United States Department of the Interior

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FINDING OF NO SIGNIFICANT IMPACT

SUPPLEMENT TO ENVIRONMENTAL ASSESSMENT: WRECK REMOVAL AND DEBRIS RECOVERY AT KINGMAN REEF AND PALMYRA ATOLL NATIONAL WILDLIFE REFUGES

On September 30, 2013 the U.S. Fish and Wildlife Service (Service) adopted an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) on alternatives for restoring coral reef ecosystems at Kingman Reef and Palmyra Atoll National Wildlife Refuges (NWRs) by permanently removing three sunken vessels and their associated debris in a manner that minimizes harm to the ecosystem while maintaining a high probability of success. The alternative selected was the Preferred Action alternative, which includes three related sub-actions, each a separate salvage operation at either Kingman Reef or Palmyra Atoll NWR. The Service prepared a supplement to the EA (Supplemental EA) describing proposed modifications to the method of disposal described in the EA by including the option to dispose of Kingman's wreck debris in the deep ocean.

The Kingman Reef NWR Preferred Action alternative as described in the EA includes floating and lifting the wreck debris off the reef and using a crane barge to hoist debris onto the barge for disposal on land. Under the proposed change in disposal method described in the Supplemental EA, heavy wreck debris that cannot be safely lifted onto the tugboat, including the engine block and associated debris, would be floated seaward, and instead of hoisting it out of the water for land disposal, it would be towed offshore for disposal at a pre-determined deep water location. The preferred alternative modification for ocean disposal of the engine block and associated debris is a desired option due to risks posed by Kingman Reef's oceanic conditions, unique susceptibility to weather, and topographic features.

The ocean disposal method described in the Supplemental EA would be more protective than the Preferred Alternative described in the EA, as the ocean disposal method presents less risk to shallow corals than the anchored crane barge. There would be no additional environmental consequences of the ocean disposal alternative than the No Action alternative, because the debris to be disposed of is currently in the marine environment. The action described in the Supplemental EA would relocate the debris from a highly sensitive coral reef area where the debris is having an adverse impact, to a deep water area where it is expected to have no adverse impact.

As described in detail in the EA and Supplemental EA, the Service has determined that no significant impacts are likely to result from implementing the preferred alternative modification for the following reasons:

- The removal of the shipwrecks from the reefs as prescribed in the EA will sustain the surrounding coral reef animal and algae communities, providing for recovery of reef habitats.
- There would be no significant negative effect to resident wildlife or threatened or endangered species or habitat by implementing shipwreck removal best management practices.
- No cultural sites would be affected by shipwreck removal actions.
- No significant effects to the demographic, economic, and social setting are expected.
- No significant effects to the wildlife-dependent public uses are expected.
- The action would contribute to the goals of the National Wildlife Refuge System by strengthening the Service's ability to provide wildlife conservation, contribute to protection and recovery of endangered species, and continue providing research opportunities.

Conclusion

Because the preferred alternative modification is expected to have fewer environmental impacts that the preferred alternative described in the EA, I reaffirm the conclusion from the September 30, 2013 Finding of No Significant Impact.

This Finding of No Significant Impact and supporting references are on file at the U.S. Fish and Wildlife Service, Pacific Reefs National Wildlife Refuge Complex, 300 Ala Moana Blvd, rm 5-211 PO Box 50167, Honolulu Hawaii, 96850 (telephone 808-792-9560).

These documents are available to the public and can be found on the internet at: http://www.fws.gov/palmyraatoll/.

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Regional Chief, National Wildlife Refuge System
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1-3-14

Date

References:

Environmental Assessment. Wreck Removal and Debris Recovery at Kingman Reef and Palmyra Atoll National Wildlife Refuges. August 2013.

Supplement to the Environmental Assessment of Wreck Removal and Debris Recovery at Kingman Reef and Palmyra Atoll National Wildlife Refuges. December 2013.

U.S. FISH AND WILDLIFE SERVICE

Supplement to the
ENVIRONMENTAL ASSESSMENT OF WRECK REMOVAL AND DEBRIS RECOVERY AT KINGMAN REEF AND PALMYRA ATOLL NATIONAL WILDLIFE REFUGES

December 31, 2013

1. Purpose and Need

Introduction and Background

On September 30, 2013 the U.S. Fish and Wildlife Service (Service) adopted the Environmental Assessment (EA) for Wreck Removal and Debris Recovery at Kingman Reef and Palmyra Atoll National Wildlife Refuges. The project is to restore the coral reef ecosystems of Kingman Reef and Palmyra Atoll National Wildlife Refuges (NWRs) by permanently removing three sunken vessels and their associated debris in a manner that minimizes harm to the ecosystem while maintaining a high probability of success. This Supplemental EA modifies the approach for disposal of debris recovered from the wreck at Kingman Reef to include disposal in the deep ocean, 12 nautical miles from the reef. The analysis is tiered from the Environmental Assessment (EA).

The EA proposed two potential actions, a No Action alternative, which maintained the status quo, and a Preferred Action alternative, which included three related sub-actions. Each sub-action is a separate salvage operation at either Kingman Reef or Palmyra Atoll National Wildlife Refuge (NWR) and the EA disclosed anticipated effects for each alternative, pursuant to the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. 4321-4347). Each sub-action was described independently in the EA because of the differences in ecological settings between Kingman Reef and Palmyra Atoll, the varying baseline impacts of the three sunken vessels on their individual locations, and the differences in the approaches proposed to remove and recover the vessels and their associated debris. Appendices in the EA, including the Scope of Work, Proposed Technical Approach and Draft Work Plan, provided supporting information. The EA was made available for public review and comment from August 22 to September 25, 2013. The EA was posted on the Palmyra Atoll NWR web page, www.fws.gov/palmyra and a public notice of availability was sent to the local newspapers and interested parties were alerted via email. Few comments were received; all comments were addressed in the Final EA.

Purpose and Need- Kingman Reef

The purpose of the Kingman sub-action is to restore and protect the coral reef ecosystems of the Kingman Reef NWRs by permanently removing a sunken vessel and its associated debris in a manner that minimizes harm to the ecosystem while maintaining a high probability of success. This supplemental EA describes a modification for disposal of the Kingman Reef wreck debris to further support this purpose.

Kingman Reef NWR supports one of the highest biological diversities among U.S. coral reefs, with 173 known scleractinian coral species and 418 known species of reef fish. Coral in the Kingman Reef NWR has been physically abraded by the vessel and associated debris, and iron from the debris has been linked to the proliferation of the non-native, invasive macroalga *Derbesia tenuissima* which has overgrown and killed sensitive hard corals and crustose coralline algae—building blocks of the coral reef. Removal of the shipwrecked vessel is necessary to eliminate the source of physical impacts and leaching iron.

This document, tiered from the Final EA (September 2013), has been developed to describe proposed modifications to the method of disposal described in the EA by including the option to dispose of Kingman's wreck debris in the deep ocean. Kingman Reef NWR is in a very remote location, accessible only by ocean-going vessels via a typically 7 to 10-day voyage from Honolulu, Hawaii. As such, a pre-planning site visit was not logistically feasible for salvage experts. Since completion of the Final EA, during the project implementation at Palmyra, a small team from the Service and the salvage contractors made a site visit to Kingman to assess and strategize implementation of the project's Draft Work Plan. Based upon additional information garnered from this site visit, deep ocean disposal of the debris was deemed a beneficial option to land-based disposal as originally planned and described in the EA. Using deep ocean disposal would provide a more protective alternative than originally planned by minimizing potential risk to shallow water coral reef resources from anchoring a barge near the reef in order to pick up debris at the reef by crane.

2. Alternatives

Alternatives considered in the EA include towing the engine block and other debris to a crane barge where the crane could safely load the engine block and associated debris onto barges for transport and disposal/recycling on land (to California), and a no-action alternative. This supplement adds the option of disposing Kingman wreck debris at a deep ocean site to the action alternative.

For all alternatives, consideration of weather and environmental conditions at Kingman Reef is important. The reef's small islets are only 3 feet above sea level at their highest point and are frequently awash, resulting in very little upland habitat with little or no vegetation. The emergent land consists largely of dead coral and mollusk shell rubble. Squalls of up to 40 knots can materialize with little to no warning, and they are often accompanied by changes in wind direction of up to 180 degrees. The reef is essentially an open-ocean environment. A calm sea state at Kingman Reef, where waves of 2 to 3 feet in the lagoon are common on a calm day, is considered a rough state elsewhere.

As described in the EA, under a **no-action alternative**, the shipwreck and associated debris field at Kingman Reef would be left in place. The shipwreck debris is considered to be a primary threat to the biological integrity of the reef ecosystem because of its physical and chemical impacts on the surrounding reef. The wreckage is located in a high-energy environment and

would continue to cause physical damage due to movement by wind and waves. Persistent physical impacts to reefs from shipwrecks reduce topographic complexity and the structure of reef fish and invertebrate communities. Iron released from the vessel has led to the expansion of invasive *D. tenuissima* and an associated phase shift away from hard coral and crustose coralline algae; with iron left in place, this expansion would continue, and the reef would be further degraded.

The **preferred alternative** as described in the EA includes floating and lifting the wreck debris off the reef and using a crane barge to hoist debris onto the barge for disposal on land. Under this alternative, the engine block and associated debris would be lifted out of the water using the crane onboard a 185-ft crane barge, as it is anchored in the Kingman lagoon immediately along the steep slope of shallow reef bench. This supplement modifies this alternative to include floating the wreck debris seaward and, instead of hoisting it out of the water for land disposal, towing it offshore for disposal at a pre-determined deep water location.

The preferred alternative modification for ocean disposal of the engine block and associated debris is a desired option due to risks posed by Kingman Reef's oceanic conditions, unique susceptibility to weather, and topographic features. Kingman Reef offers essentially no protection from weather, wind, and waves.

Under the ocean disposal procedure, the engine block and associated debris will be floated with lift bags and Norwegian and Yokohama pneumatic fenders, and the load will be towed away from the reef bench through the surf zone using a Shallow Draft Transport Vessel (SDTV). The SDTV will be tethered to the tugboat SARAH C to aid in towing the engine block out of the surf zone. Large metal debris that cannot be safely lifted onto the SARAH C would then be towed to a designated deep water disposal site 12 nautical miles northeast using the SARAH C.

Other debris that can be safely recovered, which includes for example waterlogged teak, fiberglass panels, and small metal debris would not be disposed of at sea. Instead, this smaller debris will be collected by hand or using lift bags, towed out of the surf zone using the SDTV, and manually loaded onto the SARAH C. The SARAH C will transport the debris ~30 miles to Palmyra Atoll, where it will be loaded onto a 185-foot crane barge for land disposal and recycling in California.

Figure 1. Main engine room debris, including engine block at Kingman Reef NWR wreck site, November 29, 2013. A.Pollock/USFWS

Specific equipment to be used

Equipment Type (Size)	Description/Purpose
Floatation devices	Buoyancy devices including Norwegian and Yokohama pneumatic fenders and lift bags will be used to float the engine block and associated debris.
Shallow Draft Transport Vessel (SDTV) (24' L x 10' W x 3' D)	The Shallow Draft Transport Vessel is lightweight aluminum with a flat deck, wide body, and two long-tail surface motors. The deck of the SDTV contains a raised edge coming around the perimeter that provides 300 gallons of containment volume in case of any residual within the transported material. The SDTV is designed to be highly maneuverable while carrying 10 short tons of material and drafting only 2 feet of sea water (FSW). The SDTV will haul the floated engine block and associated debris away from the lagoon through the surf zone. The SDTV will be tethered to the SARAH C.
SARAH C	EPA Tier III environmentally compliant oceangoing tugboat used to maneuver SDTV and haul engine block and associated debris to designated disposal site.

Sequence of events

1) Upon arrival at the site, the SDTV will be launched with divers onboard. Divers will conduct a survey of the search area. Debris would be marked by GPS location and buoys.
2) Working from the SDTV, divers will rig the engine block (12-71 Detroit Diesel, estimated 3,600 pounds) and associated debris with cut-rope for floating using flotation devices and tether it to the SDTV.
3) When the engine block and associated debris are sufficiently lifted off the seafloor and tethered to the SDTV, the SDTV will haul the load away from the lagoon through the surf zone. The SDTV will be tethered to the SARAH C to aid in hauling.
4) Once out of the surf zone and past the reef crest in a water depth of at least 300 FSW, the load will be fully transferred and secured to the SARAH C.
5) The SARAH C will tow the floating engine block and associated large debris to the designated deep water disposal site.
6) Upon arrival at the designated disposal site, crew will conduct a 360-degree visual survey to ensure there are no marine mammals or turtles present.
7) Upon determining the designated disposal site is clear, the lift bags will be deflated, the engine block and associated debris will be cut loose of fenders, and the debris will be allowed to sink to the seafloor.
8) The SARAH C will remain onsite to verify the debris is no longer floating.
9) GPS coordinates of the disposal site will be recorded and reported to the National Ocean Survey, National Oceanic and Atmospheric Administration.

3. Affected Environment

The affected environment of Kingman Reef is described in the EA of September 2013. Consideration of the deep water environment offshore of Kingman Reef is included in this supplement. However, limited information exists in these extreme deep environments. Depths greater than 11,000 feet (~2 miles) are found within 5 miles north of the wreck site at Kingman Reef (Figure 2). While there has been little exploration of this area, a research expedition in 2006 by the National Oceanic and Atmospheric Administration Coral Reef Ecosystem Division collected multibeam data that is processed by Pacific Islands Benthic Habitat Mapping Center (PIBHMC) in the School of Ocean and Earth Science and Technology (SOEST) at the University of Hawaii (UH) and the Hawai'i Undersea Research Laboratory. These data present as bathymetric and backscatter maps of the area. (Figures 2& 3). In addition, deep sea microbial and protozoan communities are well documented throughout the world's oceans. For example, iron-eating bacteria have been documented in deep water environments, including *Halomonas titanicae*, a bacterium isolated from "rustsicles" from the Titanic shipwreck (Sanchez-Porro et al, 2010).

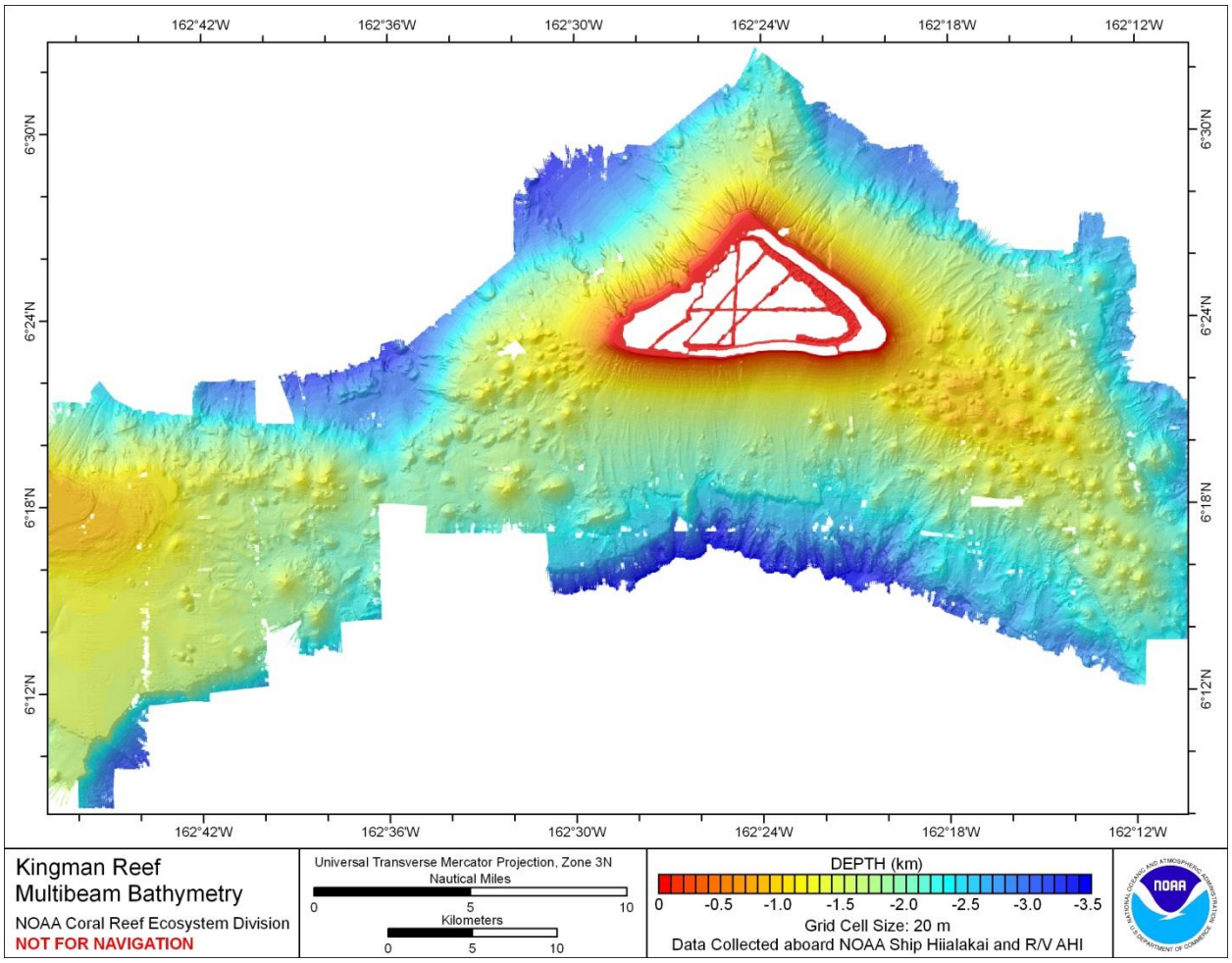

Figure 2. Kingman Reef bathymetry. NOAA-SOEST, 2006.

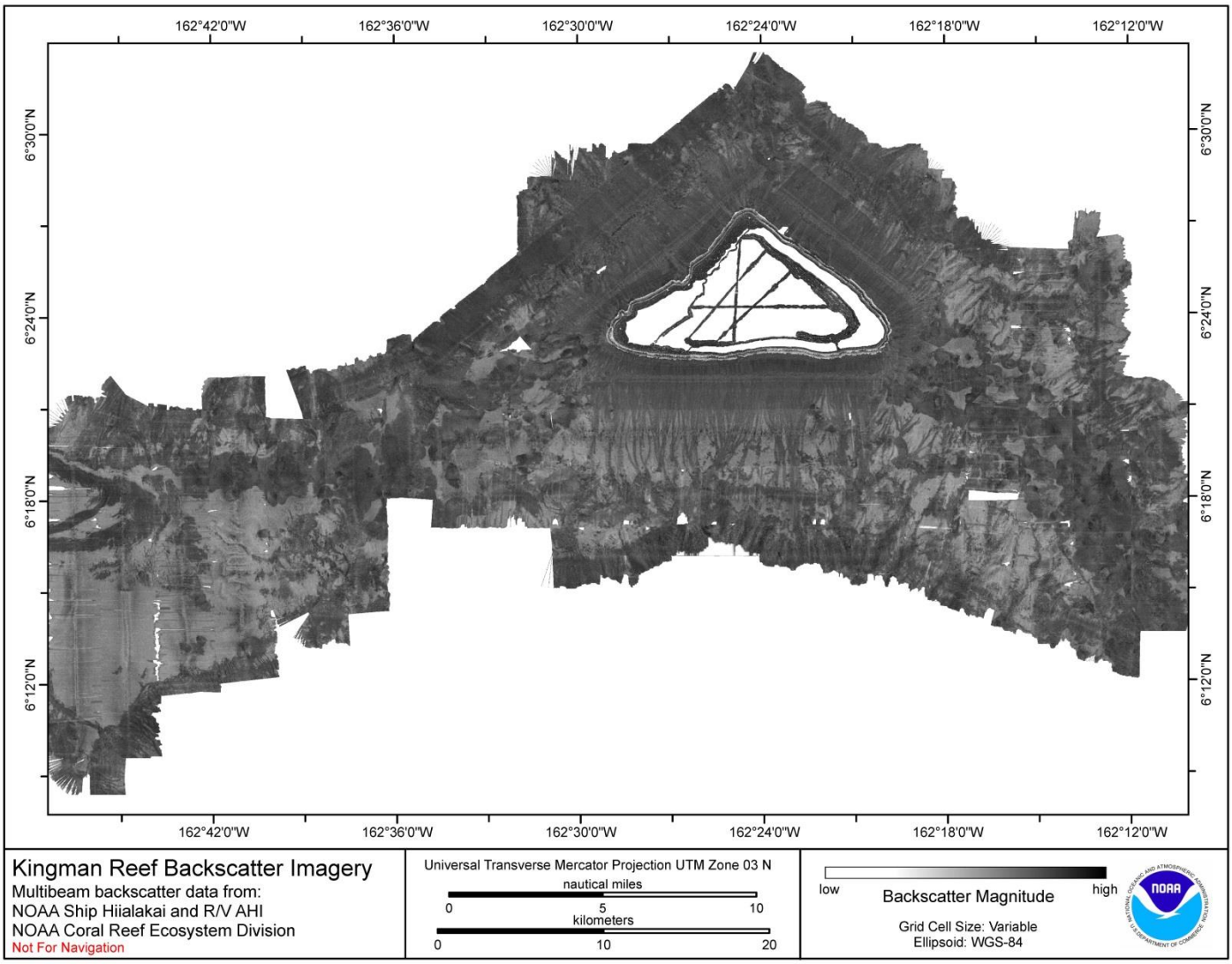

Figure 3. Backscatter map of Kingman Reef NWR. Darker colors represent harder substrate. NOAA-SOEST, 2006.

4. Environmental Consequences

Environmental consequences for shallow water habitats and species at Kingman Reef NWR are described in the EA. Additional information learned during the 29 November 2013 site visit provides data for an updated supplemental analysis.

Disposal on land by a crane barge anchored in Kingman's lagoon would have several disadvantages to ocean disposal. Of primary concern would be a lack of flexibility and adaptability of the crane barge in the event of bad weather. To increase the stability of the anchoring system, the crane barge must be held in place by the tug SARAH C during removal operations. Forecasts of bad weather would necessitate speedy evacuation of personnel, equipment, and the barge in order to minimize risk to personal and resource safety and

security. In such an event temporary moorings could potentially be left without the guarantee of a retrieval opportunity. In emergency weather conditions, salvage equipment could also be left at the reef crest, thereby presenting alien metals to the marine environment. In addition to the crane challenges, the site of the engine block is a shallow, high ocean-energy area subject to ocean swells. A winter swell from the north would render the salvage area inaccessible by crane barge. Use of the crane barge onsite would increase risk and reduce probability of success. Thus, floating the engine block and associated metal debris away from the reef bench through the surf zone would minimize risk to reef resources in the event of bad weather. As such, we do not expect to have any adverse effects to reef resources from the floatation removal method described.

The ocean disposal method described here would be more protective than originally planned, as it presents less risk to shallow corals than the anchored crane barge. There would be no additional environmental consequences of the ocean disposal alternative than the no action alternative, because the debris to be disposed of is currently in the marine environment. The action described in this supplemental EA would relocate it from a highly sensitive coral reef area where the debris is having an adverse impact, to a deep water area where it is expected to have no adverse impact.

As described in detail in the EA, the Service determined that no significant impacts are likely to result from implementing the preferred alternative for the following reasons:

- The removal of the shipwrecks from the reefs as prescribed in the EA will sustain the surrounding coral reef animal and algae communities, providing for recovery of reef habitats.
- There would be no significant negative affect to resident wildlife or threatened or endangered species or habitat by implementing shipwreck removal best management practices.
- No cultural sites would be affected by shipwreck removal actions.
- No significant effects to the demographic, economic, and social setting are expected.
- No significant effects to the wildlife-dependent public uses are expected.
- The action would contribute to the goals of the National Wildlife Refuge System by strengthening the Service's ability to provide wildlife conservation, contribute to protection and recovery of endangered species, and continue providing research opportunities.

References

NOAA, 2006. National Oceanic and Atmospheric Administration, Coral Reef Ecosystem Division multibeam mapping, 29 March to 3 April 2006. Downloaded from http://www.soest.hawaii.edu/pibhmc/pibhmc_pria.htm on 26 December 2013.

Sanchez-Porro, C. B. Kaur, H. Mann, A. Ventosa. 2010. *Halomonas titanicae* sp. nov., a halophilic bacterium isolated from the RMS Titanic. International Journal of Systematic and Evolutionary Microbiology. 60, 2768-2774. Downloaded from http://ijs.sgmjournals.org/content/60/12/2768.full.pdf+html on 26 December 2013.