Read-Me

This spreadsheet was created by Lisa DiPinto, NOAA, to organize and describe changes made to the resource-specific assessment sections of the PDARP between the Draft and Final Version, in response to additional reviews from chapter/resource technical leads that were conducted during the public comment period. Where changes were made in individual resource-specific assessment sections (found in Chapter 4), corresponding changes were made in other sections of the document using the same text or values (e.g., Section 4.1, Section 4.11, Chapter 5). This spreadsheet does not capture changes made to the resource-specific assessment sections that are described in the responses to public comments included in the Final PDARP.

The changes described in this spreadsheet are also reflected in minor changes to Technical reports 2, 8, 13, and 17, as referenced below:

Wallace, BP, Rissing, M, Cacela, D, Garrison, L, McDonald T., Schroeder B, McLamb D, Witherington B, and Stacy B. Estimating Degree of Oiling of Sea Turtles and Surface Habitat during the Deepwater Horizon Oil Spill: Implications for Injury Quantification. DWH Sea Turtle Technical Working Group Report. Abt Associates, Boulder CO. Prepared for NOAA Assessment and Restoration Division. (Septemeber 4, 2015) Pp42.

Dias, Laura Aichinger . Evidence of marine mammals' direct exposure to petroleum products during the Deepwater Horizon Oil Spill in the Gulf of Mexico. DWH NRDA Marine Mammal Technical Working Group Report. (Sepetember 1, 2015)

Morris, J.M., M.O. Krasnec, M.W. Carney, H.P. Forth, C.R. Lay, I. Lipton, A.K. McFadden, R. Takeshita, D. Cacela, J.V. Holmes, and J. Lipton. Deepwater Horizon Oil Spill Natural Resource Damage Assessment Comprehensive Toxicity Testing Program: Overview, Methods, and Results.
DWH NRDA Toxicity Technical Working Group Report. Prepared for National Oceanic and Atmospheric Administration by Abt Associates, Boulder, CO. (August 31, 2015)

Powers, Sean P. and Scyphers, Steven B. Estimating injury to nearshore fauna resulting from the Deepwater Horizon Oil Spill . DWH Shoreline NRDA Technical Working Group Report. (September 8, 2015)

Chapter/section	Resource Area	Change made to final PDARP compared to draft PDARP
Figure 4.5-2 (C)	Benthos	Scale bar showed 319,000,000 bbls of oil released from Macondo, whereas the figure legend indicated 3,190,000 bbls of oil released. Inserted updated figure.
Table caption of Table 4.5-1 on page 4-239	Benthos	Removed the words "Sampling Designs"
4.5.3.2	Benthos	Removed citation to Passow 2014 in line 4, and replaced with "Fu et al. 2014."
4.5.3.2	Benthos	Original language: "Floc" covering a vast area of the sea floor was also reported, particularly in areas where dispersants were applied or where sediment from the Mississippi River may have been distributed along with oil from the spill (Brooks et al. 2015; Fu et al. 2014; Hartwell 2015) (Figure 4.5 8). Modified to read: "Floc" covering a vast area of the sea floor was also reported, particularly in areas where dispersants were applied in areas of known heavy oiling, and where sediment from the Mississippi River may have been distributed along with oil from the spill (Brooks et al. 2015; Fu et al 2014; Hartwell 2015;) (Figure 4.5-8).
4.5.3.2	Benthos	The full citation for the Fu et al. 2014 article was added to the cited references list as follows: Fu,J., Gong, Y., Zhao, X., O'Reilly, S.E., and Zhao, D. (2014) Effects of Oil and Dispersant on Formation of Marine Oil Snow and Transport of Oil Hydrocarbons. Environ. Sci. Technol. 48(24): 14392-14399.
4.5.3.2	Benthos	Removed extra parenthesis after the White et al. 2014 reference in the first paragraph on the page.
4.5.4.1.2	Benthos	A parenthesis was missing after Krasnec et al. (2015). Added a parenthesis to close the parenthesis before the word "Figure."
4.5.4.1.2	Benthos	Added a parenthetical with the values so that the relevant sentence now reads: "The Trustees then identified locations from which deep-sea sediment samples were taken (and TPAH50 values measured) that had TPAH50 concentrations in excess of the LC20 and LC50 values (LC20=2.82 mg/kg TPAH50, and LC50=7.12 mg/kg TPAH50)."
4.5.4.1.2	Benthos	Added this same parenthetical to the figure caption on page 4-250: "The Trustees then identified locations from which deep-sea sediment samples were taken (and TPAH50 values measured) that had TPAH50 concentrations in excess of the LC20 and LC50 values (LC20=2.82 mg/kg TPAH50, and LC50=7.12 mg/kg TPAH50)."
Table 4.5-2	Benthos	Added a period so that the second mention of Schwing et al. should be the start of a second sentence, so that the two sentences read as follows: In the deep sea, benthic foraminifera and other protozoans make up a significant proportion of the biomass, and serve as prey items for numerous macrofaunal organisms (Schwing et al. 2015). Schwing et al. (2015), working independently from the NRDA, analyzed sediment cores and associated communities of benthic foraminifera.
Table 4.5-3	Benthos	Changed the statement: "Sediment DWH fingerprinted oil in sediment traps" to "DWH oiled sediments in sediment traps".
Table 4.5-3 (the last line on page 4-267)	Benthos	In line 13 of Table 4.5-3 (the last line on page 4-267), added an **X** in the column for "Mortality"
Table 4.5-3 (In line 14)	Benthos	Added an **X** in the column for "Degradation of habitat and ecosystem quality". (The first line on page 4-268 that read: TPAH50 concentrations exceed LC20 and LC50 modeled mortality).
Table 4.5-3 (in line 20)	Benthos	Added an **X** in the column for "Mortality" (line 20).
Table 4.5-3 (in line 24)	Benthos	Added an **X** in the column "Degradation of habitat and ecosystem quality".
Table 4.5-4	Benthos	In Table 4.5-4, corrected colon alignment in column header.
Table 4.5-5 (first row, fourth column)	Benthos	Added a period to Table 4.5-5 (1st row, 4th column) after the sentence "Reduction of sediment faunal abundance".
Table 4.5-5	Fate and Exposure	Revised text from "Overall injury not quantified", to "Injury not quantified".
4.2.2.1.2	Fate and Exposure	Original text: The gas-consuming bacteria proliferated, consumed the gas, and then died or were consumed by other bacteria. Revised to read: The gas-consuming bacteria proliferated, consumed the gas, and then died or were consumed by protozoa or small zooplankton.
4.2.2.1.2, first bullet	Fate and Exposure	Original text: Within the surface waters, oil droplets attached to particulate matter (e.g., oil-degrading bacteria that proliferated in the near surface waters in response to the oil's presence, fecal pellets produced by phytoplankton and zooplankton, etc.) and sank.... Revised to read: Within the surface waters, oil droplets attached to particulate matter (e.g., oil-degrading bacteria that proliferated in the near surface waters in response to the oil's presence, phytoplankton, and fecal pellets produced by zooplankton, etc.) and sank....

Section 4.2.2.4	Fate and Exposure	Original text: Synthetic-based drilling mud was used in the original drilling of the Macondo well prior to the Deepwater Horizon incident. In addition, BP used these drilling muds in response to the spill. Specifically, between May 26 and May 29, 2010, synthetic drilling mud, along with various bridging materials (e.g., golf balls, cubes, and miscellaneous objects), were pumped into Macondo in a failed effort to plug the well. The Trustees conducted chemical analyses of the synthetic-based drilling mud used at the Macondo well (Stout 2015f). The chemical found in greatest concentrations in the drilling mud was barium sulfate, which comprised up to 60 percent of the mud by weight. These levels of barium sulfate make the drilling mud dense (heavy). The drilling mud also contained hydrocarbons (abundant olefins and traces of PAHs) and petroleum-based chemicals, such as ethylene glycol. Drilling mud is designed to resist breaking down when under high temperature and pressure while drilling a well; therefore, it is similarly resistant to breaking down on the sea floor. During one well plugging attempt, an unknown volume of drilling mud (perhaps up to 30,000 barrels) was discharged from the well. This drilling mud spread over the sea floor within 4 kilometers (2.5 miles) of the wellhead, sometimes up to at least 10 centimeters thick, and smothered the benthic habitat. The synthetic-based mud was still found in this area 4 years afterward (Stout 2015f). Section 4.5 (Benthic Resources) presents additional information on the significance of these persistent drilling muds on the sea floor. Revised text (note that the revised 3rd paragraph correctly states "4 square kilometers"; the draft pDARP incorrectly stated "4 kilometers"): Conventional synthetic-based drilling mud was used in the original drilling of the Macondo well prior to the Deepwater Horizon incident. In addition, BP used a similar "kill" mud in response to the spill. Specifically, between May 26 and May 29, 2010, nearly 30,000 barrels of kill mud, along with various bridging materials (e.g., golf balls, cubes, and miscellaneous objects), was pumped into Macondo in a failed effort to plug the well. Both these muds, herein collectively referred to as synthetic-based drilling mud, contained synthetic chemicals (olefins) along with barium sulfate, the latter of which comprised up to 60 percent of the mud by weight (Stout 2015f). These high levels of barium sulfate make the muds dense (heavy). The drilling mud also contained traces of PAHs and petroleum-based chemicals, such as ethylene glycol. Synthetic chemicals are designed to resist breaking down when under high temperature and pressure while drilling a well; therefore, they are similarly resistant to breaking down on the sea floor. During the blowout and failed well plugging attempt, an unknown volume of synthetic-based drilling mud was discharged from the well. As indicated by the detection of synthetic chemicals in deep-sea sediments, this mud was determined to have spread over the sea floor within 4 square kilometers (2.5 square miles) of the wellhead, sometimes up to at least 10 centimeters thick, and smothered the benthic habitat. The synthetic-based mud was still found in this area 4 years afterward (Stout 2015f). Section 4.5 (Benthic Resources) presents additional information on the significance of these persistent synthetic-based muds on the sea floor.
4.2.3.3.2	Fate and Exposure	Original text: Evidence for the deposition of marine oil snow and the resulting exposure of shallower benthic ecosystems (depths less than 1,000 meters) was found through chemical analysis of semi-permeable membrane devices (SPMDs) and sediment traps deployed within the water column. For example, SPMDs deployed near a shelf edge mesophotic reef about 30 miles north of the well (VK906; Figure 4.2-10) also collected DWH oil within the water column (Stout & Litman 2015a). In addition,... Revised text: Evidence for the deposition of marine oil snow and the resulting exposure of shallower benthic ecosystems (depths less than 1,000 meters) was found through chemical analysis of semi-permeable membrane devices (SPMDs) and sediment traps deployed within the water column. For example, SPMDs deployed near the shelf edge (Alabama Alps) mesophotic reef site north of the well also collected DWH oil within the water column (Stout & Litman 2015a). In addition,...

4.2,5.2	Oil on Water	Changed the following paragraph to the revised text, below, adding new MacDonald publication and corresponding reference. Original text: After overlaying all available SAR images, the Trustees developed a "cumulative surface oil days" footprint that covered 43,300 square miles (Figure 4.2 15)—an area approximately the size of the state of Virginia. This cumulative footprint shows the area where SAR detected oil at any time during the 89 days for which images are available. SkyTruth (2010) estimated a cumulative extent of 68,000 square miles (176,000 km2), based on a rapid analysis of SAR images that likely included some false positive oil identification... Revised to read: After overlaying all available SAR images, the Trustees developed a "cumulative surface oil days" footprint that covered 43,300 square miles (Figure 4.2 15)—an area approximately the size of the state of Virginia. This cumulative footprint shows the area where SAR detected oil at any time during the 89 days for which images are available. Because each SAR image provides only a snapshot in time, and the oil was constantly moving across the ocean surface, the SAR imagery likely missed some locations where oil was present. Thus, the Trustees' estimate of cumulative oil coverage based solely on oil present in SAR images likely underestimates the cumulative extent of surface oiling. Other researchers using different methods estimated a greater cumulative extent of oiling. For example, MacDonald et al. (2015) calculated a cumulative surface oil footprint of 57,500 square miles (149,000 km2) using statistical interpolation to estimate oil coverage where and when SAR images were not available. Not surprisingly, areas closest to the wellhead had the most number of days with detectable oil, and areas furthest from the wellhead had the least number of days with detectable oil (Figure 4.2 15; see also MacDonald et al. 2015). The maximum extent of surface oil detected in the SAR imagery on any single day was 39,600 square kilometers (15,300 square miles) on June 19, 2010 (Figure 4.2 16); this area is about ten times the size of Rhode Island. Added correct reference: MacDonald, I.R., O. Garcia-Pineda, A. Beet, S. Daneshgar Asl, L. Feng, G. Graettinger, D. French-McCay, J. Holmes, C. Hu, F. Huffer, I. Leifer, F. Mueller-Karger, A. Solow, M. Silva, and G. Swayze. 2015. Natural and Unnatural Oil Slicks in the Gulf of Mexico. Journal of Geophysical Research: Oceans. doi:1002/2015JC011062.C65
Table 4.7-3	Birds	Brown Booby info changed in final 2 columns to 2, 2; Cory's Shearwater info changed in final two columns to 24, 35.
Table 4.7-3	Birds	Brown Booby and Cory's Shearwater placed in alphabetical order.
Overview document, Sea Turtle Injury Quantification	Turtles	Changed to "between 55,000 and 160,000 small juvenile turtles".
Executive Summary	Turtles	In the Executive Summary, changed original text from "...between 56,000 and 166,000 small juvenile sea turtles...", to "...between 55,000 and 160,000 small juvenile turtles..."
Section 4.8.5, Key Points Box	Turtles	In Injury Quantification, Key Points box, changed original text from "...between 56,000 and 166,000 small juvenile sea turtles...", to "...between 55,000 and 160,000 small juvenile turtles..."
4.8.5.5.1	Turtles	In Injury Quantification, changed original text from "...more than 421,000 small juvenile turtles were exposed to DWH oil...", to "...approximately 402,000 small juvenile turtles were exposed to DWH oil..."
4.8.5.5.1	Turtles	In Injury Quantification, changed original text from "approximately 56,000 small juvenile turtles...", to "approximately 55,000 small juvenile turtles..."
4.8.5.5.1	Turtles	In Injury Quantification, changed original text from "...up to an additional 110,000 turtles were likely killed. Thus, the Trustees estimated that as many as 166,000 small juvenile sea turtles...", to "up to an additional 104,000 turtles were likely killed. Thus the Trustees estimated that as many as 160,000 small juvenile turtles..."
4.8.5.5.1	Turtles	In Injury Quantification replaced Table 4.8-4 with new table.
4.8.5.5.1	Turtles	In Injury Quantification section "Putting Injury Estimates in Context," changed original text from "Our exposure estimate of 217,000 Kemp's ridleys ...", to "Our exposure estimate of 206,000 Kemp's ridleys".
4.8.5.5.1	Turtles	In Injury Quantification section "Putting Injury Estimates in Context," changed original text from "Total small juvenile Kemp's ridley mortalities were between 36,000 and 90,000...", to "Total small juvenile Kemp's ridley mortalities were between 36,000 and 87,000..."
4.8.5.5.1	Turtles	In Injury Quantification, changed "...between 56,000 and as many as 166,000 small juvenile turtles...", to "between 55,000 and as many as 160,000 small juvenile turtles..."
Table 4.8-7,	Turtles	Changed cells in Table 4.8-7 for Small Juveniles only.
4.8.6: Conclusions	Turtles	Changed original text from "...between 56,000 and as many as 166,000 small juvenile turtles...", to "between 55,000 and as many as 160,000 small juvenile turtles..."

Summary and Synthesis of Findings, Section 4.11	Turtles	Changed original text in Key Finding from "...resulted in up to 166,000 deaths to small juvenile turtles...", to "...resulted in up to 160,000 deaths to small juvenile turtles..."
Summary and Synthesis of Findings, Section 4.11	Turtles	Changed original text in Key Finding from "...killed 56,000 and up to 166,000 small juvenile turtles...", to "...killed 55,000 and up to 160,000 small juvenile turtles..."
5.5.10	Turtles	In key aspects of the injury that informed restoration planning, changed original text from "...between 56,000 and as many as 166,000 small juvenile turtles...", to "between 55,000 and as many as 160,000 small juvenile turtles..."
4.6.4.5.1	Nearshore	In the Key Points box (amphipods), last bullet modified to read "382 metric tons" (replaced 407 mt).
4.6.4.5.1	Nearshore	In the Injury Determination section (amphipods), made the following changes: --Line 2: replaced "37-96%" with "36 to 95 percent" --Line 4: replaced "would kill 96 percent" with "would kill 95%"
4.6.4.5.1, Figure 4.6-21	Nearshore	Replaced Figure 4.6-21 with new figure and replaced the original caption for Figure 4.6-21 with the following text: "This figure shows the relationship between TPAH50 concentrations in oiled marsh soil and death of amphipods over 10 days. As TPAH50 concentrations increase (horizontal axis), the percent of amphipods dying (vertical axis) increases. Twenty percent of amphipods die at a TPAH50 concentration of 7.2 parts per million, and 50 percent die at a concentration of 17.9 parts per million."
4.6.4.5.1	Nearshore	In the First full paragraph in Injury Quantification Amphipods, replaced "407 metric tons" with "382 metric tons". In the last sentence of the second full paragraph in Injury Quantification Amphipods),replaced "approximately 7.6 parts per million TPAH50," with "approximately 7.2 parts per million TPAH50".
4.6.4.8	Nearshore	In Table 4.6-17, third line concerning amphipod mortality, replaced "96%" with "95%".
4.6.4.9.1	Nearshore	In the third full paragraph, first sentence, replaced "50 to 96 percent" with "50 to 95 percent".
4.6.2.2.3	Nearshore	Replaced Figure 4.6.5; caption stayed the same.
4.6.4.5.5	Nearshore	In two places (in the first and last sentence of paragraph), changed "12.6" to "12.8" ppm (EC-20 for flounder length).
4.6.4.5.6 Key Points Box	Nearshore	Numbers, years, and last sentence of the third bullet were changed to read: "An estimated total of 563 MT wet weight of red drum was lost where TPAH50 concentrations in marsh soils exceeded 37 parts per million. This effect occurred over 39 miles (62 kilometers) of oiled shoreline in 2010-12. Total PAH concentrations fell below 37 ppm in marsh soils in 2013." Deleted the 4th bullet: "Reduced red drum production persists through 2013 and would be expected to continue in heavier persistently oiled marshes until soil TPAH50 concentrations drop below 31 parts per million".
4.6.4.5.6	Nearshore	In Injury Determination, first full paragraph, the starting size of red drum for the toxicity test was changed from "3.5" cm to "3" cm.
4.6.4.5.6	Nearshore	In Injury quantification, last paragraph, the numbers in the first sentence were changed to read: "An estimated total of 563 MT wet weight of red drum was lost... where TPAH50 concentrations in marsh soils exceed 37 parts per million." In the second sentence, the years were changed to read: "This effect occurred over 39 miles (62 kilometers) of oiled mainland herbaceous shoreline in Louisiana between 2010 and 2012."
4.6.8	Nearshore	Table 4.6-17, in the row for red drum observed time period, the years were changed to "2010-2012," and the expected recovery time to "3 years".
Table 4.3-2 in the PDARP	Toxicity	Bay anchovy high end of range changed to 3.3. The low end of Mahi range changed to 0.95. The low end of red drum range changed to 7.0.
Figure Caption 4.3-7	Toxicity	The caption listed the red drum LC20 at 20.5; updated to 21.9 (18.4, 24.5). The caption listed the 95% CI for Bay anchovy as 0.8-NS; changed to 0.9.-2.8. So, the caption was revised to read: "1. Results of HEWAF toxicity testing showing the relationship between the exposure concentration of TPAH50 and percent mortality (Morris et al. 2015b)Top panel: Mahi-mahi embryo/larvae exposed to Slick A oil. The LC20 for this test after 96 hours of exposure was 5.1 (95% confidence interval [CI] 3.7–6.6) µg/L TPAH50 Middle panel: Red drum embryo/larvae exposed to Slick A oil. The LC20 for this test after 72 hours was 21.9 (95% CI 18.4–24.5) µg/L TPAH50. Bottom panel: Bay anchovy embryo/larvae exposed to Slick B oil. The LC20 for this test after 48 hours was 1.3 (95% CI 0.9–2.8) µg/L TPAH50."
Figure 4.3-21	Toxicity	Southern Founder 94% mortality was listed as 58; changed to 57. Red drum value was listed as 36; changed to 37. Fiddler crab value was listed as 0.6; changed to 0.5.

Figure 4.3-19 and section 4.3.3.3.5	Toxicity	Updated figure and LC values: fiddler crab value was listed as 0.62; changed to 0.51 The revised paragraph of Section 4.3.3.3.5 was changed to read: "In this study, adult fiddler crabs were placed on sediments coated with DWH oil for 10 days. The TPAH50 concentrations in the upper 2 centimeters (cm) of these sediments ranged from 0.07 (clean reference sediment) to 26 mg/kg. During the exposure period, several female crabs became gravid (i.e., produced fertilized egg masses that remain attached to the female; also known as "sponge crab"). The Trustees removed the gravid females from the oiled sediment exposures after 10 days and placed them in clean water for another 2 to 4 days until the embryos in their external egg masses hatched. After hatch, the zoea (i.e., larvae) were collected and either held indoors in clean water or exposed to varying levels of ambient sunlight in clean water for approximately 7 hours. Zoea from females exposed to contaminated sediment as embryos and subsequently exposed to sunlight in clean water experienced substantial mortality, with a calculated LC20 value of 0.51 mg/kg TPAH50 in the upper 2 cm of sediment (Figure 4.3 19; (Morris et al. 2015b)) This study demonstrates substantial toxicity to fiddler crab offspring at relatively low concentrations of oil in or on sediments, even though the oiled sediments did not affect adult survival, fecundity, or behavior."
Box 7	Toxicity	Added the test durations for the figures in this box (Mahi is 72-h time point and oyster is 24-h time point). The revised text was changed to read: "For example, the left panel below shows the results of a test using larval mahi-mahi. In this test, the LC20 value was 25 ppm and the LC50 value for this test was 31 ppm after 72 hours. The right panel in the figure below shows the results of a bioassay in which abnormal development in oyster larvae was measured. In this test, the EC20 and EC50 concentrations were 5.3 and 5.7 ppm after 24 hours, respectively (Morris et al. 2015b)."
Section 4.3.3.2 (Coastal amphipod analysis)	Toxicity	The value was listed as LC20 7.16 (6.3, 8.2) and LC50 17.4 (16.0, 19.0); changed to LC20 7.2 (6.3, 8.2) and LC50 17.9 (16.4, 19.5).
Section 4.3.3.2 (Coastal amphipod analysis)	Toxicity	Figure 4.3-14 and caption were changed as follows. The revised caption was changed to read: "Juvenile amphipod (L. plumulosus) mortality after a 10-day exposure to contaminated sediments collected from the northern Gulf of Mexico or sediments spiked in the laboratory with DWH oil. The LC20 and LC50 values (95% confidence interval) are 7.2 (6.3, 8.2) and 17.9 (16.4, 19.5) mg/kg TPAH50, respectively (Morris et al. 2015b). Data are binned according to total organic carbon (TOC) concentrations." The revised text was changed to read: "Exposure of the amphipods to oil-contaminated sediments resulted in mortality, with a calculated LC20 value of 7.2 mg/kg TPAH50 in 10-day tests over a range of sediment types (Figure 4.3-14) (Morris et al. 2015b). Adverse effects of contaminated sediments on growth and reproduction of the amphipods were also observed. This information is important in assessing injury in deep-sea sediments, in sediment adjacent to marsh and beach environments, and in marsh soils that have been contaminated by oil."
4.4.2.2.1	Water Column	The Bay Anchovy value was listed as 1.16; changed to 1.3.
4.2.2.2.1	Water Column	The red drum value was listed as 20.5; changed to 21.9
4.2.2.2.1	Water Column	The blue crab value was listed as 69; changed to 79
4.2.2.2.1	Water Column	The revised text in the "Toxicity in the Absence of Sunlight" section was changed to read: "The selected species that represent the low and high end of the range of sensitivity in the absence of UV light were the more sensitive bay anchovy (Anchoa mitchilli) and the less sensitive red drum (Sciaenops ocellatus) (Morris et al. 2015c). The concentration that kills 20 percent of the test organisms (Section 4.3, Toxicity)—known as the LC20—for bay anchovy (based on a 48-hour test) and red drum (based on a 72-hour test) are 1.3 and 21.9 µg/L TPAH50, respectively. For invertebrates, the low and high sensitivity species and their corresponding LC20 values are copepod (Arcartia tonsa; LC20 = 33.5 µg/L TPAH50 based on a 96-hour test) and blue crab (Callinectes sapidus; LC20 = 79.0 µg/L TPAH50 based on a 48-hour test), respectively. These ranges were used to evaluate TPAH50 water column concentrations in waters that do not receive appreciable UV light."
4.9.3 Exposure: Key Points Box	Mammals	Original text: "During response activities and surveys, workers observed over 1,100 marine mammals in the Deepwater Horizon surface slick." Corrected text: "During response activities and surveys, workers observed nearly 1,400 marine mammals in the Deepwater Horizon surface slick."
4.9.3.1	Mammals	Original text: "as shown in figure 4.9-6....." Corrected text: "as shown in figure 4.9-8....."
4.9.3.1	Mammals	Original text: "(Dias 2015; Jefferson &Schiro 1997; Waring et al. 2013)" Corrected text: "(Dias 2015; Jefferson &Schiro 1997; Rosel and Mullin 2015; Waring et al. 2013)"
4.9.3.1	Mammals	Original text: "Vessel and aerial marine mammal surveys, as well as reports from response monitoring activities, documented nearly 1100 marine mammal sightings of at least 10 species swimming in oil (Table 4.9-2)." Corrected text: Vessel and aerial marine mammal surveys, as well as reports from response monitoring activities, documented nearly 1400 marine mammals of at least 11 species swimming in oil or with oil on their bodies (Table 4.9-2).
4.9.3.1	Mammals	Original text: "Table 4.9-2 and Figure 4.9-8 present the findings from these reports and surveys." Deleted the whole sentence
4.9.3.1	Mammals	Inserted, after the deleted sentence above: "In addition to the documentation of direct exposure, additional expposure to oil was estimated by overlapping the marine mammal sightings with the oil footprint. A total of 510 cetacean sightings with over 6,400 animals overlapped with the oil footprint between April 28 and August 10, 2010 (Figure 4.9-8; Dias 2015)."

4.9.3.1	Mammals	Original text/item to change: Table 4.9-2 and caption Corrected Table 4.9-2 and inserted revised text as follows: Table 4.9-2. Response workers and scientists observed nearly 1,400 marine mammals swimming in Deepwater Horizon surface oil or observed with oil on their bodies during response activities and as part of NRDA boat and helicopter surveys (Dias 2015).
4.9.3.1	Mammals	In Figure 4-4.9-8, replaced “species” with “groups”.
4.9.5 Injury Quantification: Key Points	Mammals	Original text: “Shelf and oceanic stocks were generally less affected than BSE stocks.” Corrected text: "Shelf and oceanic stocks were also affected."
Table 4.7-3	Birds	Brown Booby info changed in final 2 columns to 2, 2; Cory's Shearwater info changed in final two columns to 24, 35.
Table 4.7-3	Birds	Brown Booby and Cory's Shearwater were placed in alphabetical order.