF	speckled sea trout	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
144	CEWAF	blue crab	zoea	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
148	CEWAF	blue crab	zoea	Acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
152	CEWAF	Gulf killifish	embryo	Acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
155	CEWAF	sheepshead minnow	larvae	acute toxicity, variable salinity Survival, immunotox, fertilization, abnormalities, larval survival	US_PP_NOHD_18000001	US_PP_NOHD_18000001
156	SPIKED SED	eastern oyster	adult	acute toxicity, heart rate, hatch	US_PP_NOHD_18000001	US_PP_NOHD_18000001
158	CEWAF	Gulf killifish	embryo	acute toxicity, heart rate, hatch	US_PP_NOHD_18000001	US_PP_NOHD_18000001
161	CEWAF	mahi-mahi	embryo	UV acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
163	SPIKED SED	grass shrimp	adult	chronic toxicity, reproduction, days to hatch, % hatch, growth	US_PP_NOHD_18000001	US_PP_NOHD_18000001
165	CEWAF	Gulf killifish	larvae	acute toxicity, heart rate	US_PP_NOHD_18000001	US_PP_NOHD_18000001
167	CEWAF	sheepshead minnow	larvae	mortality, temperature interaction	US_PP_NOHD_18000001	US_PP_NOHD_18000001
171	CEWAF-VARDISP	sheepshead minnow	larvae	chronic toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
175	CEWAF	eastern oyster	veliger	acute toxicity, growth	US_PP_NOHD_18000001	US_PP_NOHD_18000001
178	DISP	eastern oyster	veliger	growth, abnormality, mortality	US_PP_NOHD_18000001	US_PP_NOHD_18000001
184	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
188	Algae + oil	eastern oyster	adult	acute toxicity, histology	US_PP_NOHD_18000001	US_PP_NOHD_18000001
189	LEWAF	eastern oyster	gamete/ embryo/ veliger	Fertilization, abnormalities, development, growth, acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates
190	LEWAF	eastern oyster	embryo	Abnormalities, development, growth, acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
191	LEWAF	eastern oyster	veliger	Abnormalities, development, growth, acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
193	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
195	SPIKED SED	Gulf killifish	embryo	acute toxicity, heart rate	US_PP_NOHD_18000001	US_PP_NOHD_18000001
199	SLICK	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
202	CEWAF	red drum	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
204	DISP	red drum	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
207	CEWAF	red drum	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
209	DISP	red drum	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
211	CEWAF	inland silverside	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
213	CEWAF	inland silverside	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
214	CEWAF	red drum	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
215	CEWAF	sheepshead minnow	adult	chronic lifecycle test, repro, gene expression	US_PP_NOHD_18000001	US_PP_NOHD_18000001
218	SPIKED SED	eastern oyster	adult	acute toxicity, fertilization, bioaccumulation, histology	US_PP_NOHD_18000001	US_PP_NOHD_18000001
227	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
231	CEWAF	mahi-mahi	embryo	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
233	CEWAF	eastern oyster	pediveliger	acute toxicity, settlement	US_PP_NOHD_18000001	US_PP_NOHD_18000001
238	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
239	Slick	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
247	SPIKED SED	Leptocheirus	Neonates	survival, growth, reproduction, reburial	US_PP_NOHD_18000001	US_PP_NOHD_18000001
250	CEWAF	sheepshead minnow	embryo	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
252	CEWAF	sheepshead minnow	larvae	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
253	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
255	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
256	SPIKED SED	eastern oyster	pediveliger	settlement	US_PP_NOHD_18000001	US_PP_NOHD_18000001
258	CEWAF	mahi-mahi	embryo	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
260	Slick	mahi-mahi	embryo	acute mortality	US_PP_NOHD_18000001	US_PP_NOHD_18000001
262	SPIKED SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
267	DISP	white shrimp	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
268	CEWAF	white shrimp	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
272	SPIKED SED	Leptocheirus	Neonates	survival, growth, reproduction, reburial	US_PP_NOHD_18000001	US_PP_NOHD_18000001
283	CEWAF	grass shrimp	adult	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
285	CEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
288	CEWAF	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
291	CEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
293	CEWAF	grass shrimp	adult	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
294	CEWAF	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
296	DISP	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_18000001	US_PP_NOHD_18000001

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates
302	Algae + CEWAF	eastern oyster	adult	long-term algae/oil/dispersant slurry	US_PP_NOHD_18000001	US_PP_NOHD_18000001
304	DISP	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
305	CEWAF	eastern oyster	early spat	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
306	DISP	eastern oyster	early spat	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
311	CEWAF	sheepshead minnow	larvae	variable renewal frequency, 24, 48 h	US_PP_NOHD_18000001	US_PP_NOHD_18000001
312	CEWAF	sheepshead minnow	larvae	variable dispersant/dispersant only	US_PP_NOHD_18000001	US_PP_NOHD_18000001
316	CEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
318	Algae + oil	eastern oyster	adult	immune response, disease susceptibility	US_PP_NOHD_18000001	US_PP_NOHD_18000001
321	CEWAF	sheepshead minnow	larvae	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
323	CEWAF	blue crab	Zoea	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
325	CEWAF	blue crab	zoea	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
340	SPIKED SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
342	SPIKED SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
343	SPIKED SED	eastern oyster	adult	acute toxicity, immune response, histology	US_PP_NOHD_18000001	US_PP_NOHD_18000001
400	DISP	eastern oyster	gamete/ embryo/ veliger	fertilization	US_PP_NOHD_18000001	US_PP_NOHD_18000001
515	CEWAF	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
519	CEWAF	eastern oyster	gamete/ embryo/ veliger	fertilization	US_PP_NOHD_18000001	US_PP_NOHD_18000001
534	FIELD SED	eastern oyster	adult	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
535	SED CLEAN + Surface Oiling	fiddler crab	adult	behavior test with oiled sediment	US_PP_NOHD_18000001	US_PP_NOHD_19000001
540	FIELD SED	southern flounder	juvenile	chronic sediment- histo, gene expression	US_PP_NOHD_18000001	US_PP_NOHD_18000001
541	Algae + oil	eastern oyster	adult - F2	long-term algae/oil/dispersant slurry	US_PP_NOHD_18000001	US_PP_NOHD_18000001
542	Algae + oil + dispersant	eastern oyster	adult - F2	long-term algae/oil/dispersant slurry	US_PP_NOHD_18000001	US_PP_NOHD_18000001
547	CEWAF	sheepshead minnow	larvae	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
558	Algae + oil	eastern oyster	veliger	Dietary protocol	US_PP_NOHD_18000001	US_PP_NOHD_18000001
568	CEWAF	grass shrimp	adult, embryos, larvae	chronic lifecycle test, repro, gene expression	US_PP_NOHD_18000001	US_PP_NOHD_18000001
569	FIELD SED	blue crab	juvenile	mortality, growth, molting	US_PP_NOHD_18000001	US_PP_NOHD_18000001
572	SED CLEAN + Surface Oiling	fiddler crab	adult	Reproduction/Fertilization	US_PP_NOHD_18000001	US_PP_NOHD_19000001
573	Algae + oil	eastern oyster	adult - F2	Histology, fertilization, embryo development, survival	US_PP_NOHD_18000001	US_PP_NOHD_18000001
576	SED ELUTRIATE	eastern oyster	embryo	acute toxicity - sediment elutriate	US_PP_NOHD_18000001	US_PP_NOHD_18000001
578	SED CLEAN + Surface Oiling	fiddler crab	zoea	maternal exposure	US_PP_NOHD_18000001	US_PP_NOHD_18000001
579	SED CLEAN + Surface Oiling	fiddler crab	zoea	maternal exposure to oil and UV exposure to zoea	US_PP_NOHD_18000001	US_PP_NOHD_18000001
582	CEWAF	eastern oyster	embryo	acute toxicity - temp. salinity interactions	US_PP_NOHD_18000001	US_PP_NOHD_18000001
586	FIELD SED	grass shrimp	adult	28 day sediment	US_PP_NOHD_18000001	US_PP_NOHD_18000001

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates
609	SED ELUTRIATE	eastern oyster	gamete/ embryo/ veliger	acute toxicity - sediment elutriate	US_PP_NOHD_18000001	US_PP_NOHD_18000001
610	SED ELUTRIATE	eastern oyster	veliger	acute toxicity - sediment elutriate	US_PP_NOHD_18000001	US_PP_NOHD_18000001
615	NA	yellowfin tuna	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001
628	CEWAF	eastern oyster	gamete/ embryo/ veliger	acute toxicity - temp. salinity interactions	US_PP_NOHD_18000001	US_PP_NOHD_18000001
630	FIELD SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
631	FIELD SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001
634	SPIKED SED	southern flounder	larvae	acute toxicity during metamorphosis	US_PP_NOHD_18000001	US_PP_NOHD_18000001
888	CEWAF	red drum	juvenile	behavior	US_PP_NOHD_18000001	US_PP_NOHD_19000001
889	DISP	red drum	juvenile	behavior	US_PP_NOHD_18000001	US_PP_NOHD_19000001
890	CEWAF	red drum	juvenile	behavior	US_PP_NOHD_18000001	US_PP_NOHD_19000001
891	CEWAF	red drum	juvenile	behavior	US_PP_NOHD_18000001	US_PP_NOHD_19000001

Appendix K-7: Complete Definitive Toxicity Tests from the United States*

*Appendix K-6 is a subset of this Appendix (K-7) that identifies the complete definitive toxicity tests from the United States used in this report

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates	ALS Numbers
102	CEWAF	eastern oyster	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109758 K1110569 K1302167
103	CEWAF	eastern oyster	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1108058
105	CEWAF	eastern oyster	veliger	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109758 K1110569 K1302167
106	CEWAF	eastern oyster	veliger	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1108058
107	HEWAF	eastern oyster	early spat	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1202378 K1202521 K1202523 K1202713 K1202726
109	CEWAF	eastern oyster	early spat	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1202378 K1202521 K1202523 K1202713
110	DISP	eastern oyster	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1108058
111	DISP	eastern oyster	veliger	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1108058
113	SPIKED SED	southern flounder	juvenile	Juvenile exposure to spiked sediments in individual mesh chambers, growth, survival, gill/liver histopath, gene expression	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1303104 K1303284 K1303455 K1303738 K1303960 K1304207 K1307084 K1307160
114	SPIKED SED	Leptocheirus	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1307022 K1307504
115	SPIKED SED	Leptocheirus	juvenile	10-day amphipod	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1304159 K1304620
116	HEWAF	fiddler crab	zoea	UV acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305020 K1305664
117	HEWAF	blue crab	zoea	UV acute toxicity - same oil and prep as 323	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1304952
118	HEWAF	blue crab	zoea	UV acute toxicity - same oil and prep as 322	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1304952
124	CEWAF	eastern oyster	gamete/ embryo/ veliger	fertilization	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1108058
125	HEWAF	blue crab	zoea	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1304932 K1305027 K1308409
126	HEWAF	blue crab	zoea	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305027 K1308409

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates	ALS Numbers
127	HEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1304932 K1308395
128	HEWAF	eastern oyster	spat	Temperature, salinity multiple stressor	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1304864 K1305023 K1305035 K1305161
129	HEWAF	sheepshead minnow	adult	Mortality, growth, microflora of gill and gut	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305027 K1305134 K1305237 K1305495 K1305724 K1307393
130	CEWAF	sheepshead minnow	adult	mortality, growth, microflora of gill and gut	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305027 K1305134 K1305237 K1305495 K1305724 K1307414
131	HEWAF	fiddler crab	zoea	UV acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305081 K1305664
132	CEWAF	eastern oyster	veliger	salinity/temperature interactions	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1210121
133	HEWAF	eastern oyster	veliger	salinity interactions	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1211116
134	HEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1107823 K1208989
135	HEWAF	sheepshead minnow	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109113 K1208985
136	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1200884 K1208518
137	CEWAF	sheepshead minnow	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109512 K1208985
138	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1206596 K1208717
139	CEWAF	sheepshead minnow	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1207150 K1208717
141	HEWAF	speckled sea trout	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1108695 K1208649
142	CEWAF	speckled sea trout	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1110252 K1110332 K1201061 K1208564
143	CEWAF	speckled sea trout	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1108695 K1208985
144	CEWAF	blue crab	zoea	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1203434 K1208518
148	CEWAF	blue crab	zoea	Acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305134 K1305237 K1308405
149	HEWAF	fiddler crab	zoea	UV acute toxicity, some treatments moved to clean water for UV exposure	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305187 K1305664

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates	ALS Numbers
152	CEWAF	Gulf killifish	embryo	Acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305338 K1306925 K1400123
153	HEWAF	fiddler crab	zoea	Acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305476 K1305664
154	HEWAF	sheepshead minnow	larvae	Acute toxicity, variable salinity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305883 K1309334
155	CEWAF	sheepshead minnow	larvae	acute toxicity, variable salinity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305883 K1306029 K1310739
156	SPIKED SED	eastern oyster	adult	Survival, immunotox, fertilization, abnormalities, larval survival	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305730 K1305823 K1305983 K1306104 K1306168 K1306315 K1306316 K1311951
157	HEWAF	Gulf killifish	embryo	acute toxicity, heart rate, hatch	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305743 K1306060 K1306925 K1400123
158	CEWAF	Gulf killifish	embryo	acute toxicity, heart rate, hatch	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305743 K1306060 K1306925 K1400123
160	HEWAF	mahi-mahi	embryo	mahi larval UV in Imhoff cones	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305880 K1306106
161	CEWAF	mahi-mahi	embryo	UV acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1305965 K1306077
163	SPIKED SED	grass shrimp	adult	chronic toxicity, reproduction, days to hatch, % hatch, growth	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1306029 K1306150 K1306305 K1306499 K1306811 K1307067 K1310799 K1310801
164	HEWAF	Gulf killifish	larvae	Acute toxicity, heart rate	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1306314 K1306925 K1400123
165	CEWAF	Gulf killifish	larvae	acute toxicity, heart rate	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1306314 K1400123 K1400128
167	CEWAF	sheepshead minnow	larvae	mortality, temperature interaction	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1306150 K1306305 K1307417
170	HEWAF	sheepshead minnow	larvae	chronic toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1111424 K1111585 K1111701 K1111878 K1206563

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates	ALS Numbers
171	CEWAF-VARDISP	sheepshead minnow	larvae	chronic toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1111424 K1111585 K1111701 K1111878 K120563
173	HEWAF	sheepshead minnow	larvae	Acute toxicity; Dissolved oxygen interaction	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1306811 K1308395
175	CEWAF	eastern oyster	veliger	acute toxicity, growth	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1306563 K1306567
176	HEWAF	eastern oyster	veliger	acute toxicity, growth	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1306563 K1306567
177	HEWAF	eastern oyster	veliger	acute toxicity, deformity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1306536
178	DISP	eastern oyster	veliger	growth, abnormality, mortality	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1306563 K1306567
181	HEWAF	eastern oyster	embryo	acute toxicity, deformity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1306536
184	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1307067 K1308405
185	HEWAF	sheepshead minnow	embryo	chronic toxicity, Temperature interaction	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1307333 K1307611 K1308701
188	Algae + oil	eastern oyster	adult	acute toxicity, histology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1308603 K1309900 K1312050
189	LEWAF	eastern oyster	gamete/ embryo/ veliger	Fertilization, abnormalities, development, growth, acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1308113
190	LEWAF	eastern oyster	embryo	Abnormalities, development, growth, acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	N/A
191	LEWAF	eastern oyster	veliger	Abnormalities, development, growth, acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1308113
192	HEWAF	sheepshead minnow	embryo	Acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1307922 K1308253 K1309334
193	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1310148 K1310453 K1310668
194	HEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1308856 K1309038 K1310668
195	SPIKED SED	Gulf killifish	embryo	acute toxicity, heart rate	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1308681 K1308872 K1309200 K1309401 K1400128
196	HEWAF	fiddler crab	adult	Fertilization, larvae production	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1308434 K1308633 K1308731 K1309046 K1309417 K1309630 K1309844
197	HEWAF	fiddler crab	zoea	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	N/A

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates	ALS Numbers
198	HEWAF	Amberjack	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	N/A
199	SLICK	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1310416 K1310522
200	HEWAF	red drum	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1109750 K1112225
201	HEWAF	red drum	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1109750 K1112225
202	CEWAF	red drum	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1109108 K1112225
204	DISP	red drum	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1109108 K1112225
205	HEWAF	red drum	larvae	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1108666 K1108839 K1112225
206	HEWAF	red drum	larvae	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1108666 K1108839 K1112225
207	CEWAF	red drum	larvae	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1109887 K1110046 K1112225
209	DISP	red drum	larvae	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1109887 K1110046
210	HEWAF	inland silverside	larvae	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1112191
211	CEWAF	inland silverside	larvae	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1112191
212	HEWAF	inland silverside	juvenile	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1111734
213	CEWAF	inland silverside	juvenile	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1111734
214	CEWAF	red drum	larvae	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1110699
215	CEWAF	sheepshead minnow	adult	chronic lifecycle test, repro, gene expression	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1204948 K1205058 K1205182 K1205380 K1205594 K1205833 K1205880 K1206053 K1206163 K1206505 K1206509 K1206596 K1210098 K1210100 K1210102 K1310280
217	HEWAF	Gulf killifish	embryo	acute toxicity, heart rate, time to hatch	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1310657 K1310961 K1400129

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates	ALS Numbers
218	SPIKED SED	eastern oyster	adult	acute toxicity, fertilization, bioaccumulation, histology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1310330 K1310678 K1310789 K1311256 K1311307 K1311951
220	HEWAF	mahi-mahi	juvenile	swim performance	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1310322 K1310419 K1310522 K1310674 K1312196 K1312325 K1312510
225	HEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1310453
227	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1310902
229	HEWAF	mahi-mahi	embryo	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1110837
230	HEWAF	eastern oyster	pediveliger	acute toxicity, settlement	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1311171
231	CEWAF	mahi-mahi	embryo	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1111813
233	CEWAF	eastern oyster	pediveliger	acute toxicity, settlement	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1311171
234	HEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1310838
235	HEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1311068 K1311071
236	HEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1311406
237	HEWAF	blue crab	zoea	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109823
238	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1311770
239	Slick	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1311577 K1311831
245	HEWAF	eastern oyster	embryo	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1206837
246	HEWAF	eastern oyster	veliger	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1206837
247	SPIKED SED	Leptocheirus	Neonates	survival, growth, reproduction, reburial	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1312126 K1312344 K1312520 K1312824 K1313298
248	HEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1312518
250	CEWAF	sheepshead minnow	embryo	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1205073 K1205190
251	HEWAF	sheepshead minnow	larvae	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1202448 K1202598
252	CEWAF	sheepshead minnow	larvae	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1201108

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253	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1400399
254	HEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1400971
255	CEWAF	sheepshead minnow	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1401126
256	SPIKED SED	eastern oyster	pediveliger	settlement	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1312973
258	CEWAF	mahi-mahi	embryo	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1205619
260	Slick	mahi-mahi	embryo	acute mortality	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1312687 K1312785 K1312947
261	HEWAF	white shrimp	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1312923
262	SPIKED SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1313363 K1313883
263	HEWAF	eastern oyster	embryo	acute toxicity, abnormality, growth	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1313361
264	HEWAF	eastern oyster	gamete	acute toxicity, fertilization, growth, abnormality	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1313361
267	DISP	white shrimp	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1313601 K1313855
268	CEWAF	white shrimp	juvenile	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1313500 K1313601
							K1402366 K1402445 K1402589 K1402841 K1403404
272	SPIKED SED	Leptocheirus	Neonates	survival, growth, reproduction, reburial	US_PP_NOHD_18000001	US_PP_NOHD_18000001	
273	HEWAF	mahi-mahi	embryo	Gene expression	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1401730
274	HEWAF	Amberjack	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	N/A
278	HEWAF	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1110277 K1210899 K1211931
279	HEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1110704
283	CEWAF	grass shrimp	adult	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1110661 K1208981
285	CEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1201757 K1311865
288	CEWAF	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1111359
289	HEWAF	grass shrimp	adult	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1111117 K1208712 K1208717 K1208989
290	HEWAF	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1111664 K1309822
291	CEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1112232

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292	HEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1401860 K1402105
293	CEWAF	grass shrimp	adult	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1111585 K1208712 K1208748
294	CEWAF	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1111664 K1309822
295	HEWAF	mahi-mahi	embryo	Outdoor UV - acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1111813
296	DISP	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1111752 K1309822
298	HEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1200135 K1309815
299	HEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1200583 K1210846 K1309815
							K1201273 K1201380 K1201520 K1201579 K1201690
302	Algae + CEWAF	eastern oyster	adult	long-term algae/oil/dispersant slurry	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1201719 K1201740 K1201782 K1201914 K1212650 K1302722
304	DISP	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1201331 K1310143
305	CEWAF	eastern oyster	early spat	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1201381 K1201464 K1201573
306	DISP	eastern oyster	early spat	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1201381 K1201464 K1201573
							K1201381 K1201464 K1201573
307	HEWAF	eastern oyster	early spat	survival, growth, development	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1201573 K1201579 K1201718
310	HEWAF	sheepshead minnow	larvae	variable renewal frequency, 24, 48 h	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1201498 K1201564
311	CEWAF	sheepshead minnow	larvae	variable renewal frequency, 24, 48 h	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1201564 K1201717 K1208518 K1208981
312	CEWAF	sheepshead minnow	larvae	variable dispersant/dispersant only	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1201886 K1208978
314	HEWAF	mahi-mahi	embryo	ELS pre-exposure for grow out - future juvenile swim performance	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1201830 K1209153 K1311865
316	CEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1201543 K1311865

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates	ALS Numbers
318	Algae + oil	eastern oyster	adult	immune response, disease susceptibility	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1202979 K1203162 K1203234 K1203408 K1203533 K1203703 K1203788 K1212710 K1302722
320	HEWAF	cobia	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1203030
321	CEWAF	sheepshead minnow	larvae	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1203168 K1203340
322	HEWAF	blue crab	Zoea	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1203513 K1203516 K1303992
323	CEWAF	blue crab	Zoea	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1203513 K1203516 K1303992
324	HEWAF	mahi-mahi	juvenile	swim performance	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1203432 K1206002 K1209473
325	CEWAF	blue crab	zoea	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1203288 K1208981
339	HEWAF	cobia	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1201830 K1311865
340	SPIKED SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1402587 K1402918
341	HEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1402254 K1402459
342	SPIKED SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1403326 K1403716
343	SPIKED SED	eastern oyster	adult	acute toxicity, immune response, histology.	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1403039 K1403225 K1403348 K1403499 K1403649 K1403914
352	HEWAF	sheepshead minnow	embryo	acute toxicity, time to hatch, heart rate	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1403449 K1403729
353	HEWAF	sheepshead minnow	embryo	acute toxicity, time to hatch, heart rate	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1403729
354	HEWAF	sheepshead minnow	embryo	acute toxicity, time to hatch, heart rate	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1404039
360	HEWAF	zebrafish	embryo/larval/juvenile	acute toxicity, growth, development	US_PP_NOHD_18000001	US_PP_NOHD_18000001	N/A
400	DISP	eastern oyster	gamete/ embryo/ veliger	fertilization	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1108058
411	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109247
412	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109247
413	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109247

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates	ALS Numbers
414	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109247
415	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109522
416	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109522
417	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109522
418	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109522
419	HEWAF	yellowfin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109522
420	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109798
421	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109798
422	HEWAF	yellowfin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1109798
423	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1110428 K1204033
424	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1110428
425	HEWAF	yellowfin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1110428
426	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1110775
427	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1110775
428	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1111039
429	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1111408
430	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1111408
431	HEWAF	yellowfin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1111408
432	HEWAF	yellowfin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1111584
433	HEWAF	yellowfin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1111584
434	HEWAF	yellowfin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1111791
435	HEWAF	yellowfin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1111791
436	HEWAF	yellowfin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1203649
437	HEWAF	yellowfin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1203649
438	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1203951
439	HEWAF	yellowfin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1204978
440	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1205536

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441	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1205996
442	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1205996
443	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1205996
444	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1206385
445	HEWAF	Pacific mackerel	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1206910
446	HEWAF	yellowfin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1206910
447	HEWAF	Pacific mackerel	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1206910
448	HEWAF	Pacific mackerel	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1207132
449	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1207560
450	GWAF	Pacific mackerel	adult	Respirometry	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1111039 K1111222 K1111408
451	GWAF	Pacific mackerel	adult	Respirometry	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1111408
452	GWAF	Pacific mackerel	adult	Respirometry	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1111791
453	GWAF	Pacific mackerel	adult	Respirometry	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1200798
454	GWAF	Pacific mackerel	adult	Respirometry	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1201423
455	GWAF	Pacific mackerel	adult	Respirometry	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1202594
456	GWAF	Pacific mackerel	adult	Respirometry	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1205728
457	GWAF	Pacific mackerel	adult	Respirometry	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1207560
458	GWAF	Pacific mackerel	adult	Respirometry	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1208277
477	HEWAF	southern bluefin tuna	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1200822
490	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1207560
491	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1208277
492	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1208277
493	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1208665
494	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1211471
495	HEWAF	yellowfin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1211471
496	HEWAF	yellowfin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1211471

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates	ALS Numbers
497	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1211471
498	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	N/A
499	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_1800001	US_PP_NOHD_1800001	N/A
506	HEWAF	eastern oyster	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1109755
507	HEWAF	eastern oyster	veliger	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1109755
508	HEWAF	eastern oyster	gamete/ embryo/ veliger	fertilization	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1109755 K1308397
512	HEWAF	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1111752 K1309822
515	CEWAF	mahi-mahi	embryo	Embryo cardiac development toxicity test	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1111664 K1111752 K1309822
519	CEWAF	eastern oyster	gamete/ embryo/ veliger	fertilization	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K110569 K1302167
521	HEWAF	eastern oyster	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1111789
522	HEWAF	eastern oyster	veliger	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1111789
523	HEWAF	grass shrimp	adult	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1110332 K1201061 K1208748
524	HEWAF	blue crab	zoea	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1203288 K1208748
525	HEWAF	eastern oyster	gamete/ embryo/ veliger	fertilization	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1204033
528	HEWAF	yellowfin tuna	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1203962
534	FIELD SED	eastern oyster	adult	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1209809 K1210202 K1210332 K1212644 K1302722 K1402934
535	SED CLEAN + Surface Oiling	fiddler crab	adult	behavior test with oiled sediment	US_PP_NOHD_1800001	US_PP_NOHD_1900001	K1204123 K1204451 K1204736 K1206179
537	HEWAF	yellowfin tuna	embryo	cardiotox	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1204536
539	HEWAF	yellowfin tuna	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1204097

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates	ALS Numbers
540	FIELD SED	southern flounder	juvenile	chronic sediment- histo, gene expression	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1204353 K1204486 K1204672 K1204948 K1205182 K1205380 K1208563 K1208648 K1208746
541	Algae + oil	eastern oyster	adult - F2	long-term algae/oil/dispersant slurry	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1204570 K1204628 K1204800 K1204882 K1205038 K1205125 K1205458 K1205543 K1212650 K1302722
542	Algae + oil + dispersant	eastern oyster	adult - F2	long-term algae/oil/dispersant slurry	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1206069 K1206236 K1206488 K1206592 K1206733 K1207024 K1207049 K1212710 K1302722
543	HEWAF	yellowfin tuna	embryo	Gene expression	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1204536
544	HEWAF	sheepshead minnow	embryo	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1205620 K1205782 K1303992
545	HEWAF	sheepshead minnow	larvae	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1204877 K1303992
547	CEWAF	sheepshead minnow	larvae	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1205186 K1303992
550	HEWAF	mahi-mahi	embryo	ELS pre-exposure for grow out - future juvenile swim performance	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1205662 K1205695
551	HEWAF	grass shrimp	adult, embryos, larvae	chronic lifecycle test, repro, gene expression	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1205594 K1205833 K1205880 K1206053 K1206163 K1206505 K1208517 K1208714 K1208986
552	HEWAF	mahi-mahi	juvenile	swim performance	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1205695 K1205877
554	HEWAF	mahi-mahi	juvenile	swim performance	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1206002 K1209473
555	HEWAF	mahi-mahi	embryo	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1206432

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates	ALS Numbers
558	Algae + oil	eastern oyster	veliger	Dietary protocol	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1210884 K1211016
562	HEWAF	sheepshead minnow	embryo	Indoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1206872 K1207043
563	HEWAF	mahi-mahi	embryo	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1206832
564	HEWAF	eastern oyster	gamete	Outdoor UV - fertilization	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1206837
565	HEWAF	eastern oyster	gamete	Outdoor UV - fertilization	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1207067
566	HEWAF	eastern oyster	veliger	Outdoor UV - acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1207067
567	HEWAF	eastern oyster	gamete	Outdoor UV - fertilization	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1207067
568	CEWAF	grass shrimp	adult, embryos, larvae	chronic lifecycle test, repro, gene expression	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1207063 K1207150 K1207366 K1207618 K1207862 K1208138 K1208558 K1208561 K1208647
569	FIELD SED	blue crab	juvenile	mortality, growth, molting	US_PP_NOHD_18000001	US_PP_NOHD_18000001	569 K1207247 569 K1207420 569 K1207879 569 K1208137 569 K1208398 569 K1208496
571	HEWAF	sheepshead minnow	adult, embryos, larvae	chronic lifecycle test, repro, gene expression	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1207618 K1207862 K1208138 K1208330 K1208467 K1208775 K1209085 K1210096 K1210097 K1307403 K1308397
572	SED CLEAN + Surface Oiling	fiddler crab	adult	Reproduction/Fertilization	US_PP_NOHD_18000001	US_PP_NOHD_19000001	K1207888 K1208076 K1209310 K1210288 K1302019 K1302036
573	Algae + oil	eastern oyster	adult - F2	Histology, fertilization, embryo development, survival	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1208151 K1208766 K1209208 K1212644 K1302722
576	SED ELUTRIATE	eastern oyster	embryo	acute toxicity - sediment elutriate	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1208355

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates	ALS Numbers
578	SED CLEAN + Surface Oiling	fiddler crab	zoea	maternal exposure	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1207888 K1210288
579	SED CLEAN + Surface Oiling	fiddler crab	zoea	maternal exposure to oil and UV exposure to zoea	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1208285 K1304919
582	CEWAF	eastern oyster	embryo	acute toxicity - temp. salinity interactions	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1210120
583	HEWAF	eastern oyster	embryo	acute toxicity - temp. salinity interactions	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1211116
585	HEWAF	eastern oyster	gamete/ embryo/ veliger	acute toxicity - temp. salinity interactions	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1211458
586	FIELD SED	grass shrimp	adult	28 day sediment	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1208561 K1209085 K1209308 K1209562 K1210041 K1210118 K1308701 K1310739 K1310800
587	HEWAF	mahi-mahi	embryo	acute toxicity; UV	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1209522
588	HEWAF	yellowfin tuna	Embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1210277
609	SED ELUTRIATE	eastern oyster	gamete/ embryo/ veliger	acute toxicity - sediment elutriate	US_PP_NOHD_1800001	US_PP_NOHD_1800001	k1209566
610	SED ELUTRIATE	eastern oyster	veliger	acute toxicity - sediment elutriate	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1209565
611	HEWAF	mahi-mahi	juvenile	swim performance	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1209522 K1212502 K1212518 K1212577 K1212583 K1212585 K1212734 K1212744 K1309815 K1309822
615	NA	yellowfin tuna	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1210277
616	HEWAF	yellowfin tuna	embryo	acute toxicity	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1210630 K1210694
621	HEWAF	yellowfin tuna	embryo	Cardiac function morphometry; RNA for direct sequencing	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1210277
625	HEWAF	yellowfin tuna	embryo	Cardiac function morphometry; RNA for backup	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1210426
626	HEWAF	yellowfin tuna	embryo	Cardiac function morphometry; RNA for biomarker QPCR	US_PP_NOHD_1800001	US_PP_NOHD_1800001	K1210426 K1210630

Test ID	Test Substance Mixing Method	Common Name	Lifestage	Endpoints	Beg Bates	End Bates	ALS Numbers
627	HEWAF	grass shrimp	adult, embryos, larvae	mortality, growth, gene expression of females and embryos, egg production, fecundity, fertility, percent hatch, time to hatch	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1210525 K1210774 K1210926 K1211112 K1211345 K1211535 K1211686 K1307417 K1307436
628	CEWAF	eastern oyster	gamete/ embryo/ veliger	acute toxicity - temp. salinity interactions	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1211458
630	FIELD SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1300798 K1301319
631	FIELD SED	Leptocheirus	juvenile	10-day acute sediment test	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1301882 K1302131
632	HEWAF	southern flounder	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1302262 K1307417
633	HEWAF	southern flounder	larvae	acute toxicity during metamorphosis	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1302392 K1308499
634	SPIKED SED	southern flounder	larvae	acute toxicity during metamorphosis	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1302392 K1307084
635	HEWAF	southern flounder	larvae	acute toxicity	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1302262 K1308397
888	CEWAF	red drum	juvenile	behavior	US_PP_NOHD_18000001	US_PP_NOHD_19000001	K1110442 K1112225
889	DISP	red drum	juvenile	behavior	US_PP_NOHD_18000001	US_PP_NOHD_19000001	K1110571
890	CEWAF	red drum	juvenile	behavior	US_PP_NOHD_18000001	US_PP_NOHD_19000001	K1110869 K1111065
891	CEWAF	red drum	juvenile	behavior	US_PP_NOHD_18000001	US_PP_NOHD_19000001	K1111065
H06	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1108143
H07	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1108143
H08	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1108143
H09	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1108143
H10	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1108641
H11	HEWAF	Pacific bluefin tuna	Adult - cardiomyocyte	Electrophysiology	US_PP_NOHD_18000001	US_PP_NOHD_18000001	K1108641