

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
For
Deep Sea Research within the Northwestern Hawaiian Islands

Papahānaumokuākea Marine National Monument
Northwestern Hawaiian Islands
Hawai'i

National Oceanic and Atmospheric Administration
National Ocean Service, Office of National Marine Sanctuaries

September 2015

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1

EXECUTIVE SUMMARY

2 This Supplemental Environmental Assessment (SEA) was prepared in accordance with the
3 National Environmental Policy Act of 1969 (42 U.S.C. § 4321, *et seq.*), as implemented by the
4 Council on Environmental Quality regulations (40 Code of Federal Regulations Parts 1500-
5 1508), and National Oceanic and Atmospheric Administration (NOAA) Administrative Order
6 (NAO) 216-6, which describes NOAA policies, requirements, and procedures implementing
7 NEPA.

8 In 2014, NOAA's Office of National Marine Sanctuaries (ONMS) proposed to issue two permits;
9 one research permit to Florida State University (FSU) to conduct deep-sea marine research and
10 one conservation and management permit to the University of Alaska – Fairbanks (UAF),
11 School of Fisheries and Ocean Sciences, Seward Marine Center allowing vessel operations to
12 support the aforementioned FSU deep sea research. The UAF operated vessel, R/V *Sikuliaq*
13 would provide transportation for research teams working on permitted projects within
14 Papahānaumokuākea Marine National Monument (PMNM or Monument). Researchers aboard
15 this vessel would also have access to the Autonomous Unmanned Vehicle (AUV) *Sentry* for
16 underwater survey work.

17 In an effort to enhance these originally proposed research activities and ensure continuity of
18 vessel support ONMS proposes to issue one permit amendment and one new permit
19 ("Proposed Action"). ONMS would amend a research permit to Florida State University (FSU)
20 to extend the depths at which surveys would be conducted to 200 – 700 m and deploy
21 additional instruments attached to a lander at depths between 300 – 700 m, which would stay in
22 place on site and be recovered one year later (in 2016). In addition, one conservation and
23 management permit would be issued to the University of Hawaii Marine Center (UHMC) to
24 conduct vessel operations in support of the aforementioned FSU deep sea research. The
25 UHMC operated vessel, R/V *Kilo Moana* would provide transportation for research teams
26 working on permitted projects within Papahānaumokuākea Marine National Monument (PMNM
27 or Monument).

28 The purpose of the Proposed Action is to satisfy the Findings of Presidential Proclamation 8031
29 which authorizes research and conservation and management activities in the Monument
30 designed to enhance understanding of Monument resources and improve resource
31 management decision making (Monument Management Plan, 2008). The Proposed Action is
32 necessary to support research operations that would provide for a better understanding of the
33 deep-sea biota within the Monument through collection of new records and new species and
34 bathymetric habitat mapping. In addition this research would provide more insight into the
35 impacts of trawling and the recovery potential for deep-sea coral and sponge bed communities.
36 This information would allow for better management of deep water areas within the PMNM.

37 The Proposed Action would not result in impacts on the following resource categories: terrestrial
38 biological resources, soils and topography, land use, traffic, air quality and ambient noise, visual
39 resources, natural hazards, and utilities and other infrastructure. The Proposed Action would
40 not result in significant impacts to marine biological resources, cultural resources, physical
41 conditions (water quality and air quality), solid waste, marine traffic, and hazardous and
42 regulated materials. The Proposed Action would not create environmental health and safety
43 risks that may disproportionately affect children and minority or disadvantaged populations, and
44 would not result in significant cumulative impacts to any environmental resource category.

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ACRONYMS AND ABBREVIATIONS

AUV	Autonomous Underwater Vehicle
CTD	Conductivity, Temperature, Depth
CFR	Code of Federal Regulations
dB	Decibels
EFH	Essential Fish Habitat
EO	Executive Order
FSU	Florida State University
ft	Feet
HAR	Hawai'i Administrative Record
Hz	Hertz
HDOH	Hawai'i Department of Health
kHz	Kilohertz
lbs	Pounds
m	Meter(s)
μP	Micropoise
mm	Millimeters
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NWHI	Northwestern Hawaiian Islands
PMNM	Papahānaumokuākea Marine National Monument
Proclamation	Proclamation 8031
R/V	Research vessel
ROV	Remotely Operated Vehicle
SWATH	Small Waterplane Area Twin Hull
SPA	Special Preservation Area
spp.	Species (plural)
SL	Source levels
UHMC	University of Hawaii Marine Center
U.S.	United States
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service

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1.0 PURPOSE AND NEED FOR ACTION

1.1 Summary of Proposed Action

The National Oceanic and Atmospheric Administration (NOAA) proposes to issue one permit amendment and one new PMNM permit. ONMS would amend the research permit issued to Florida State University (FSU), PMNM-2014-028, to extend the depths at which surveys would be conducted to 200 – 700 m and deploy additional instruments attached to a lander at depths between 300 – 700 m, which would stay in place on site and be recovered one year later (in 2016). ONMS would also issue one conservation and management permit to the University of Hawaii Marine Center (UHMC) for operation of the Research Vessel *Kilo Moana* to allow vessel support operations for the aforementioned research activities within PMNM. The Proposed Action remains part of the originally proposed Phase one portion of proposed research activities and is designed to conduct broad surveys and identify areas where corals occur at each of the target sites. Phase two, would allow permittees to return to the identified sites with a Remotely Operated underwater Vehicle (ROV) to collect specimens and additional video data. The captain and crew of the R/V *Kilo Moana* would provide the support platform as well as multi-beam mapping system to support the proposed project. Both the permit amendment and new permit would be issued for a period of one year, scheduled to end on September 30, 2016. Phase one consists of all previously permitted and analyzed activities and the deployment of additional instruments attached to a lander which would stay in place on site and be recovered one year later (in 2016).

This analysis focuses on (1) proposed amendment to extend the depths at which surveys would be conducted to 200 – 700 m; (2) the newly proposed instrument deployments using a lander to secure the instruments in place for a one year period; and (3) operation of R/V *Kilo Moana in support of separately permitted activities to conduct the proposed deepsea research.*

Purpose and Need

Purpose

The purpose of the Proposed Action is to conduct research on select areas within PMNM to characterize the sea floor to better understand deep sea resources and their recovery rates from the effects of trawling. Such research would ultimately enhance scientists' understanding of Monument resources and improve resource management decision making (Monument Management Plan, 2008).

Need

The need for the Proposed Action is based on the PMNM permit requirements as set forth in Presidential Proclamation 8031, which necessitates a PMNM permit for all activities with limited exceptions. The Proposed Action is necessary to provide access to PMNM marine areas of depths ranging from 200 – 700 m and deployment of a lander for a one year period (October 2015 – October 2016). This activity supports research operations that would provide for a better understanding of the deep-sea biota within the Monument through collection of new records and new species and bathymetric habitat mapping and information on recovery potential of habitat and species in these deeper areas from trawling. In addition this research would provide more insight into the impacts of trawling and the recovery potential for deep-sea coral and sponge bed communities. This information would allow for better management of deep water areas within the PMNM.

44 **1.2 Background**

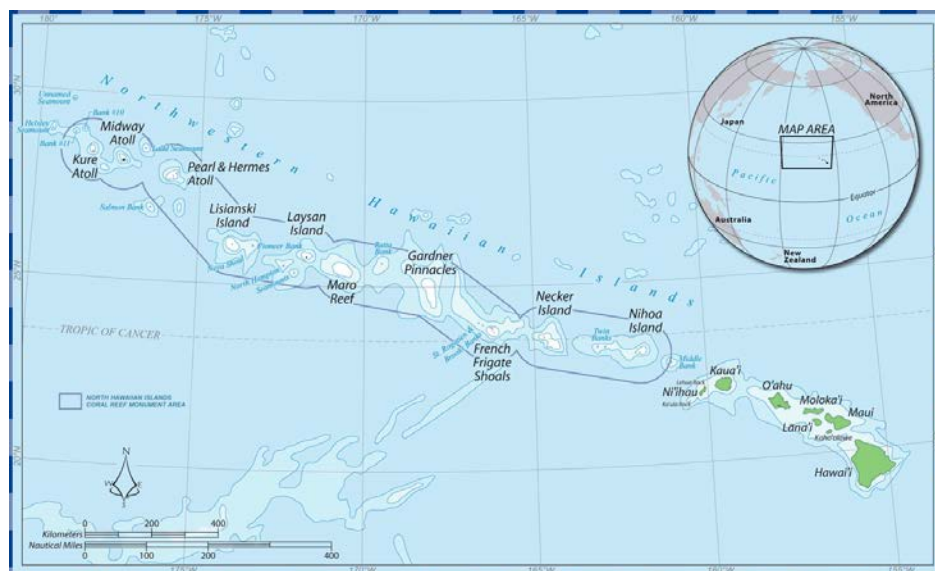
45 **Papahānaumokuākea Marine National Monument (PMNM) – Regulatory**
 46 **Environment**

47 The purposes and management regime for the Monument, as well as restrictions and
 48 prohibitions regarding activities in PMNM, are set forth in the Proclamation 8031 (71 Federal
 49 Register 36443, June 26, 2006) (Proclamation). Activities within the PMNM are subject to permit
 50 approval by the Monument Co-Trustees which include: NOAA National Ocean Service, USFWS
 51 Hawaiian and Pacific Islands National Wildlife Refuge Complex, and State of Hawai'i
 52 Department of Land and Natural Resources. All Federal permits including PMNM permits are
 53 subject to National Environmental Policy Act (NEPA) compliance. Proposed activities that
 54 impact State jurisdiction may also be subject to State of Hawaii, Hawaii Revised Statutes 343
 55 environmental review. The Proposed Action would be conducted in federal waters both in and
 56 around the Monument.

57 According to NAO 216-6, the purpose for a Supplemental Environmental Assessment (SEA) is
 58 to determine whether significant environmental impacts could result from a Proposed Action.
 59 An SEA is appropriate where environmental impacts from the Proposed Action are expected,
 60 but it is uncertain that those impacts would be significant. Specific factors that the PMNM
 61 believe are relevant include the potential effects of the proposed research on unique
 62 characteristics of this geographic region. For a comprehensive description of the background of
 63 the Proposed Action, inclusive of all previously analyzed activities, refer to the Environmental
 64 Assessment for Papahānaumokuākea Marine National Monument dated October 2014.

65 All previously permitted research activities, co-led by Dr. Baco-Taylor and Dr. Brendan Roark
 66 were analyzed in the October 2014 Environmental Assessment for Papahānaumokuākea
 67 Marine National Monument, which is incorporated in this document by reference. Deployment
 68 of additional instruments using a lander to secure for a period of one year and the use of the
 69 R/V *Kilo Moana* as the support vessel on which research activities would be conducted in the
 70 Monument is analyzed further in this SEA.

Figure 1-1 Map of Papahānaumokuākea Marine National Monument, Hawai'i



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2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVE

2.1 Introduction

This document provides analyses and supporting documentation for the agency to determine whether a Finding of No Significant Impact is warranted. To make this determination, two alternatives are being considered: (1) not issuing a new PMNM permit and permit amendment to conduct proposed research activities (no action alternative) or (2) issuing a new PMNM permit and permit amendment to conduct research activities using a lander in deeper depths for a year to better understand the effect of trawling within PMNM (Proposed Action – preferred alternative). This chapter presents a discussion of the Proposed Action, No Action Alternative, and a summary of environmental effects. The Proposed Action and the No Action Alternative are analyzed in terms of how well they meet the purpose and need of the project, as described in Chapter 1.

The PMNM permit process considers a range of conditions and ways to mitigate effects (e.g., timing, location, methods, and materials) and, where warranted, special terms and conditions are placed on PMNM permits, prior to issuance to ensure protection of natural and cultural resources within PMNM. Special terms and conditions inherently evaluated in this document under the Proposed Action are discussed throughout and include, but are not limited to, actions that would mitigate potential impacts to endangered species and the environment during vessel and research operations.

2.2 Description of Proposed Action and Alternative

Proposed Action

NOAA's Office of National Marine Sanctuaries (ONMS) proposes to issue one research permit amendment to PMNM-2014-028, to extend the depths at which surveys would be conducted to 200 – 700 m and deploy additional instruments attached to a lander, within a depth range of 300 – 700 m, which would stay in place at the deployment site and be recovered one year later (in 2016); and one conservation and management permit to the University of Hawaii Marine Center (UHMC) for operation of the Research Vessel *Kilo Moana* to allow vessel support operations for the aforementioned research activities within PMNM. Objectives of the research activities that would be authorized by the Proposed Action include underwater surveys and vessel support operations onboard R/V *Kilo Moana*, including multibeam mapping and water sampling. All activities, including multibeam mapping and water sampling activities were previously analyzed in an Environmental Assessment for Papahānaumokuākea Marine National Monument dated October 2014 and therefore are not further analyzed in this document.

R/V *Kilo Moana*

The UHMC operates the R/V *Kilo Moana*, a 186 ft small waterplane area twin hull (SWATH) oceanographic research vessel owned by the U.S. Navy. It can accommodate up to 28 scientists and technicians and 20 crewmembers. The ship was designed as a multi-purpose oceanographic research vessel with extensive equipment for geophysical (2 multibeam ecosounders, subbottom profiler, gravimeter and magnetometer), physical oceanographic (Doppler current profilers, CTDs, pCO₂); meteorological and radioisotope research. The ship is equipped with eight different laboratories and over 4,000 sq. ft. of exterior working space. It also has an incinerator for burning trash, but would not use the incinerator while

44 operating within PMNM boundaries. This requirement would be a condition of the proposed
45 PMNM permits. The ship has a dedicated series of saltwater ballast tanks along with an IMO
46 approved ballast water treatment system, but no de-ballasting operations would take place
47 within PMNM boundaries.

48
49 Vessel anchoring has the potential to impact the ecosystem depending on several factors,
50 such as size of the ship or vessel, anchor system, weather conditions, and the location and
51 vicinity of the anchorage relative to sensitive ecosystems (e.g. coral reefs). Anchors and
52 chains can destroy coral and live rock affecting fishes, other benthic organisms and their
53 habitat. The R/V *Kilo Moana* would only anchor in emergency situations and efforts would
54 be made to drop anchor in areas that are free of coral. While there is no intention on the
55 part of the permit applicants to anchor the R/V *Kilo Moana* and its small vessels, the
56 restrictions on anchoring within PMNM would be a condition of the proposed PMNM permits.

57 The R/V *Kilo Moana* would be required to obtain a hull and rat inspection prior to entering
58 the Monument and certificates of completion must be provided to the PMNM permit
59 coordinator, as conditions in each PMNM issued permit.

60 The Marine Sanitation Device (MSD) aboard R/V *Kilo Moana* is an Orca II, Type II MSD.
61 Solids are filtered and eliminated through a biological process within the sewage treatment
62 tank and solids separation via the MSD. The sewage holding tank aboard R/V *Kilo Moana*
63 is 1,800 gallons and is generally pumped once a day. All sewage would be treated and the
64 grey water retained until at a minimum of 3 nm from all PMNM Special Preservation Area
65 (SPA) boundaries. As a result of the sewage treatment system and the ship's routine
66 maintenance schedule, potential for accidental spills and or discharge would be minimized.

67 The ship's fuel capacity is ~130,000 gallons with a range of 50 days at sea. The ship uses
68 low sulfur diesel as required to meet Environmental Protection Agency Tier II emissions of
69 the diesel generator engines. The ship has six (6) fuel storage tanks and two (2) day tanks
70 onboard, for the emergency generator and the incinerator. The largest storage tank is
71 23,015 gallons and the smallest is 4,019 gallons and the other tanks range between those
72 two extremes. The ship is constructed with a double bottom so none of the fuel (or any
73 polluting liquids) are next to the skin of the ship. The ship's fuel storage system is designed
74 to minimize potential for discharge.

75 The ship would carry up to 3,421 gallons of lubrication oil via two separate storage tanks for
76 engines and Z-drives as they use different grade oils). Hydraulic fluid would be kept in
77 drums within the spaces where the hydraulic power unit is located. These oils and fluids are
78 kept in the designated holding tanks located in the engine room. There are no lube oil
79 changes scheduled during the project period therefore R/V *Kilo Moana* would generate less
80 than one gallon of oil per day. Used oil is stored in a designated labeled drum until return to
81 port. Excess oils from maintenance and repairs are cleaned up with cloth rags and/or oil
82 absorbent pads, which would be or stored and disposed of ashore.

83 Although an oil spill at sea is unlikely, the crew would address the spill in accordance with
84 the U.S. Coast Guard (USCG) Non Tank Vessel Response Plan, USCG #47001 and
85 Shipboard Oil Pollution Emergency Plan. In the case of a hazardous material spill, the crew
86 would follow procedures described in the Safety Management System Manual.

87 R/V *Kilo Moana* is equipped with a Conductivity, Temperature, Depth (CTD) rosette and
88 current meter with the same specifications as was analyzed in the an EA for PMNM dated
89 October 2014 and therefore is not further discussed in this document.

90 Kongsberg Multi-beam system onboard R/V *Kilo Moana*

91 R/V *Kilo Moana* is equipped with two Kongsberg multi-beam systems onboard that use
92 active sonar to map the depth and contours of the sea floor (bathymetry). The two systems
93 are the Kongsberg EM710 (for shallower depths) and Kongsberg EM122 (for deeper
94 depths), which operate at frequencies of 70-100 kilohertz (kHz) and 30 kHz, respectively,
95 and typical source levels (SL) of 229 decibels (dB) re 1 micropoise (μP), respectively.
96 These multi-beam systems are identical in capacity and functionality as those onboard the
97 R/V *Sikuliaq*, and were previously described and analyzed in the original EA for PMNM
98 completed in October 2014. As such, the multi-beam systems are not further analyzed in
99 this document.

100 Autonomous Underwater Vehicle (AUV) *Sentry*

101 The AUV *Sentry* and its proposed research use was described and analyzed in the original
102 EA completed in October 2014 and therefore is not further discussed in this document.

103 NOAA Deep-sea Coral Lander & Instrumentation

104 A NOAA deep-sea coral lander (shown in Appendix 1) would be constructed and deployed
105 near Pioneer Bank within PMNM for a period of approximately one year. The footprint of the
106 lander would be 1 meter on each of the four sides. The lander would contain CTD, oxygen,
107 chlorophyll, turbidity, current velocity and direction, a sediment trap, as well as settling plates
108 to enable larval recruitment to occur during the one year deployment. A deep marker
109 beacon would be attached to the lander to allow researchers to locate the lander upon
110 recovery. Weights and floatation devices would also be attached to the lander to ensure the
111 lander stays in place during the duration of its deployment as well as successful recovery.
112 Prior to launch, researchers would conduct photo surveys of the site with the AUV *Sentry* to
113 determine the appropriate site upon which to deploy the lander ensuring avoidance of deep
114 sea coral colonies and maximum protection of the seafloor habitat. The lander would be
115 deployed from the ship and placed on the seafloor using a weight tension release system
116 and winch. During recovery of the lander the ROV *Jason II* would be used to release the
117 lander unit from the weights allowing the unit to float to the surface. Each component of the
118 lander and attached instruments are described below.

119 *Lander & acoustic release*

120 The lander would include approximately 9 glass spheres with plastic hardhats or syntactic
121 foam used as a floatation device. The frame is constructed using aluminum piping and is
122 square shaped and 1 m in length all sides. One steel plate, identical to the AUV *Sentry*
123 ascent weight, which was previously analyzed in the EA for PMNM dated October 2014,
124 would be used and ballasted on the seafloor upon ascent and recovery of the lander.

125 The weight is composed of:

- 126
- 127 • 4x Alvin plates
 - 1x galvanized steel eyebolt with shoulder and nut: 3.25" x ½" - 13 thread

- 128 • 1x stainless steel shackle: ¼”
- 129 • 1x galvanized steel washer: ½”
- 130 • 1x wire rope lanyard: 1/8” in diameter, 12” long, galvanized steel, looped and
- 131 crimped at both ends

132 The Deep Marker Beacon Sonardyne Type 7835 is a positioning transponder that allows
133 subsea devices to be uniquely acoustically marked for up to 4.5 years. This unit passively
134 listens and can respond to defined frequencies allowing for the determination of the units
135 range and direction. The unit operates at a frequency of 35 to 55 kHz and source levels of
136 183-186 dB. The ROV *Jason II* will be used to locate the lander in 2016. This device is
137 powered by an Alkaline battery pack (7835-000-01) and the entire device is encased in
138 stainless steel and long term galvanic corrosion is minimized by incorporated zinc anodes.

139 *CTD, Oxygen, Current velocity & direction device*

140 The Seaguard II Platform with a multi-group recorder including four analog and 20 AiCaP
141 sensor inputs with 2 GB SD storage cards and a Lithium battery (7V/35Ah) would be
142 attached to the lander. The four analog sensor inputs are: (1) conductivity and temperature
143 sensor, (2) Oxygen Optode MkII IW AiCaP smart sensor, (3) Depth AiCAP smart sensor,
144 and (4) WET Labs Environmental Characterization Optics fluorometer (ECO FLNTU) would
145 be plugged directly into Seaguard II Platform housing. This instrument serves as a data
146 logger and power source for a series of smart sensors that are connect directly or by cable
147 to the Seaguard II Platform housing, of which is connected directly to the lander.

148 A deepwater DCPS 600 kHz 3D Broadband acoustic doppler current profiler sensor would
149 be part of the Seaguard II Platform. This acoustic profiler operates at a frequency of 600 kHz
150 with ping rates of up to 10 Hz. Acoustic measurements would occur every 4-6 hours with
151 short periods of pings lasting less than three minutes per occurrence. When the doppler
152 recorder is not in use, it would be in sleep mode and no noise emission would occur. The
153 entire system is encased in Titanium and stainless steel to minimize leakage and corrosion.

154 *Larval Recruiting Panels*

155 These settlement frames are composed of a frame (35 x 35 x 35 cm) made of plastic (3 cm
156 diameter) with mild steel feet (to enable welding). Each frame has nine blocks made of 3
157 different materials (plastic, carbonate (stone) and green scrubby) and each block measures
158 either 4 x 4 x 4 or 5.6 x 5.6 x 5.6 cm, secured to the frame using a nylon threaded rod and
159 nylon nuts. A block of wood slats (5 x 3 x 20 cm) is attached lengthwise onto a side of the
160 frame using a nylon rod. The different materials represent the different type of habitats
161 (e.g., carbonate rocks) or structures (plastics) that larvae may recruit to.

162 Remotely Operated Vehicle

163 No Remotely Operated Vehicles (ROV) are currently proposed for use during Phase One.
164 An ROV would be used during Phase Two of this research project and currently the ROV
165 *Jason II* is the vessel identified for use. While Phase Two has not been proposed nor
166 permitted for access to PMNM, the ROV *Jason II* is analyzed below as a part of the above
167 referenced recover efforts of the lander as well as the anticipated survey efforts that would
168 be proposed under Phase Two of this research activity.

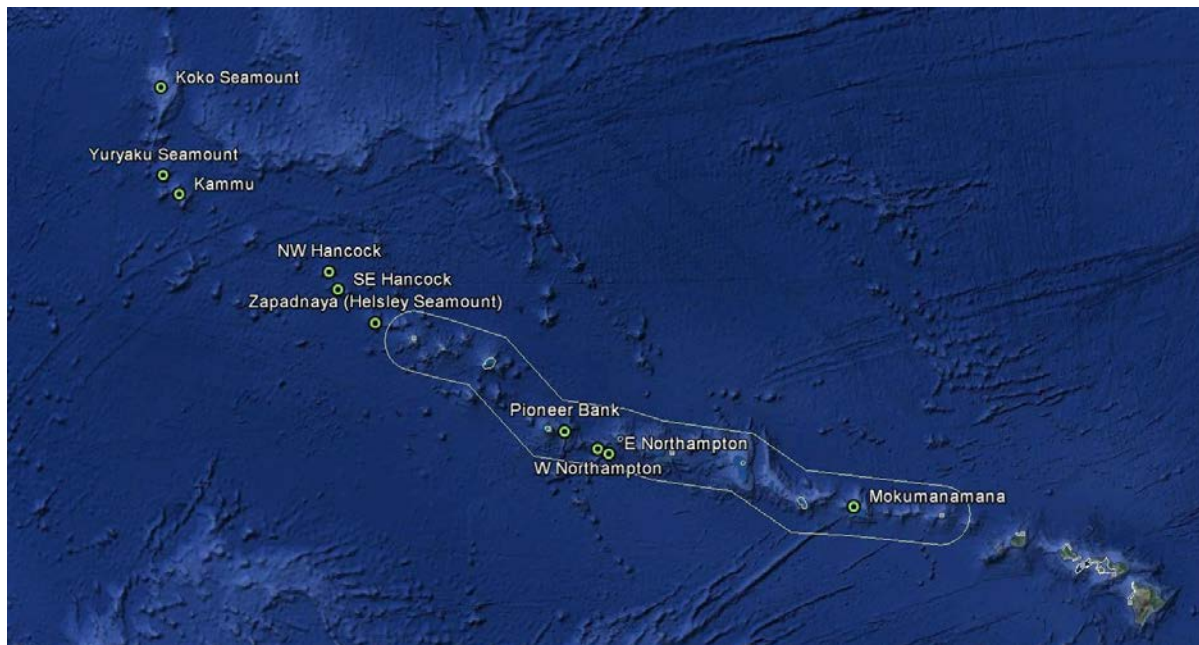
169 The ROV *Jason II* is a two-part remotely operated submersible vehicle (ROV) system that
170 can dive up to 6,500 m below the ocean's surface. The system consists of the vehicle and
171 launching garage (aka, *Medea*), a winch/A-frame unit, and the associated power and control
172 consoles. The ROV is ballasted with syntactic foam and attached lead blocks. Both types
173 of ballast are fixed to the vehicle and are not released. No liquid ballast is used. The
174 compact hydrodynamic design and neutrally buoyant tether cable allow close up inspections
175 with a high degree of maneuverability. From *Medea* a cable runs up to a winch on the ship,
176 securing the *Medea* and ROV *Jason II*. The ROV unit is controlled in real time by
177 researchers in a control room on the ship's deck. The ROV *Jason II* has a Teledyne Reson
178 SeaBat 7125 multibeam sonar that operates at a frequency range of 200 kHz – 400 kHz
179 with maximum ping rates of up to 50 Hz and beam widths measuring at -3 dB. The purpose
180 and use of the ROV *Jason II* is currently not known and therefore cannot be further analyzed
181 at this time.

182 In preparation for any research cruise, the maintenance crews would wash the ROV with
183 fresh water and Simple Green™ prior to departure and again following any maintenance
184 onboard the R/V *Kilo Moana*.

185

186 Project Locations

187 **Figure 2-1 Project Locations Map**





188
189 **Figure 2-2 Project Location Coordinates**

Feature Name	Lat N	Long E/W	*Last Year Trawled	Coral Observations
Koko Smt	35 15.0	171 35.0	Ong	ns
Yuryaku Smt	32 40.2	172 16.2	Ong	ns
Kammu	32 10.0	173 00.0	Ong	ns
NW Hancock	30 16.2	178 43.2	1986 - ong	ns
SE Hancock	29 47.4	179 04.2	1986	ns
Zapadnaya	28 54.0	-179 36.0	1977	Yes
Pioneer Bank	26 00.0	-173 26.0	Never	Yes
W Northampton	25 30.6	-172 24.6	Never	ns
E Northampton	25 22.2	-172 04.2	Never	ns
Mokumanamana	23.576	-164 70.2	Never	ns

190
191 All positions from SBN earthref.org. *NOAA Report (2008), ong = ongoing. ns = not
192 surveyed on previous explorations for precious corals in the NWHI.

Table 2-1 Vessel Specifications

Facility	Specifications	
<p>R/V <i>Kilo Moana</i></p>	<p>Built: 2002 Ownership: U.S. Navy Length (overall): 186 ft Beam (max across reamer): 88 ft Draft: 25 ft (Max) 23 in (Min) Gross Tonnage: 3,060 tons Displacement: 2,542 tons Speed: Cruising 12 knots; Full 15 knots; Minimum <1 knot Range: 50 days Fuel Capacity: 130, 000 gallons Endurance: 50 days (food and fresh water)</p>	
<p>ROV <i>Jason II</i></p>	<p>Length: 3.4 meters Width: 2.2 meters Height: 2.4 meters Life Support: Max Operating Depth: 6,500m Max Transit Speed: 1 knot (slower when sampling occurs) Descent/Ascent Rate: 30 m/min Sonar: Teledyne Reson SeaBat 7125 multibeam Sonar frequency range: 200 – 400 kHz</p>	

193 **No Action Alternative**

194 Under the No Action alternative, the activity would not occur. As a result, the permit
 195 amendment request to PMNM-2014-028 issued to Dr. Amy Baco-Taylor of the Florida State
 196 University and issuance of a separate permit for support vessel services to Mr. Ross
 197 Barnes of the University of Hawaii would be denied.

198
 199 A research or conservation and management permit denial would be based on applicants
 200 inability to meet the Findings as defined in PMNM regulations 50 CFR Part 404.11, for the
 201 Proposed Action. Per PMNM regulations, to issue a permit, an applicant must provide
 202 information to demonstrate the following: (1) the activity can be conducted with adequate
 203 safeguards for the resources and ecological integrity of the Monument; (2) the activity will be
 204 conducted in a manner compatible with the purposes of the Proclamation, considering the
 205 extent to which the conduct of the activity may diminish or enhance Monument resources,
 206 qualities, and ecological integrity, any indirect, secondary or cumulative effects of the
 207 activity, and the duration of such effects; (3) there is no practicable alternative to conducting
 208 the activity within the Monument; (4) the end value of the activity outweighs its adverse
 209 impacts on Monument resources, qualities, and ecological integrity; (5) the duration of the
 210 activity is no longer than necessary to achieve its stated purpose; (6) the applicant is
 211 qualified to conduct and complete the activity and mitigate any potential impacts resulting
 212 from its conduct; (7) the applicant has adequate financial resources available to conduct and
 213 complete the activity and mitigate any potential impacts resulting from its conduct; (8) the
 214 methods and procedures proposed by the applicant are appropriate to achieve the proposed
 215 activity's goals in relation to their impacts to Monument resources, qualities, and ecological
 216 integrity; (9) the applicant's vessel has been outfitted with a mobile transceiver unit approved

217 by NOAA's Office of Law Enforcement (OLE) and complies with the requirements of 50 CFR
218 Part 404.5; and (10) there are no other factors that would make the issuance of a permit for
219 the activity inappropriate.

220

221 Under this alternative, the activity described in this document would not be carried out within
222 PMNM. No additional scientific information would be collected and no new and potentially
223 beneficial knowledge on NWHI ecology would be gained.

3.0 AFFECTED ENVIRONMENT

3.1 Overview

This chapter describes the environmental setting and baseline conditions of the environmental resources within and adjacent to the project location. The Proposed Action has potential to impact marine biological resources, cultural resources, physical conditions (water and air quality), solid waste, marine traffic, and hazardous and regulated materials. These resource categories are described here and carried through the impact analysis presented in Chapter 4.0. Preliminary project screening indicated that the Proposed Action would not affect many of the resources typically addressed in NEPA impact documents. These resources are described here, but not carried through the impact analysis.

Terrestrial Biological Resources, Soils and Topography – There are no terrestrial or coastal components to the Proposed Action and therefore no impacts to terrestrial biological resources or impacts to soils and topography are anticipated.

Land Use – There are no terrestrial or coastal components to the Proposed Action and no impacts or conflicts involving land use are anticipated.

Noise – No impacts to ambient noise are anticipated as a result of the Proposed Action, except for minimal boat motor noise.

Visual Resources – There are no surface or land-based components to the Proposed Action that would impact the aesthetics or visual appearance of the PMNM.

Natural Hazards – The Proposed Action would not impact, induce, or intensify the natural potential for flooding, erosion, earthquake, volcanic, or hurricane activities within the PMNM.

Utilities and Other Infrastructure – The Proposed Action would not result in the construction of utilities or permanent infrastructure in the PMNM.

These resources would not be impacted by the No Action Alternative.

The following sections briefly describe the resource categories analyzed under this SEA. Complete descriptions of each of the resource categories can be found in the Environmental Assessment completed in October 2014, which is incorporated by reference.

3.2 Marine Biological Resources

PMNM encompasses an area of approximately 139,797 square miles (362,075 square kilometers), spans a distance of approximately 1,200 miles and includes islands, coral atolls, seamounts, banks, and shoals. This diverse ecosystem is home to many species of coral, fish, birds, marine mammals, and other flora and fauna, including the endangered Hawaiian monk seal, the threatened green turtle, and the endangered leatherback and hawksbill turtles. The area is also rich in history and represents a place of great cultural significance to Native Hawaiians.

R/V *Kilo Moana* would provide transportation for research teams working on permitted projects within PMNM. Researchers aboard this vessel would also have access to the AUV *Sentry* for underwater work. Vessel and AUV operations to survey the seafloor would be conducted at depths of between 200 – 700 m. The descriptions of these target islands below are summarized from the Papahānaumokuākea Marine National Monument Final Management Plan (2008), which is incorporated by reference.

The Northwestern Hawaiian Islands (NWHI)

The NWHI can be characterized as a large marine and terrestrial ecosystem exposed to a wide range of oceanographic conditions and environmental and anthropogenic stressors. The following paragraphs provide descriptions of important marine biological resources for the northern islands and atolls in the NWHI occur near the target sites of the Proposed Action.

Maro Reef (Ko'anako'a)

Maro Reef is a submerged open atoll with less than one acre of emergent land. The shallow water reef ecosystem covers nearly half a million acres and is the largest coral reef in the NWHI. It is biologically rich with 95 percent coral cover in some areas, one of the highest observed in the NWHI. Because of Maro's structural complexity, the shallow reef is poorly charted and has been largely unexplored.

Laysan Island (Kauō)

Laysan is the second largest island in the NWHI, with approximately 915 land acres. Laysan is surrounded by 100,000 acres of coral reef. The land cover of Laysan consists of vegetation and sandy dunes including a 100-acre hypersaline lake (one of only five natural lakes in Hawai'i). About two million birds nest here – boobies, frigate birds, terns, shearwaters, noddies, albatrosses – as well as the endangered Laysan duck (*Anas laysanensis*) and finch (*Telespyza cantans*).

Lisianski Island (Papa'āpoho)

Lisianski Island, the second largest NWHI atoll is over 12 miles at its widest point and includes 400 acres of land. Lisianski is a low sand and coral island approximately 20 million years old and reaches a height of 40 feet above sea level. The coral cover around the island totals 310,000 acres.

Pearl and Hermes Atoll (Holoikauaua)

69 Pearl and Hermes is a large atoll with several small islets forming 80 acres of land and
70 nearly 300,000 acres of coral reef habitat. The atoll extends over 20 miles across and 12
71 miles wide. The islets provide important dry land respites for seals, turtles, and birds in
72 need of rest, protection from predators, or nesting grounds.

73 Midway Atoll (Pihemanu)

74 Midway Atoll consists of three small sandy islets, also known as the “Midway Islands,”
75 totaling 1,540 acres and a large elliptically shaped barrier reef measuring approximately five
76 miles in diameter. The atoll is surrounded by approximately 88,500 acres of coral reef.

77 Kure Atoll (Mokupāpapa)

78 Kure Atoll is located at the northern extent of coral reef development includes nearly 200
79 acres of emergent land. The only permanent land in the atoll is crescent-shaped Green
80 Island, located near the fringing reef in the southeastern part of the lagoon. Kure contains
81 80,000 acres of coral reef habitat.

82 Banks and Seamounts

83 There are approximately 30 submerged banks throughout the NWHI. An unnamed bank is
84 located just to the east of French Frigate. To the west are South East Brooks Bank, St.
85 Rogatien Bank, and another unnamed bank. Raita Bank is just west of Gardner Pinnacles.
86 Pioneer Bank is only 22 nm from Neva Shoals. Bank areas provide extensive habitat for
87 bottomfish and a few are known to provide foraging habitat for endangered Hawaiian monk
88 seals.

89 **Coral Reefs**

90 A total of 57 stony coral species are known in the shallow waters of the NWHI, of which 17
91 endemic species account for 37 to 53 percent of the relative abundance surveyed on each
92 reef in the NWHI (Friedlander et al. 2005). Seven species of coral within the *Acropora*
93 genus have been documented in the central NWHI, despite their near absence from the
94 MHI. Despite their high latitudes, more species of coral have been reported for the NWHI
95 (52 spp.) than the MHI (48 spp.) (Friedlander et al. 2005).

96 Shallow and deep-sea coral reef habitats harbor a diversity of macro and micro algae.
97 Currently, a total of 355 algal species have been recorded from shallow water coral reef
98 habitats of the NWHI. The reefs of the NWHI are largely free of invasive species unlike in
99 the MHI.

100 **Bottomfish**

101 Prior to the establishment of PMNM, commercial bottomfishing had been conducted in the
102 NWHI for over 60 years. The fishery included 13 species of snapper and carangid and one
103 species of grouper that was commonly caught at depths between 60-350 m (NOAA, 2007).
104 With the establishment of PMNM, commercial bottomfishing was phased out and the fishery
105 closed as a result of Presidential Proclamation 8031.

106 **Seabirds**

107 Approximately 14 million birds representing 20 breeding species seasonally or permanently
108 reside in the NWHI (Naughton and Flint 2004). Birds that live at sea and migratory birds are
109 also part of the ecosystem. The NWHI contain over 95 percent of the world's black-footed
110 and Laysan albatrosses.

111 **Marine Mammals**

112 A total of 24 different species of marine mammals have been recorded by research cruises
113 within the U.S. Exclusive Economic Zone in waters surrounding the NWHI and are afforded
114 protection under the Marine Mammal Protection Act (Barlow 2003). Marine mammals
115 observed in the NWHI include whales, dolphins, and Hawaiian monk seals.

116 **Endangered Species**

117 Twenty-three species of plants and animals known to occur in the NWHI are listed under the
118 Endangered Species Act. Of those listed species that occur in the marine ecosystem, the
119 Hawaiian monk seal and the green sea turtle are discussed further as the NWHI serve as an
120 important breeding ground for these species.

121 Hawaiian Green Turtle (*Chelonia mydas*)

122 Over 90 percent of all sub-adult and adult green turtles found throughout Hawai'i originate
123 from the NWHI. Green turtle nesting sites occur at Pearl and Hermes Atoll, Lisianski Island,
124 Maro Reef, and French Frigate Shoals. French Frigate Shoals is the primary nesting site for
125 green turtles, accounting for 400 nesting sites or 90 percent of all nesting within the
126 Hawaiian Archipelago (NOAA 2006).

127 Hawaiian Monk Seal (*Monachus schauinslandi*)

128 The Hawaiian monk seal population is estimated at 1,200 individuals (Antonelis et. al 2006),
129 however models predict that the population would fall below 1,000 individuals within the next
130 five years, due to a variety of threats including predation, disease, and marine debris. The
131 great majority of the Hawaiian monk seal population lives within PMNM. Designated critical
132 habitat for this species under the ESA encompasses all beach areas, sand spits and islets,
133 including all beach crest vegetation to its deepest extent inland, lagoon waters, inner reefs,
134 and ocean waters out to a depth of 20 fathoms (36.5 m) with few exceptions.

135 **3.3 Cultural Resources**

136 **Native Hawaiian Significance**

137 The ocean serves as a central source of physical and spiritual sustenance for Native
138 Hawaiians on a daily basis. Today, Native Hawaiians continue to maintain their strong
139 cultural ties to the land and sea. This concept of interconnectedness transcends geography.
140 Native Hawaiians understand the importance of managing the islands and waters as one, as
141 they are inextricably connected to one another (Beckwith 1951; Lili'uokalani 1978).

142 **Maritime Heritage Significance**

143 Maritime activities following Western contact with the Hawaiian Islands have left behind the
144 historical and archaeological traces of a unique past. Currently, there are over 60 known
145 ship losses and/or confirmed sites among the NWHI, the earliest loss dating back to 1818.
146 This, combined with 67 known aircraft crashes, gives a total of over 120 potential maritime
147 heritage resource sites. Many of these resources reflect the distinct phases of historical
148 activities in the remote atolls (Van Tilburg 2002).

149 **3.4 Physical Conditions**

150 **Water Quality**

151 Due to their remote location and low level of human activities, the waters of the NWHI are
152 relatively pristine.

153 **Air Quality**

154 Due to their remote location and low level of human activities, the air of the NWHI is
155 relatively pristine.

156 **3.5 Solid Waste**

157 Marine pollution can be defined as the direct or indirect introduction by humans, of
158 substances or energy to the marine environment resulting in deleterious effects such as
159 hazards to the health of marine life and humans, hindrance of marine activities, and
160 impaired water quality.

161 **3.6 Marine Traffic**

162 Federal regulations (50 CFR Part 404) define specific vessel traffic reporting rules for areas
163 within PMNM, a designated Particularly Sensitive Sea Area (PSSA)
164 (http://www.papahanaumokuakea.gov/resource/ship_reporting.html). Vessels that are not
165 required by federal law to participate in vessel reporting within PMNM are encouraged to
166 report. In general, due to the area's remote location, vessel traffic is minimal throughout the
167 year.

168 **3.7 Hazardous and Regulated Materials**

169 Hazardous materials transported via vessel within PMNM must be reported via the PMNM
170 Vessel Reporting System (50 CFR Part 404) and such materials may not be left in the
171 Monument. In addition, per PMNM policies and permit condition #12, all hazardous
172 materials must be pre-approved via a valid PMNM permit and stored, used, and disposed of
173 according to applicable laws and Monument approved protocols
174 (www.papahanaumokuakea.gov/permit).

175

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1 **4.0 ENVIRONMENTAL CONSEQUENCES**

2 **4.1 Overview**

3 This chapter evaluates the potential environmental consequences to environmental
 4 resources with implementation of the Proposed Action and the No Action Alternative. Table
 5 4-1 summarizes the environmental effects of the Proposed Action and the No Action
 6 Alternative. This information is a summary of Chapter 4.0, Environmental Consequences.

Table 4-1 Summary of Anticipated Environmental Effects of the Proposed Action and No Action Alternative

Resource Category	Proposed Action	No Action Alternative
Marine Biological Resources	No significant adverse impact to marine biological resources with implementation of Best Management Practices (BMPs). If any endangered monk seals or sea turtles are observed, or enters the project area at any time, in-water work would be stopped until they leave the area.	No impact.
Cultural Resources	No significant adverse impact to cultural resources. If any indication of a culturally or historically significant site is found during project, work would be halted until the proper authorities are notified.	No impact.
Physical Conditions (Water Quality)	No significant adverse impact to water quality as steel weights, less than 1,800 lbs per year, are dropped at target locations, of which, only four of the ten target sites are located within PMNM. Target sites span in location from the southwestern most boundary of PMNM to beyond Kure Atoll (see Figure 2-1 for map of target sites).	No impact.
Physical Conditions (Air Quality)	No significant impact to air quality by adding one additional research cruise per year. Other than incidental admissions from the R/V <i>Kilo Moana</i> , no other emission would occur.	No impact.
Solid Waste	No significant adverse impact to solid waste is anticipated with the implementation of mitigations and operating practices as needed.	No impact.
Marine Traffic	No significant impact is anticipated by adding one additional research cruise per year.	No impact.

Resource Category	Proposed Action	No Action Alternative
Hazardous and Regulated Materials	No significant impact to the environment as all hazardous and regulated materials would be sealed and contained onboard the R/V <i>Kilo Moana</i> and properly disposed of on land.	No impact

7

8 **4.2 Proposed Action**

9 **Marine Biological Resources**

10 The October 2014 EA describes the environmental consequences likely to occur as a result
 11 of the activities described therein and therefore is not further discussed in this SEA. Under
 12 this Proposed Action, during the deployment of the lander with additional instrumentation
 13 attached, operators would implement operational practices to minimize any potential to
 14 adversely impact the environment or marine biological resources. Implementation of these
 15 operational practices would be an explicit condition of the permit and permit amendment
 16 considered in this Proposed Action.

17 Deepwater Corals

18 The lander would descend and be weighted to the seafloor and stay in place for a period of
 19 one year prior to recovery. During recovery, the lander would drop one set of steel plates,
 20 identical to those used by the AUV *Sentry* (all AUV *Sentry* weights have been previously
 21 described and analyzed for impacts in the Environmental Assessment dated October 2014).
 22 To avoid deepwater corals during deployment and recovery of the lander, to the extent
 23 possible, operators would select a drop site where corals are not present. R/V *Kilo Moana*
 24 would not drop anchor within PMNM, except in emergency situations. If an emergency
 25 occurs, efforts would be made to drop anchor in areas of sandy substrate.

26 Acoustic Impacts on Biological Resources

27 The following devices would transmit sound underwater however are not likely to affect fish,
 28 cetaceans, and marine mammals underwater because the sound frequency at which they
 29 transmit underwater noise (i.e., the sound frequency levels are typically above what most
 30 fish and whales can hear) and the small number of sound emissions that would occur as a
 31 result of the proposed action.

32 The Type 7835 Deep Mark Transponder operates at a frequency band ranging from 35 –
 33 55kHz with source levels of 183 – 186dB. The acoustic release Teledyne 866 A operates at
 34 a frequency band of 7 – 15kHz and its source level is 192dB. While there is a potential for
 35 fish, cetaceans (not including porpoises) and marine mammals to hear frequencies below 10
 36 kHz, a range in which the acoustic release may operate, the frequency at which the pings
 37 are emitted are beyond the range of these marine species and therefore are not likely to
 38 have adverse effects on marine biological resources.

39 The Seaguard II Platform operates at 600 kHz with a range up to 100 m. As further
 40 explained below, this profiling device operates outside of the typical hearing range of fish,

41 cetaceans and marine mammals and therefore will not have a significant impact on marine
42 biological resources.

43 The ROV *Jason II* operates within a range of 200 – 400 KhZ with maximum ping rates of up
44 to 50 Hz and beam widths measuring at -3 dB. While there is a potential for fish, cetaceans
45 (not including porpoises) and marine mammals to hear frequencies below 10 kHz, a range
46 and number of occurrences in which the acoustic release may operate and the decibel
47 levels at which the pings are emitted are beyond the range of these marine species and
48 therefore are not likely to have adverse effects on marine biological resources.

49 Most fish as well as whales cannot hear over 10kHz (Slabberkoorn et al. 2010). Porpoises
50 can hear up into the 100kHz range, but only if the sound is above 120dB (Thomson et al.
51 2006 section 6.2). Also, sounds at 10kHz or higher have a very fast attenuation radius
52 (Thomson 2006) and are therefore more localized. Low range frequencies are the most
53 damaging, which is anything at or below 500Hz, and often ambient sea noises between
54 500Hz-25kHz are due to surface wind and wave action (Hildebrand 2009), thus at those
55 frequencies marine life would be frequently exposed to those types of sounds. Studies of
56 possible acoustic sources of known beaked whale strandings concur with this finding that all
57 possible culprits are low or mid frequency (Cox et al 2006). No equipment, instrumentation
58 and other devices proposed for use under the proposed action operate at a low range
59 frequency (<500Hz). All of the studies to date show mid- and high-range frequencies at the
60 levels emitted by the ship and other deployed instruments of the type used in this research
61 typically have little effect on marine life.

62 In addition, there is no research that indicates the type of multibeam system that R/V *Kilo*
63 *Moana* operates is harmful to marine mammals. Similar, if not identical multibeam systems
64 are utilized onboard many research vessels (e.g., *Falkor*, *Sikuliaq*, *Okeanos Explorer*,
65 *Hi'ialakai*, and *Oscar Elton Sette*), all of which have recently transited to the Monument in
66 support of various research projects and activities. During each cruise on which multibeam
67 systems are powered on and operational, observers were placed onboard each vessel prior
68 to embarking for the NWHI to notify the ship captain and crew of the presence of marine
69 mammals and cetaceans and document behavior during each siting.

70 Endangered species including monk seals and sea turtles may be seen during vessel
71 operation activities within PMNM. However, before any in-water work is to commence,
72 personnel aboard R/V *Kilo Moana* would perform a visual scan of the adjacent areas to
73 locate any endangered species. If an endangered species is observed, or if any such
74 species enters the project area at any time, all in-water activities would be stopped until all
75 endangered species leave the area. Activities that would take place as a result of the
76 Proposed Action would not occur within, near, or adjacent to any known breeding or nesting
77 areas of endangered species.

78 Throughout the project and while R/V *Kilo Moana's* multibeam system is turned on, active
79 observers would be on watch for marine mammals, whales, dolphins and sea turtle
80 encounters. If species are present within 200 meters of the ship, the vessel would stop until
81 the animals depart the area but the mapping sonar would continue transmitting. The
82 observers would document cetacean encounters using observer program data sheets and
83 protocols. If the systems are shut down for any reason, such as turning off the EM 3122
84 during an extensive area of shallow water mapping, the multibeam soft start mode – a delay
85 function, starting sonar transmissions at a low output level and gradually increasing - would
86 be used to minimize any impact on cetaceans.

87 Invasive Species

88 Invasive species are often spread through ballast water that has been discharged from ships
89 as vessels transit ocean areas. In response to national concerns regarding invasive
90 species, the National Invasive Species Act of 1996 was enacted which reauthorized and
91 amended the Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990. In
92 addition, a careful washing and disinfecting regimen for the R/V *Kilo Moana* would be
93 followed to avoid the spread of invasive species. With proper attention to these guidelines,
94 the Proposed Action would not introduce or contribute to the spread of invasive species.

95 By following all established guidelines, mitigations and operating practices described here,
96 the Proposed Action would not significantly affect marine biological resources.

97 **Cultural Resources**

98 Under the Proposed Action, the actual locations of underwater work would be determined by
99 the individual research projects and occur at depths ranging from 200 – 700 m. These
100 underwater areas are not known to contain culturally or historically significant sites.
101 However, if any indication of a culturally or historically significant site is found during project
102 activities, work would stop until the proper authorities can be notified. In addition, the
103 Proposed Action is temporary in nature and would not significantly impact historic or cultural
104 resources, nor interfere with traditional Hawaiian practices.

105 **Physical Conditions**

106 Water Quality

107 Under the Proposed Action, the lander would be deployed near Pioneer Bank within PMNM
108 for a period of approximately one year. The footprint of the lander would be 1 meter on
109 each of the four sides (forming a square shape). The lander would contain CTD, oxygen,
110 chlorophyll, turbidity, current velocity and direction, a sediment trap, as well as settling plates
111 to enable larval recruitment to occur during the one year deployment. A deep marker
112 beacon would be attached to the lander to allow researchers to locate the lander for retrieval
113 purposes. Weights and floatation devices would also be attached to the lander to ensure it
114 stays in place for the duration of its deployment and support successful recovery. Upon
115 retrieval, to enable successful ascent of the lander, one dive weight (~48-64 lbs) would be
116 released and remain on the seafloor. The steel dive weight would not be recovered and
117 would slowly dissolve, adding iron to the water. The environment where the weight is likely
118 to be dropped is iron-limited (J. Wiltshire, personal communication via email, SOEST,
119 September 10, 2007). The steel weights and added nutrients would be spread over a large
120 area. Due to the low-light environment the ballast release would not cause localized
121 phytoplankton blooms.

122 Marine vessels and their related activities can affect the water quality by discharging
123 sewage or grey water effluent. Sewage discharge can contain bacteria, viruses, or medical
124 wastes that can adversely impact the direct health of humans and wildlife or affect the
125 ecosystem by increasing nutrient concentrations. Grey water is wastewater from sinks,
126 showers, laundry and galleys. It can contain a number of pollutants such as suspended
127 solids, ammonia, nitrogen, phosphates, heavy metals and detergents. The Proposed Action
128 would operate in deep water areas only away from all Special Preservation Area (SPA)
129 boundaries. As such, all sewage aboard R/V *Kilo Moana* would be treated and the grey

130 water recycled and if discharge is necessary, discharge would be well outside of any SPA
131 boundary.

132 Bilge water collects in the bottom of the ship's hull, and as a result contains fuel, oil, and
133 wastewater from engine and machine operations, including spills and leaks. Regulations for
134 the PMNM, prohibit discharging or depositing any material into PMNM that could injure any
135 resource. Exceptions were made to discharges incidental to vessel operations, such as
136 deck wash, approved marine sanitation device effluent, cooling water, and engine exhaust.

137 With these operational practices in place and regulations followed, the Proposed Action
138 would not significantly degrade the water quality within PMNM; therefore, no significant
139 impacts to water quality would occur as a result of the Proposed Action.

140 Air Quality

141 Under the Proposed Action, the emissions from R/V *Kilo Moana* diesel engine would have
142 no adverse effect on existing air quality within the PMNM. The instruments attached to the
143 lander are either alkaline or lithium battery-powered and there may be a small amount of
144 sulfur gas emitted, however, the amounts are minimal and spread throughout the expedition
145 making impacts negligible. Therefore, no significant adverse impacts to air quality would
146 occur as a result of the Proposed Action.

147 **Solid Waste**

148 Under the Proposed Action, degradable waste would be discharged at a minimum distance
149 of 12 nm from shore. Degradable waste that might float would be discharged at least 25 nm
150 from shore. All plastics would be retained on board and properly disposed of at home port.
151 Adhering to these operational restrictions, R/V *Kilo Moana* would not discharge significant
152 amounts of solid waste within PMNM.

153 Under the Proposed Action, the lander would drop between 48 – 64 lbs of one steel weight
154 upon ascent of the lander during retrieval in 2016. The steel weight would not be recovered.
155 The use of steel ballast would have less adverse impact than the traditional lead ballast
156 because it does not release lead into the environment. Individually, the steel plates are
157 relatively thin (5/8") with a high surface area which minimizes the time it takes to corrode.

158 One effort to model the corrosion of mild steel experimentally manipulated five variables
159 (salinity, sulfate, bicarbonates, pH, temperature and dissolved oxygen) whose effects are
160 interrelated (Paul, 2011). The model predicted a corrosion rate of 0.435mm/year which
161 compared very well to field measured corrosion rates of 0.471 mm/year for soft steel in
162 seawater with an average composition of 29.8-34.9 g salinity, 2.4 g/L SO_4^{2-} , and pH 8 (Paul,
163 2011). A separate study on the corrosion of materials commonly used in constructing
164 artificial reefs found a corrosion rate of 0.3625 mm/year for soft steel in seawater (Chen et
165 al., 2011) while the corrosion rate in Peruvian surface waters was 0.231 mm/year (Farro et
166 al., 2009). Thus a reasonable assumption given the lower oxygen content and temperatures
167 in the PMNM waters is that corrosion rates of the soft steel plates would be even slower.
168 Due to estimated slow corrosion rates and the size of the steel plates, all plates are
169 expected to remain on the seafloor. The weights are comprised of ordinary carbon steel,
170 which is less toxic than lead and the same type of steel used in vessels often used in
171 shallow waters as artificial reef substrate. Given the vast area the project would survey and

172 the comparatively small footprint of the dive weights, the value of the data obtained from
173 such surveys would outweigh the potential impacts.

174 A study looking at the environmental impacts of three decommissioned naval vessels used
175 as artificial reefs in Australian waters found some metal (Alluminum (Al) and Iron (Fe))
176 enrichment of the sediments in the immediate vicinity of the ships but also concluded that
177 the scuttling of the ships had no adverse environmental impacts on the sediments and that
178 the small enrichments levels are unlikely to significantly impact marine life in the foreseeable
179 future (MacLeod et al., 2004). Given these results are for large ships and that this same type
180 of ship steel is use to create numerous successful artificial reefs, a reasonable assumption
181 is that the slow corrosion of the soft steel plates would not have any adverse impact on the
182 environment within PMNM. Therefore, no significant impacts to solid waste would occur as
183 a result of the Proposed Action.

184 **Marine Traffic**

185 Under the Proposed Action, R/V *Kilo Moana* would undertake one research cruise totaling
186 50 days in 2015. The existing marine traffic is minimal and one additional research cruise
187 per year would not significantly increase traffic within PMNM; therefore, no significant
188 impacts to marine traffic would occur as a result of the Proposed Action. Other possible
189 impacts associated with marine vessels such as vessel discharge and oil spills have been
190 evaluated in Section 4.2 Physical Conditions.

191 **Hazardous and Regulated Materials**

192 In the event of an oil or toxic chemical spill, vessel crew would follow all established
193 procedures detailed in the USCG approved Shipboard Oil Pollution Emergency Plan and
194 Safety Management System Manual. With these mitigation measures in place, no
195 significant impact to resources are likely to occur as a result of the Proposed Action.

196 **4.3 No Action Alternative**

197 **Marine Biological Resources**

198 Under the No Action Alternative, the Proposed Action would not take place. The R/V *Kilo*
199 *Moana* would not enter PMNM eliminating the necessity for research to be conducted,
200 including deployment of the proposed lander. As a result, there would be no damage to
201 coral and no chance for fuel spills, vessel grounding or other vessel hazards.

202 While the No Action Alternative would eliminate negative impacts to Monument resources it
203 would also impede the ability to gather information that would lend to potential beneficial
204 impacts to the Monument as well as information that would help to improve conservation
205 and management capacity and decision making. The Proposed Action aims to address
206 recovery potential and time scales of recovery for deep-sea coral and sponge beds that
207 have been affected by trawling. Deep waters in the Monument on many of the island and
208 seamounts were affected by trawling prior to the establishment of the U.S. Exclusive
209 Economic Zone and the proposed project would provide high-resolution multibeam imagery
210 as well as photographic survey imagery. The Proposed Action would both substantially
211 increase knowledge of the deep-water communities within the Monument as well as provide
212 a better understanding of trawling impacts and recovery potential for deep-sea coral and
213 sponge communities. Ultimately, the No Action Alternative would not allow researchers and

214 Monument managers the opportunity to gain new information about deep water areas within
215 PMNM.

216 **Cultural Resources**

217 Under the No Action Alternative, the Proposed Action would not take place. The existing
218 cultural resources and Native Hawaiian uses at PMNM would not change as there would be
219 no human or vessel presence in the area; therefore, no impacts would occur as a result of
220 the No Action Alternative.

221 **Physical Conditions**

222 Water Quality

223 Under the No Action Alternative, the Proposed Action would not take place. The existing
224 conditions to water quality at PMNM would not change as no activities would be conducted
225 and no vessels would be present in the area; therefore, no impacts would occur as a result
226 of the No Action Alternative.

227 Air Quality

228 Under the No Action Alternative, the Proposed Action would not take place. *R/V Kilo Moana*
229 would not enter PMNM. The existing air quality conditions at PMNM would not change as
230 no activities would be conducted and no vessels would be present in the area; therefore, no
231 impacts would occur as a result of the No Action Alternative.

232 **Solid Waste**

233 Under the No Action Alternative, the Proposed Action would not take place. No lander,
234 ballast drop-weight or effluent would be discharged. The existing conditions at PMNM
235 would not change as no activity would be conducted in the area therefore, no impacts would
236 occur as a result of the No Action Alternative.

237 **Marine Traffic**

238 Under the No Action Alternative, the Proposed Action would not take place. *R/V Kilo Moana*
239 would not enter PMNM. The existing conditions at PMNM would not change as no activity
240 would be conducted in the area therefore, no impacts would occur as a result of the No
241 Action Alternative.

242 **Hazardous and Regulated Materials**

243 Under the No Action Alternative, the Proposed Action would not take place. *R/V Kilo Moana*
244 would not enter PMNM. As a result, no hazardous or regulated materials would enter
245 PMNM; therefore, no impacts would occur as a result of the No Action Alternative.

246 **4.4 Cumulative Impacts**

247 Cumulative impacts to environmental resources result from incremental effects of the
248 Proposed Action evaluated in conjunction with the effects of other government and private

249 past, present and reasonably foreseeable actions. Cumulative impacts can result from
250 individually minor, but collectively significant, actions taking place over a period of time.

251 Cumulative impacts were previously analyzed in the Environmental Assessment for PMNM
252 dated October 2014 and therefore are not discussed in this document. The following
253 analysis is based on the newly proposed actions (deployment of a lander with
254 instrumentation attached and expansion of the depth range from 200 – 700 m).

255 **Marine Biological Resources**

256 Originally proposed research activities have been previously discussed in the original
257 Environmental Assessment dated October 2014. Additionally proposed actions, including
258 the expansion of the target depth range to 200 – 700 m and the proposed deployment of a
259 lander with specific instrumentation to collect data over the course of one year has not been
260 previously permitted in PMNM. Ballast discharge of steel dive weights of the AUV *Sentry*
261 was permitted to be permanently dropped on the seafloor in 2014 and analyzed under this
262 original EA. Similarly, in 2007 and 2009 respectively, steel ring ballast was permitted to be
263 dropped on the seafloor to balance the ascent and descent of previously permitted ROV and
264 AUV operations in 2007 and 2009 respectively. The steel weight proposed to be left on the
265 seafloor as a result of the proposed action would be one steel plate ranging in weight from
266 48 – 64 lbs. Therefore, due to the weight and size of the steel weight under the proposed
267 action and the vast scale of the Monument, the Proposed Action would not significantly
268 impact marine biological resources.

269 In the past, roughly 17 expeditions for conservation and management and research
270 purposes are conducted in the Northwestern Hawaiian Islands each year. No significant
271 adverse marine biological impacts are anticipated as a result of the Proposed Action. In
272 addition, the proposed research locations under the Proposed Action are at a much greater
273 depth than areas targeted by other research projects occurring within the PMNM.
274 From 2009 – 2015, 24 research expeditions targeted depths within the range of 200 - 700 m
275 have occurred in PMNM. Majority of marine research activities occur at depths of <30 m.
276 Therefore, the Proposed Action would not result in cumulative impacts.

277 **Cultural Resources**

278 Locations of underwater work would occur at depths ranging from 200 – 700 m. These
279 underwater areas are not known to contain culturally or historically significant sites. In
280 addition, the Proposed Action is temporary in nature and would not significantly impact
281 historic or cultural resources, nor interfere with traditional Hawaiian practices. Therefore, no
282 cumulative impacts to cultural resources are anticipated as a result of the Proposed Action.

283 **Physical Conditions**

284 Water Quality

285 No significant impact to water quality is expected as a result of the proposed action. A
286 complete analysis can be found in the original EA dated October 2014. Capacity and
287 operation onboard the R/V *Kilo Moana* is similar to the R/V *Sikuliaq* and therefore is not
288 further analyzed here. All permit conditions and restrictions applicable to the R/V *Sikuliaq*
289 would also be applied to a permit, if issued, to the R/V *Kilo Moana*.

290 Air Quality

291 No significant impact to air quality is expected as a result of the proposed action. A
292 complete analysis can be found in the original EA dated October 2014. Capacity and
293 operation onboard the R/V *Kilo Moana* is similar to the R/V *Sikuliaq* and therefore is not
294 further analyzed here. All permit conditions and restrictions applicable to the R/V *Sikuliaq*
295 would also be applied to a permit, if issued, to the R/V *Kilo Moana*.

296 **Solid Waste**

297 There has been only one AUV operation and five submersible dives permitted within the
298 NWHI since PMNM was designated. Analysis of the AUV and submersible dive operations
299 are further analyzed in the EA dated October 2014. Given that the dives would take place at
300 different sites covering a vast area (see figure 2-1), the amount of ballast discharged is
301 negligible.

302 **Marine Traffic**

303 No significant impact to air quality is expected as a result of the proposed action. A
304 complete analysis can be found in the original EA dated October 2014. Capacity and
305 operation onboard the R/V *Kilo Moana* is similar to the R/V *Sikuliaq* and therefore is not
306 further analyzed here. All permit conditions and restrictions applicable to the R/V *Sikuliaq*
307 would also be applied to a permit, if issued, to the R/V *Kilo Moana*.

308 **Hazardous and Regulated Materials**

309 No significant impact to air quality is expected as a result of the proposed action. A
310 complete analysis can be found in the original EA dated October 2014. Capacity and
311 operation onboard the R/V *Kilo Moana* is similar to the R/V *Sikuliaq* and therefore is not
312 further analyzed here. All permit conditions and restrictions applicable to the R/V *Sikuliaq*
313 would also be applied to a permit, if issued, to the R/V *Kilo Moana*.

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5.0 ENVIRONMENTAL PERMITS, APPROVALS, AND COMPLIANCE

5.1 Permits

The University of Hawaii Marine Center submitted a conservation and management permit application to conduct vessel operations (R/V *Kilo Moana*) and the Florida State University submitted a permit amendment to previously permitted research activities within PMNM expand the depth range in which to survey the seafloor and deploy a lander near Pioneer Bank with specific instrumentation to collect samples gather data for a one year period within PMNM.

No other permits are required for these activities, as the activities contained herein would not result in incidental disturbance or take of Hawaiian monk seals or cetaceans. Separate PMNM permits would be issued to R/V *Kilo Moana* for vessel support and researchers to deploy a lander and operate the AUV *Sentry* for surveying the seafloor at identified target sites.

5.2 Other Laws and Authorities Considered

Magnuson-Stevens Fishery Conservation and Management Act

The site for the Proposed Action are comprised of soft bottom substrate. Large precious corals, such as gold, pink and black corals, are found within the target depth range of this research activity, however, are primarily found on rocky substrate such as submerged banks. Soft bottoms such as the areas targeted for deployment of the lander and its associated ballast discharge upon ascent do not have a suitable surface for the coral to attach to (NOAA, 2006; Drazen, personal communication, May 31, 2007). The bottom habitat surrounding the project drop areas are inhabited by invertebrate fauna, burrowing fish, and bottom-dwelling fish. The AUV *Sentry* would be the only vehicle to transit the deep sea ecosystem, collections would not occur and the lander would be stationary for one year and primarily consists of passive data recording instruments. On August 25, 2015 ONMS initiated informal consultation under the Magnuson-Stevens Fishery Conservation and Management Act on impacts to Essential Fish Habitat (EFH) and NMFS concurred with its conclusion that due to the limited scope of the proposed action, no adverse impacts to EFH are anticipated. Also, cumulative or synergistic impacts are not expected as a result of the Proposed Action because a vast amount of similar habitat lies within the PMNM.

Endangered Species Act

The National Marine Fisheries Service (NMFS) has determined that the Proposed Action would not adversely affect Hawaiian Monk Seals (*Monachus schauinslandi*), green sea turtles (*Chelonia mydas*), hawksbill sea turtles (*Eretmochelys imbricata*), North Pacific distinct population segment of loggerhead sea turtles (*Caretta caretta*), olive ridley sea turtles (*Lepidochelys olivacea*), leatherback sea turtles (*Dermochelys coriacea*), Main Hawaiian Islands false killer whale distinct population segment (*Pseudorca crassidens*), humpback whales (*Megaptera novaeangliae*), sperm whales (*Physeter macrocephalus*), fin whales (*Balaenoptera physalus*), blue whales (*Balaenoptera musculus*), sei whales (*Balaenoptera borealis*), and north pacific right whales (*Eubalaena japonica*). The Proposed Action would take place greater than 3nm from shore at a depth range of 200 - 700m. All precautions would be taken not to disturb Hawaiian monk seals, green sea turtles, and all cetaceans previously listed.

44 On August 18, 2015, PMNM initiated an informal consultation with NMFS Pacific Islands
45 Regional Office (PIRO) on the Proposed Action – procedures which included operation of
46 R/V *Kilo Moana*, expansion of target depth ranges to 200 – 700 m, and deployment of a
47 lander for a period of one year. In the analysis, NMFS PIRO concurred with the
48 determination by ONMS PMNM that the Proposed Action may affect, but is not likely to
49 adversely affect ESA-listed marine species or designated critical habitat. NMFS’
50 concurrence was received on August 27, 2015 and was based on the finding that the effects
51 of the Proposed Action are expected to be insignificant, discountable, or beneficial as
52 defined in the joint USFWS-NMFS Endangered Species Consultation Handbook (USFWS &
53 NMFS 1998).

54 **National Historic Preservation Act (NHPA)**

55 Under the provisions of Section 106 of the National Historic Preservation Act of 1966, the
56 Secretary of the Interior has compiled a national register of sites and buildings of significant
57 importance to America’s history. Sites in the NWHI include cultural sites on Nihoa Island
58 and Mokumanamana Island, and historic sites on Midway Atoll. The Proposed Action would
59 not cause any negative impacts to historic properties, including registered sites or buildings
60 on shore or any such submerged site, such as shipwrecks.

61 **Marine Mammal Protection Act**

62 The Marine Mammal Protection Act authorizes NMFS to take measures to protect marine
63 mammals that may involve setting aside habitat required by various life stages, although the
64 chief provision is the prohibition of “taking” marine mammals directly or indirectly. None of
65 the activities proposed herein should directly or indirectly interact with monk seals or other
66 protected marine mammals such as dolphins or whales.

67 **Executive Order 12898 on Environmental Justice**

68 Consistent with the President’s Executive Order on Environmental Justice (February 11,
69 1994) and the Department of Commerce’s Environmental Justice Strategy, the proposed
70 research activities would not have any disproportionately high and adverse human health or
71 environmental effects on minority or low income populations.

72 **Executive Order 12866**

73 Implementation of the activities herein described does not constitute a “significant regulatory
74 action” as defined by Executive Order 12866 because (1) it would not have an annual effect
75 on the economy of \$100 million or more, or adversely affect in a material way the economy,
76 a sector of the economy, productivity, competition, jobs, the environment, public health or
77 safety, or State, local, or tribal governments or communities; (2) it would not create a serious
78 inconsistency or otherwise interfere with an action taken or planned by another agency; (3) it
79 would not materially alter the budgetary impact of entitlements, grants, user fees, or loan
80 programs or the rights and obligations of recipients thereof; and (4) it would not raise novel
81 legal or policy issues arising out of legal mandates, the President’s priorities, or the
82 principles set forth in the Executive Order.

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7.0 LIST OF PREPARERS

2 **Papahānaumokuākea Marine National Monument**

3 Tia Brown

4 Permits and Policy Coordinator

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FINDING OF NO SIGNIFICANT IMPACT

The Council on Environmental Quality (CEQ) Regulations state that the determination of significance using an analysis of effects requires examination of both context and intensity, and lists ten criteria for intensity (40 CFR 1508.27). In addition, the National Oceanic and Atmospheric Administration Administrative Order (NAO) 216-6 Section 6.01b. 1 - 11 provides eleven criteria, the same ten as the CEQ Regulations and one additional, for determining whether the impacts of a proposed action are significant. Each criterion is discussed below with respect to the proposed action and considered individually as well as in combination with the others.

1. Can the proposed action reasonably be expected to cause both beneficial and adverse impacts that overall may result in a significant effect, even if the effect will be beneficial?

The beneficial impacts of the proposed amendment to research activities and support vessel operations are expected to outweigh the minimal adverse impacts associated with this action. Changes to the research activities include an expanded survey area inclusive of depth ranges from 200 – 700 m and federal waters offshore Mokumanamana; deployment of a lander with select instrumentation attached to record and store data for a period of one year (see Appendix 1 for details); and use of the R/V *Kilo Moana* as the support vessel platform for research activities. Originally proposed research analyzed in the October 2014 Environmental Assessment for Papahānaumokuākea Marine National Monument would continue to occur but is not analyzed within this document.

The research project would provide for a better understanding of the deep-sea biota within the Monument through collection and documentation of new records and new species and bathymetric habitat mapping. In addition this research would provide more insight into the impacts of trawling and the recovery potential for deep-sea coral and sponge bed communities. The research projects would utilize the AUV *Sentry* a maximum of 30 times (three dives would be conducted at 10 target sites) over the duration of one research cruise at 10 target locations, four of which are located within PMNM. Therefore 12 dives are planned to occur within the boundaries of PMNM. The AUV *Sentry* is the best available means to collect, survey, and map in deep water areas of the Monument. Thus, AUV operations play an integral role in supporting these projects which would benefit the management and subsequent resource protection of the Monument. The AUV *Sentry* is operated by well trained personnel who have knowledge of how to avoid impacts to the resources of the Monument. Therefore, there are no significant impacts expected from the operations of this AUV.

The R/V *Kilo Moana* is the transport research vessel that would carry all crew, and the AUV into the Monument. The R/V *Kilo Moana* would serve as the support vessel, field research laboratory and provide accommodations to all the researchers and respective crew for the duration of the cruise. Vessel anchoring has the potential to impact the ecosystem depending on many factors, such as the size of the ship and anchor system, weather conditions, and the location and vicinity of the anchorage relative to sensitive ecosystems. The R/V *Kilo Moana* would not drop anchor within the PMNM except in emergency situations. Even in emergency situations, efforts would be made to drop anchor in specially designated areas.

The R/V *Kilo Moana* would have completed all required inspections prior to departure for the Monument. These inspections include: hull, ballast water, tender and gear inspections, and rat

inspections. The R/V *Kilo Moana* would have its hull spot-cleaned to eliminate any invasive species, prior to departure for the Monument. The R/V *Kilo Moana* also has an approved Marine Sanitation Device (MSD) capable of treating black water, reusing treated effluent for toilet operations, and a holding tank for gray water. The R/V *Kilo Moana* would abide by all Monument discharge regulations and policies for all vessel discharge including treated MSD effluent and biodegradable solid waste associated with galley use. As a result of these precautionary measures, no significant adverse impacts are expected from vessel operations associated with this research

In summary, the Proposed Action will not result in a significant effect to the environment. Monument managers will benefit from increased knowledge (gained by the undertaking of the aforementioned research projects) about the deep water regions of the Monument; however, the benefits are not considered significant under NEPA.

2. Can the proposed action reasonably be expected to significantly affect public health or safety?

No negative impacts to public health or safety are associated with these activities, as the public will not be in the area of the activity. In addition, use of the R/V *Kilo Moana* would involve actions in which the vessels and their respective crew are routinely engaged with the inherent challenges involved (weather, deployment and retrieval of AUV, CTDs, and a current meter and data logger, etc.). The R/V *Kilo Moana*'s captain and crew would follow all prescribed University of Hawaii protocols and procedures when necessary to the health and safety of all crewmembers and passengers onboard the vessel.

3. Can the proposed action reasonably be expected to result in significant impacts to unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas?

The PMNM contains one of the healthiest coral reef ecosystems in the world. However, the proposed action is to be conducted well away from coral reef habitats; the proposed activities would be conducted in deep water (200-700 m), outside of the NWHI Hawai'i State Marine Refuge. The AUV would not land on or touch the seafloor and would, to the maximum extent possible, drop all ballast in areas of sandy substrate and away from sensitive areas known to contain deep-sea coral colonies. The lander would be deployed, to the extent possible, on a sandy bottom so as not to disturb coral reef habitat. The R/V *Kilo Moana* would anchor only in emergency situations away from sensitive locations and would comply with all Monument discharge regulations and policies.

4. Are the proposed action's effects on the quality of the human environment likely to be highly controversial?

None of the effects on the quality of the human environment are controversial. AUV and vessel operations have been ongoing in the NWHI and in other locations with no controversy or adverse impacts on the environment. The environmental assessment initially prepared for this research was posted on the Monument website (<http://papahanaumokuakea.gov/>) for public comment for fifteen days starting on October 7, 2014. No comments were received.

5. Are the proposed action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

The procedures, methods, and mitigation measures that are used in the existing research are accepted standard operating procedures in the scientific community and proven to be effective with minimal adverse impact to wildlife or individuals. Therefore, the effects of this action have a low degree of uncertainty or unknown risk.

6. Can the proposed action reasonably be expected to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?

Research, conservation and management activities similar to the ones described in this proposed action are ongoing in the PMNM. This action does not constitute a new precedent in any way. In addition, all Monument permit applications are evaluated on a case-by-case basis and all environmental considerations are taken into account at the time of each evaluation. Issuance of a Monument permit in no way constitutes a decision in principle about a future consideration.

7. Is the proposed action related to other actions that when considered together will have individually insignificant but cumulatively significant impacts?

The proposed research activities, when considered together with other actions, will not have individually insignificant but cumulatively significant impacts. All other vessels entering the PMNM require a permit and as a condition of such permit would be required to adhere to Monument regulations and policies. Therefore, no significant adverse cumulative impact is anticipated.

8. Can the proposed action reasonably be expected to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources?

The proposed action will not adversely affect areas listed in or eligible for listing in the National Register of Historic Places, or cause loss or destruction of significant scientific, cultural or historic places. Implementation of the proposed action will have no effect on archaeological, social, or cultural resources, as all research will be conducted in the deeper ocean where few, if any shipwrecks or downed planes would be found or affected.

9. Can the proposed action reasonably be expected to have a significant impact on endangered or threatened species, or their critical habitat as defined under the Endangered Species Act of 1973?

On August 18, 2015, PMNM initiated an informal consultation with NMFS Pacific Islands Regional Office (PIRO) on the proposed action – procedures which included operation of R/V *Kilo Moana*, expansion of target depth ranges to 200 – 700 m and addition of surveys in federal waters around Mokumanamana within the expanded depth range, and deployment of a lander for a period of one year. In the analysis, NMFS PIRO concurred with the determination by ONMS PMNM that the proposed action may affect, but is not likely to adversely affect ESA-listed marine species or designated critical habitat. NMFS' concurrence was received on August 27, 2015 and was based on the finding that the effects of the proposed action are expected to be insignificant, discountable, or beneficial as defined in the joint USFWS-NMFS Endangered Species Consultation Handbook (USFWS & NMFS 1998).

Although six species of cetaceans listed under the Endangered Species Act (ESA) are in the Western Pacific Ocean, no reported or observed adverse interactions with the R/V *Kilo Moana* or AUV *Sentry* have been observed or reported in the past and no future adverse interactions are anticipated. Therefore, no impact to listed species of cetaceans is expected. The same is expected for the remaining seventeen species protected under the Marine Mammal Protection Act. All research, conservation and management activities and vessel operations would temporarily cease, should the researchers encounter any endangered species, including the Hawaiian monk seal.

10. Can the proposed action reasonably be expected to threaten a violation of Federal, state, or local law or requirements imposed for environmental protection?

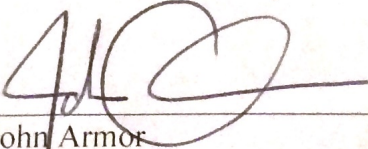
The proposed action does not threaten a violation of federal, state, or local law requirements imposed for the protection of the environment. The captain of the R/V *Kilo Moana* and FSU researchers and affiliates would operate with all necessary and required permits and approvals from Federal, state, and local agencies.

11. Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?

Mitigation measures to prevent the spread of invasive species to the PMNM, including marine algae *Hypnea musciformis* as recommended by Dr. Isabella Abbott of the University of Hawai'i Department Of Botany, will be continually implemented, making it unlikely that any invasive species would be introduced into the Monument. These measures include hull inspection and cleaning of the R/V *Kilo Moana*, disinfection of all scientific collecting equipment, and wipe down of all the subs with Simple Green™ after each dive.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting Supplemental Environmental Assessment prepared for the Proposed Action, it is hereby determined that the Proposed Action will not significantly impact the quality of the human environment as described above and in the supporting Supplemental Environmental Assessment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an environmental impact statement for this action is not necessary.



John Armor
Acting Director
Office of National Marine Sanctuaries
National Oceanic and Atmospheric Administration

9/15/2015

Date