

EcoSystems Management Associates, Inc.

Oceanographic, Geophysics and Underwater Engineering Services

21 August 2014

Statewide Geophysical Coordinator
California State Lands Commission
Mineral Resources Management Division
200 OceanGate, 12th floor
Long Beach, CA 90802-4331

Subject: Proposed Geophysical Survey Offshore San Clemente at the Wheeler North Reef

Dear Statewide Geophysical Coordinator:

Please find attached our pre-survey requirements for a geophysical survey at offshore of San Clemente at the Wheeler North Reef. This survey will include a multibeam sonar survey and a single beam echosounder survey. Equipment will include a Kongsberg EM3002 dual multibeam sonar, a single beam echosounder, a sound velocity profiler, and a DGNS positioning and attitude system. Equipment specifications for the sonar equipment are in Exhibit F.

The purpose of this survey is to inspect the condition and position of reef modules, which were originally placed in 2005 for the Wheeler North Reef. Results from this survey will be compared to the previous 2009 bathymetric survey to quantify any changes which may have occurred over time, to assess whether or not well-placed reef substrate disappears into the sediment, and to provide the necessary information for use in determining the surface material present. These objectives will be achieved by determining water depth, seabed hazards, geomorphology, and the presence of kelp using survey-grade hydrographic and geophysical survey instruments.

Enclosed in this application you will find: 1) Exhibit F (Notification of Geophysical Survey Equipment Used), 2) the Marine Wildlife Contingency Plan (which covers the MM BIO 1-9 specifications listed in Exhibit H), 3) the Oil Spill Contingency Plan (which covers the MM HAZ-1 –3 specifications listed in Exhibit H), 4) Verification of equipment service and/or maintenance and sound output, 5) Copies of certified mail sent to recipients indicated in Exhibit E, and 6) the Exhibit G Checklist.

The proposed survey will be conducted approximately 0.6-1.2 miles offshore of the City of San Clemente, in 11-15m water depths. Figure 1 shows the location of the survey area and the proposed track lines. Table 1 gives the GPS coordinates of each track line.

The target dates for the survey will be the week of September 22-26, 2014. Survey activities will only be conducted during daylight hours. EcoSystems Management Associates, Inc. (ECO-M) maintains a permit for conducting offshore geophysical surveys with the California State Lands Commission and provides pre-cruise information required by the State for

minimizing impacts to marine life. Furthermore, survey timing and location are coordinated with local government agencies and fisheries to avoid interference with recreational and commercial boating.

New amendments to Safety Zone Monitoring (Condition 7(i) and MM BIO-3) specify that the monitoring of safety zones for surveys using passive geophysical equipment and surveys where any and all active geophysical equipment is operated at frequencies ≥ 200 kHz are no longer required. During this survey, we plan to use only high frequency equipment (≥ 200 kHz, see Exhibit F). Thus, safety zone monitoring is not required. However, ECO-M staff will still implement safety measures to ensure marine mammals are not disturbed or injured during survey activities. Because safety zone monitoring is not required for this survey, and due to the small size of the ECO-M vessel (27'), we are proposing an exemption from the MWM requirement. Instead, we propose to utilize a crew member to perform these functions. Crew aboard during the survey dates will be both ECO-M crew and C&C Technology crew. Both are reputable companies with many years of experience performing sonar surveys. Despite the absence of a MWM, crew members will still implement safety measures to ensure marine mammals are not disturbed or injured during survey activities. These measures are outlined in the Marine Wildlife Contingency Plan, which all crew members will be required to read.

Sincerely,



ECOSYSTEMS MANAGEMENT ASSOCIATES, INC.

Hany Elwany, Ph.D.
President

Attachments (Electronic):

- a. Exhibit G checklist
- b. Exhibit F
- c. Marine Wildlife Contingency Plan
- d. Oil Spill Contingency Plan
- e. Verification of Equipment Service and/or Maintenance and Sound Output
- f. Copies of certified mail sent to recipients indicated in Exhibit E.

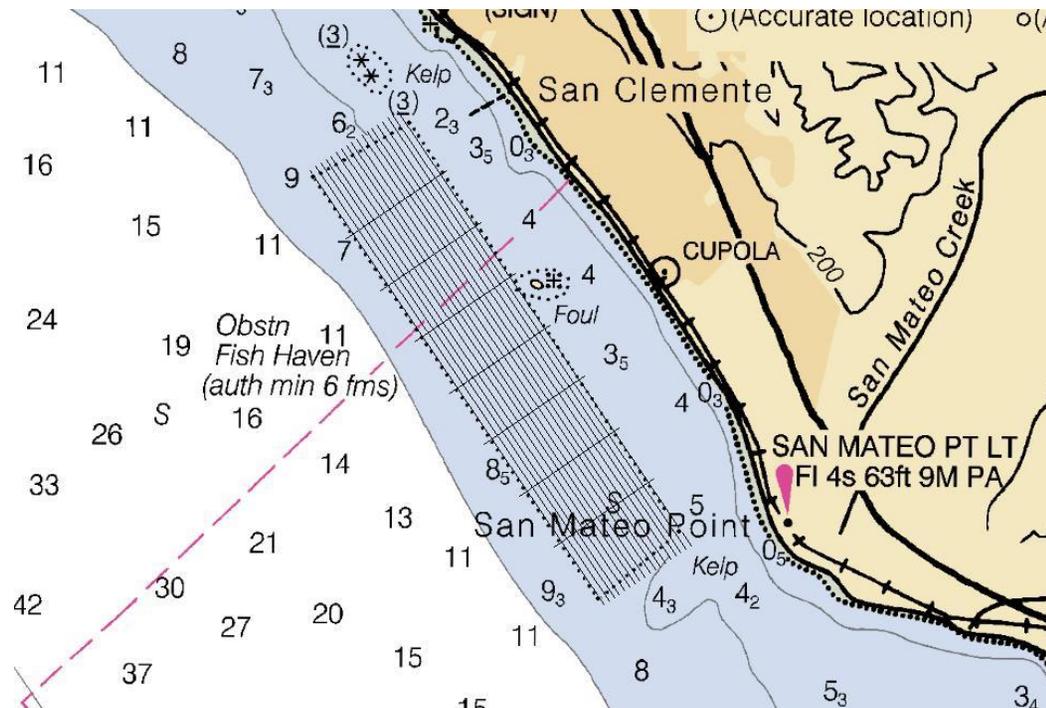


Figure 1. Map showing location of the proposed geophysical survey offshore of San Clemente at the Wheeler North Reef. Table 1 below shows the coordinates (UTM, Zone 11, meters) of the start and end point of each line.

Table 1. Line names and starting and ending points of each survey line for the Sonar Survey Offshore San Clemente at the Wheeler North Reef Survey.

Line Name	Start Point - Northing	Start Point - Easting	End Point - Northing	End Point - Easting
SCK_MB_1001	441406.7	3697806.12	443775.37	3694305.92
SCK_MB_1002	441365.29	3697778.1	443733.96	3694277.9
SCK_MB_1003	441323.88	3697750.08	443692.55	3694249.88
SCK_MB_1004	441282.47	3697722.06	443651.14	3694221.86
SCK_MB_1005	441241.06	3697694.03	443609.73	3694193.83
SCK_MB_1006	441199.65	3697666.01	443568.32	3694165.81
SCK_MB_1007	441158.24	3697637.99	443526.91	3694137.79
SCK_MB_1008	441116.83	3697609.97	443485.5	3694109.77
SCK_MB_1009	441075.42	3697581.94	443444.09	3694081.74
SCK_MB_1010	441034.01	3697553.92	443402.68	3694053.72
SCK_MB_1011	440992.6	3697525.9	443361.27	3694025.7
SCK_MB_1012	440951.19	3697497.88	443319.86	3693997.68
SCK_MB_1013	440909.78	3697469.85	443278.45	3693969.65
SCK_MB_1014	440868.38	3697441.83	443237.04	3693941.63
SCK_MB_1015	440826.97	3697413.81	443195.64	3693913.61
SCK_MB_1016	440785.56	3697385.78	443154.23	3693885.58
SCK_MB_1017	440744.15	3697357.76	443112.82	3693857.56
SCK_MB_1018	440702.74	3697329.74	443071.41	3693829.54
SCK_MB_9101	443475.26	3694838.59	442666.67	3694291.4
SCK_MB_9102	443195.03	3695252.68	442666.67	3694291.4
SCK_MB_9103	442914.81	3695666.78	442106.22	3695119.59
SCK_MB_9104	442634.58	3696080.87	441825.99	3695533.68
SCK_MB_9105	442354.35	3696494.96	441545.76	3695947.77
SCK_MB_9106	442074.13	3696909.06	441265.54	3696361.87
SCK_MB_9107	441793.9	3697323.15	440985.31	3696775.96

Coordinates are on UTM, Zone11, meters.
 Lines 1001-1018 run north to south
 Lines 9101-9107 run east to west

EXHIBIT G

California State Lands Commission Presurvey Notice Requirements for Permittees to Conduct Geophysical Survey Activities

All parts of the Presurvey Notice must be adequately filled out and submitted to the CSLC staff a minimum of twenty-one (21) calendar days prior to the proposed survey date to ensure adequate review and approval time for CSLC staff. Note that one or more of the items may require the Permittee to plan well in advance in order to obtain the necessary documentation prior to the Notice due date (e.g., permits from other State or Federal entities).

Please use the boxes below to verify that all the required documents are included in the Presurvey Notice. If “No” is checked for any item, please provide an explanation in the space provided. If additional space is needed, please attach separate pages.

Yes	No	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Geophysical Survey Permit Exhibit F
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Permit(s) or Authorization from other Federal or State agencies (if applicable) Explanation: _____ _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	21-Day Written Notice of Survey Operations to Statewide Geophysical Coordinator/
<input checked="" type="checkbox"/>	<input type="checkbox"/>	U.S. Coast Guard Local Notice to Mariners/
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Harbormaster and Dive Shop Notifications Explanation: _____ _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Marine Wildlife Contingency Plan Explanation: _____ _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Oil Spill Contingency Plan Explanation: _____ _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Notification of Geophysical Survey Equipment Used Explanation: _____ _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Verification of Equipment Service and/or Maintenance (no older than 12 months; must verify sound output) Explanation: _____
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Permit(s) or Authorization from California Department of Fish and Wildlife for surveys in or affecting Marine Protected Area(s) (if applicable) Explanation: <u>Survey area is away (~6 miles) from the nearest MPA.</u>

NOTE: CSLC staff will also require verification that current biological information was obtained and transmitted as outlined in Section 5 of this permit

EXHIBIT F

PRESURVEY NOTIFICATION FORM

Applicant/Permittee's Mailing Address _____ Date: 21 August 2014
Ecosystems Management Associates _____ Jurisdiction: Federal _____ State x Both _____
2166 Avenida de la Playa, Suite E _____ If State: Permit #PRC 8536.9
La Jolla, CA, 92037 _____ Region: Statewide
Area: _____

GEOPHYSICAL SURVEY PERMIT

Check one: x New survey _____ Time extension of a previous survey _____

ECO-M (Applicant/Permittee) will conduct a geophysical survey offshore California in the survey area outlined on the accompanying navigation chart segment. If you foresee potential interference with commercial fishing or other activities, please contact the person(s) listed below:

FEDERAL WATERS (outside 3 nautical miles)

- 1) Applicant's representative
- 2) Federal representative (e.g., Bureau of Ocean Energy Management [BOEM] or National Science Foundation [NSF])

NOTE: Any comments regarding potential conflicts in Federal waters must be received by the Applicant's Representative and lead Federal agency within ten (10) days of the receipt of this notice.

STATE WATERS (Inside 3 nautical miles)

- 1) Permittee's representative
- 2) CSLC representative

NOTE: Any comments regarding potential conflicts in State waters should be received as soon as possible by the Permittee's representative, no more than fifteen (15) days after the receipt of this notice.

1. Expected Date of Operation September 22 – 26, 2014
2. Hours of Operation 0600-1600 hrs
3. Vessel Name Farallon
4. Vessel Official Number CA Registration CF8977HJ
5. Vessel Radio Call Sign N/A – no longer required by Feds
6. Vessel Captain's Name Tim Norall
7. Vessel will monitor Radio Channel(s) 16

8. Vessel Navigation System DGPS

9. Equipment to be used Kongsberg EM 3002 dual multibeam sonar, Ross Laboratories 825B Portable Single Beam Echosounder

a. Frequency (Hz, kHz)

- Multibeam - 300 kHz
- Singlebeam - 200 kHz

b. Source level (dB re 1 μ Pa at 1 meter (m) [root mean square (rms)])

- Multibeam Sonar = 214 dB
- Singlebeam Echosounder = 230 dB (power level is 100 watts)

c. Number of beams, across track beamwidth, and along track beamwidth

- # beams – multibeam = 508; echosounder = 1
- Across track beamwidth – multibeam = Tx 1.5°; singlebeam = 2°
- Along track beamwidth – multibeam = Rx 1.5°, singlebeam = 2°

d. Pulse rate and length

- Multibeam: rate=40 Hz (25 ms); length = 150 μ sec,
- Singlebeam: rate= 10 Hz (100 ms); length = 100 μ sec

e. Rise time

- Multibeam - 0.05 ms, 165 μ sec
- Singlebeam – 0.05 ms, 165 μ sec

f. Estimated distances to the 190 dB, 180 dB, and 160 dB re 1 μ Pa (rms) isopleths

Source	Dist. To160 dB (m)	Dist. To 180 dB (m)	Dist. To190 dB (m)
Multibeam	150	36	5
Echo-Sounder	95	47	28

g. Deployment depth 1 m

h. Tow speed 3 knots

i. Approximate length of cable tow N/A – system mounted to vessel

Applicant's Representative:

Dr. Hany Elwany
President, EcoSystems Management Assoc.
2166 Avenida de la Playa, Suite E
La Jolla, CA, 92037
hany@coastalenvironments.com

California State Lands Representative

Richard B. Greenwood
Statewide Geophysical Coordinator
200 Oceangate, 12th Floor
Long Beach, CA 90802-4331
(562) 590-5201

BOEM Representative

Joan Barminski
Chief, Office of Reservoir & Production
770 Paseo Camarillo
Camarillo, CA 93010
(805) 389-7707

Other Federal Representative (if not BOEM):

ECOSYSTEMS MANAGEMENT ASSOCIATES, INC.

MARINE WILDLIFE CONTINGENCY PLAN

Submitted to

California State Lands Commission
Mineral Resources Management Division
200 OceanGate, 12th Floor
Long Beach, CA 90802-4331

by

EcoSystems Management Associates, Inc.
2166 Avenida de la Playa, Suite E
La Jolla, CA 92037

14 August 2014

TABLE OF CONTENTS

1.0 INTRODUCTION..... 1

2.0 REGULATORY BASIS 1

3.0 OPERATIONAL MEASURES FOR REDUCING IMPACTS TO MARINE MAMMALS AND TURTLES 2

 3.1 Pre-Survey Activities 2

 3.2 Marine Wildlife Monitors 3

 3.3 Operational Measures 3

4.0 COLLISION REPORTING 4

5.0 MARINE PROTECTED AREAS..... 5

6.0 REFERENCES 6

LIST OF FIGURES

Figure 1. Location of the known pinniped haul out sites and rookeries in the project vicinity7

Figure 2. Location of the Dana Point State Marine Conservation Area in relation to the survey area8

LIST OF APPENDICES

Appendix A. Marine wildlife monitor qualifications A-1

ECOSYSTEMS MANAGEMENT ASSOCIATES, INC.

MARINE WILDLIFE CONTINGENCY PLAN

1.0 INTRODUCTION

This plan is intended to serve as a guide to operations to avoid significant impacts to marine wildlife that may occur during a geophysical survey. This plan is prefaced by a brief description of the project and the regulatory basis for marine wildlife protection followed by:

- The species likely to be present during the survey and the special status species of concern;
- A proposed operational plan for the company performing the survey, EcoSystems Management Associates, Inc. (ECO-M), to exercise caution while marine wildlife is present; and
- The procedure to follow should a collision occur between the survey vessel and marine wildlife.

2.0 REGULATORY BASIS

Species that are either currently in danger or soon likely to be in danger of extinction throughout all or a portion of its range are protected by the Endangered Species Act of 1973. The United States Fish and Wildlife Service (USFWS), and the National Oceanic and Atmospheric Administration Fisheries (NOAA), National Marine Fisheries Service (NMFS) implement the Endangered Species Act. During the consultation with NMFS to issue a permit for the offshore geophysical survey, it was determined no incidental take permits are required to use the equipment and conduct the fieldwork. Regarding the consultation, the U.S. Army Corps of Engineers determined proposed activities may affect, but were not likely to adversely affect listed species (i.e., informal consultation). NMFS and USFWS have concurred with this statement.

NMFS also implements the Marine Mammal Protection Act of 1972, which protects all marine mammals within U.S. waters from intentional killing or harassment. Any accidental contact with marine wildlife during the course of the survey will be promptly reported to the NMFS Stranding Coordinator, Southwest Region, Long Beach.

The California State Lands Commission (CSLC) protects the natural environment for scenic and wildlife habitat values for the public trust. State agencies require marine mammal monitoring for any survey operations. The marine mammal population in general includes whale species, porpoises, dolphins, pinnipeds, and others. Some species are migrants that pass through central California waters on their way to calving or feeding grounds elsewhere, some are seasonal visitors that remain for weeks or months; others are resident for much or all of the year.

3.0 OPERATIONAL MEASURES FOR REDUCING IMPACTS TO MARINE MAMMALS AND TURTLES

ECO-M's project operations will utilize the following procedural techniques to limit the imposition of survey activities on any marine animals known to be within a sphere of influence.

3.1 Pre-Survey Activities

ECO-M contacted the Ocean Institute out of Dana Point on August 14th, 2014 to acquire information on the current composition and relative abundance of marine wildlife offshore. Marine mammal sightings within the past month include blue whales, a humpback whale pair, one Minke whale, fin whales, and common and bottlenose dolphins. Most of these species are found about 3-5 miles offshore, at the drop off for the continental shelf (in about 180m of water). The locations of pinniped haul-out sites in the area were also identified, using a pinniped haul-out site map supplied by Justin Greenman, Assistant Stranding Coordinator at the NOAA Long Beach office (Figure 1).

Survey activities will be conducted between 0.6 and 1.2 miles offshore in water depths not exceeding 15m. Because survey activities will be conducted out of the common depth range of most marine mammals (excluding bottlenose and common dolphins, California sea lions, and harbor seals), we do not expect to encounter many marine mammals during our survey activities.

Recent sighting information will be conveyed to the vessel operator and crew, survey party chief, and onboard Marine Wildlife Monitors (MWMs) (if present). Additionally, one day prior to survey activities, the NOAA Long Beach office and Ocean Institute will be contacted to get an update on marine wildlife sightings in the area. This information will be conveyed to the captain and crew prior to the survey.

An initial or board review of environmental responsibility of project operations will be undertaken at the beginning of each segment of the project. When new personnel will be in the crew, this training will be repeated at least for those new to the crew. They will be made aware of their individual responsibility and will be shown how to be aware of possible environmental impacts and how to mitigate them within the geophysical survey vessel's operations. Information relating to seasonality, as an indication of the types of animals that might be in our survey area, at the time of survey work will also be presented to the crew(s). A copy of this document will be provided to each member of the geophysical survey team, as well as the crew of our survey vessel.

All personnel will be expected to be consistently aware that they are to be alert to any presence of marine wildlife while they are performing their duties. There are a number of signs/indications of marine wildlife presence and each crew member will be responsible to maintain vigilance for those signs within the constraints of their project duties. Some of those indications are:

- a. Sounds - such as splashing, vocalizations (by animals and birds), and blowing (breathing).
- b. Visual indications - birds aggregating, changes in water character such as areas of rippled

water, white water caused by splashing, changes in color or shape of the ocean surface, spume, the disturbance of the normal sea view that can be caused by animals floating, rolling, diving, or leaping.

- c. Smell - on occasion marine organisms can be associated with smell from breath or defecation.
- d. Electronic observation - often the presence of schools of “bait fish” can be seen on some of the geophysical survey equipment. That presence, along with an increasing number of schools, can suggest that this area could possibly be associated with increased feeding activity of marine mammals and thereby suggest that increased awareness efforts should be undertaken. Under these circumstances, ECO-M’s personnel will be alerted to be more observant.

3.2 Marine Wildlife Monitors

Due to the new amendments made to the regulations in 2014, only one Marine Wildlife Monitor (MWM) is needed aboard during transit and data activities for surveys using active geophysical equipment operating at frequencies ≥ 200 kHz. Because passive equipment does not produce sound and frequencies ≥ 200 kHz are not audible to marine mammals, safety zones do not need to be observed. This survey will be utilizing equipment operating at 200 kHz or greater. Due to the small size of the survey vessel (27’), we are requesting an exemption of the MWM requirement. Instead, we propose to utilize a crew member to perform these functions. Crew aboard during the survey dates will be both ECO-M crew and C&C Technology crew. Both are reputable companies with many years of experience performing sonar surveys.

3.3 Operational Measures

Operational measures to reduce impacts to marine mammals or turtles will include: 1) soft-start technique, 2) acoustic safety zone radii, 3) slow vessel speeds, 4) avoidance of pinniped haul out sites, and 4) limitations on equipment usage.

Soft Start Technique

The soft-start technique will involve initiating each piece of equipment at the lowest practical sound level, increasing the output in steps not exceeding approximately 6 decibels per 5-minute period. During this time, the MWM will monitor the safety zone for marine mammal or turtle sightings.

Acoustic safety zone radius

New amendments to Safety Zone Monitoring (Condition 7(i) and MM BIO-3) specify that the monitoring of safety zones for surveys using passive geophysical equipment and surveys where any

and all active geophysical equipment is operated at frequencies ≥ 200 kHz are no longer required. During this survey, we plan to use only high frequency equipment (≥ 200 kHz, see Exhibit F). Thus, safety zone monitoring is not required. However, ECO-M staff will still implement safety measures to ensure marine mammals are not disturbed or injured during survey activities. These measures will include:

- Operational measures such as soft-start technique, slow vessel speed, and limitations on equipment usage;
- Make every effort to maintain distance from sighted marine mammals and other marine wildlife;
- Not crossing directly in front of (perpendicular to) migrating whales or any other marine mammal or turtle;
- When paralleling marine mammals or turtles, the vessel will operate at a constant speed that is not faster than that of the whales;
- Care will be taken to ensure female whales are not separated from their calves; and,
- If a whale engages in evasive or defensive action, the vessel will reduce speed or stop until the animal calms or moves out of the area.

Vessel speed

To obtain good, clean data, normal survey speeds are usually maintained between 2 and 3 knots. This speed is significantly slow in relation to transit speeds maintained by marine mammals and is only a little above the speed necessary to maintain steerage.

Limitations on equipment usage

Limitations on the frequency, pulse length, and pulse rate will be implemented to reduce potential harmful noises. For the echosounder and multibeam sonar, the highest frequency will be utilized and the shortest possible pulse length and lowest pulse rate (pings per second) will be used.

4.0 COLLISION REPORTING

In the event of a collision between the vessel and a marine mammal or reptile, the vessel operator will document the conditions under which the accident occurred. These conditions include:

- Vessel location (latitude, longitude) when the collision occurred;
- Date and time of collision;
- Speed and heading of the vessel at the time of collision;
- Observation conditions (e.g. wind speed and direction, swell height, visibility in miles or kilometers, and the presence of rain, fog) at the time of collision;
- Species of marine wildlife contacted (if known)
- Whether an observer was monitoring wildlife at the time of collision, and;
- Name of the vessel, owner/operator, and captain officer in charge of the vessel at the

time of collision.

After a collision, the vessel shall stop, but will continue with operations if it is deemed that no further damage will result to the animal by doing so. The vessel is not obliged to stand by and may proceed after confirming that it will not further damage the animal by doing so. The vessel shall then communicate by radio or telephone all details to the vessel's base of operations. From the vessel's base of operations, a telephone call shall be placed to the Stranding Coordinator, NMFS, Southwest Region, Long Beach. Alternatively, the vessel captain may contact the NMFS Stranding Coordinator directly using a cell phone.

It is unlikely that the vessel will be asked to stand by until NMFS or California Department of Fish & Game (CDFG) personnel arrive, but this shall be determined by the Stranding Coordinator. Under the Marine Mammal Protection Act, the vessel operator is not allowed to aid injured marine wildlife or recover the carcass unless requested to do so by the NMFS Stranding Coordinator.

Collisions with marine wildlife will be reported promptly to the NOAA Fisheries Stranding Coordinator. The Stranding Coordinator will then coordinate subsequent action, including enlisting the aid of marine mammal rescue organizations, if appropriate.

Although the NOAA Fisheries has primary responsibility for marine mammals in both state and federal waters, CDFG should also be advised that an incident has occurred in state waters affecting a protected species. Reports should be communicated to the federal and state agencies listed below:

FEDERAL

Justin Viezbicke
California Stranding Network Coordinator
National Marine Fisheries Service
(562) 980 3230 office
(808) 313 2803 cell
justin.viezbicke@noaa.gov

STATE

California Department of Fish & Game
Long Beach, CA 90802
(562) 590-5132

California State Lands Commission
Division of Environmental Planning and
Management
Sacramento, CA
(946)574-0748
slc.ogpp@slc.ca.gov

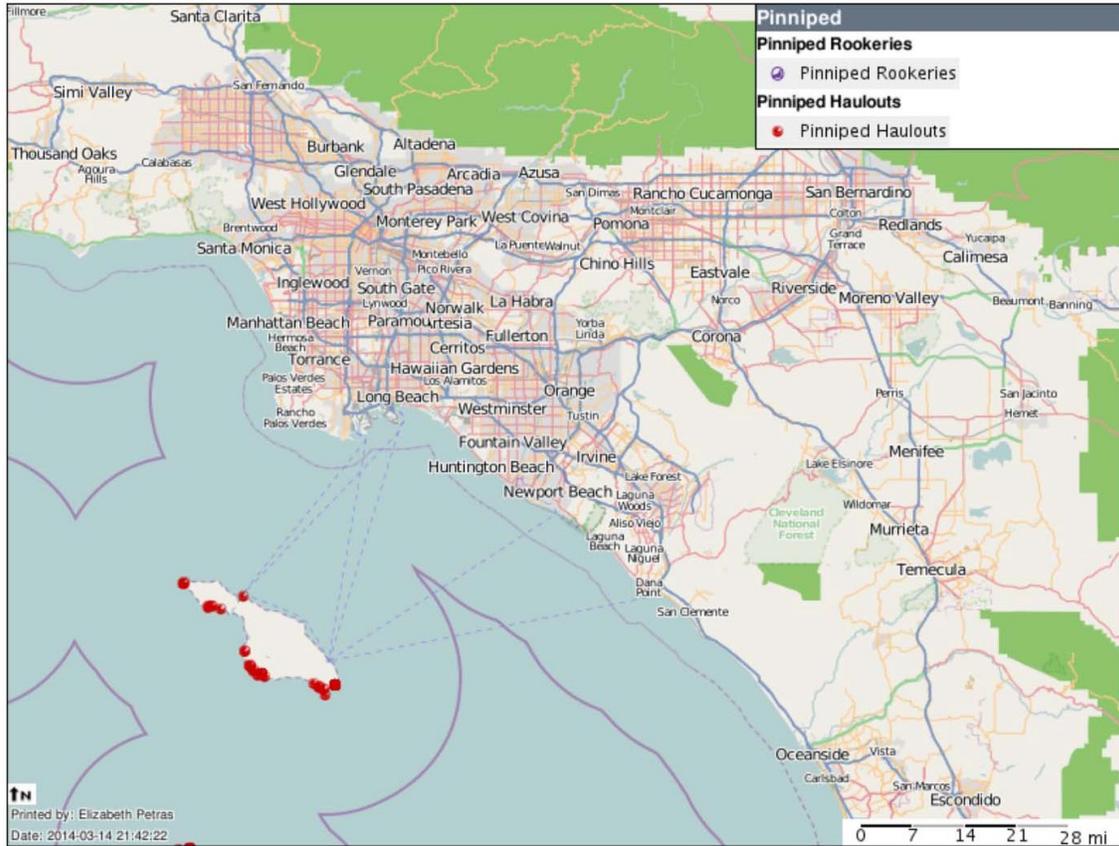
5.0 MARINE PROTECTED AREAS

The proposed survey area does not fall into a designated marine protected area (MPA). The Dana Point State Marine Conservation Area is the closest MPA, and is located approximately 6 miles north of the survey area (Figure 2).

6.0 REFERENCES

California Department of Fish and Game (CDFG). 2013. Guide to southern California marine protected areas. 120 pp.

National Oceanic and Atmospheric Administration (NOAA), 2013. Pinniped rookeries and haul-out sites, Southern California. Coastal Response Research Center.



US DOC | NOAA | NOS | NOAA Office of Response & Restoration Coastal Response Research Center ERMA Environmental Response Management Application Southwest
Email Comments: orr.erma@noaa.gov © 2007-2014 University of New Hampshire

Figure 1. Location of the known pinniped haul out sites and rookeries in the project vicinity (NOAA, 2013).

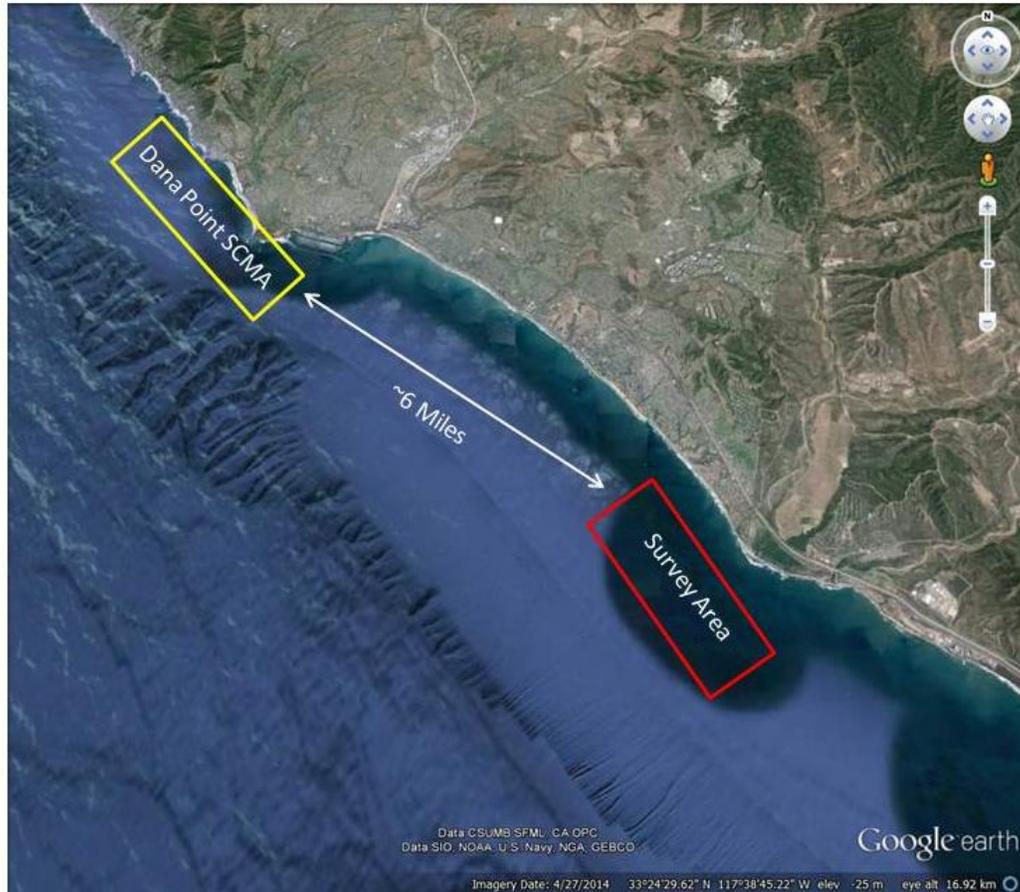


Figure 2. Location of the Dana Point State Marine Conservation Area in relation to the survey area.

APPENDIX A
MARINE WILDLIFE OBSERVER CERTIFICATIONS



Figure A-1. Marine wildlife monitor certification

JESSICA RIGGIN

Townsville, QLD, Australia

Mobile: +61 421 231 599 | Jessica.Riggin@gmail.com

SUMMARY

I am a freelance consultant for marine megafauna-related projects. My experience includes:

- Marine fauna observer for offshore multi-azimuth seismic survey (Australia)
- Marine mammal observer for coastal dredging and pile driving project (USA)
- Assistant for coastal and offshore research projects (Australia, New Zealand, USA)

I am a USA citizen with resident visas for Australia and New Zealand.

EDUCATION, CERTIFICATIONS & VACCINATIONS

- Bachelor of Science (First Class Honours), Environmental Science, Technology & Policy. California State University Monterey Bay. Graduated Cum Laude with Distinction, 2010.
- RPS Group Marine Fauna Observer Training
- New Zealand MMO Certification (scheduled with Gardline in September 2014)
- JNCC MMO Certification (scheduled with Scanning Ocean Sectors in August 2014)
- Oil & Gas UK Medical Certificate (expires 16/1/2016)
- OPITO BOSIET & HUET Certificate (expires 10/5/2016)
- Senior First Aid & CPR Certificate (expires 11/3/2017)
- Panama Seaman's Book
- Vaccinations: Diphtheria, Hepatitis A & B, Pertussis, Polio, Tetanus, Typhoid, Yellow Fever

OBSERVER EXPERIENCE

Marine Fauna Observer – RPS Group & TGS/CGG, Western Australia

January–February 2014

- Effectively implemented marine fauna mitigation under EPBC Act Australia for offshore 3D seismic survey, in coordination with lead observer (5 weeks). Protected fauna: large cetaceans, sea turtles, whale sharks.
- Recorded observer effort, survey effort, and sightings information in coordination with lead observer. Assisted with preparation of daily and weekly reports to client.

Marine Fauna Aerial Observer – James Cook University, Australia

November 2013

- Worked with team to collect data from small aircraft by spotting and identifying dugongs, cetaceans, turtles, sharks & rays, recorded data in audio format, and transcribed data.

Marine Mammal Observer – Elkhorn Slough Foundation, USA

October–December 2010

- Effectively implemented marine mammal mitigation according to protocol for dredging & pile driving project, in coordination with fellow observer. Recorded observer effort and sightings information. Protected species included southern sea otters, harbour seals, and California sea lions.

RELATED EXPERIENCE

- **Research Assistant – Burrunan Dolphin Project, Australian Marine Mammal Conservation Foundation.** May 2014. Participated in boat-based surveys by spotting and tracking dolphins, taking photographs, transcribing data. Assisted with dolphin necropsies.
- **Research Assistant – Minke Whale Project, James Cook University, Australia.** April–July 2013. Collected data from offshore live-aboard diving vessels by spotting whales, recording data, taking photographs, entering data. Wrote successful permit applications for satellite tagging project.
- **Research Assistant – Dolphin Research Australia.** January–February 2013. Spotted and tracked dolphins from land with binoculars and theodolite, recorded data.
- **Research Assistant – Sperm Whales and Tourism Project, Canterbury University, New Zealand.** June–August 2011. Spotted and tracked whales from land with binoculars and theodolite, recorded data. Collected behavioural data and fluke photographs from whale watching boats.
- **Research Assistant – Hector’s Dolphin Project, Otago University, New Zealand.** May 2011. Participated in boat-based surveys by spotting dolphins, taking photographs, recording data.
- **Naturalist/Deckhand – Dolphin Watch Ecotours, New Zealand.** February–April 2011. Searched for wildlife with binoculars, provided commentary, successfully ensured guest safety.
- **Research Assistant – New Zealand Common Dolphin Project, Massey University.** July–August 2010. Duties included driving boat, spotting dolphins, collecting habitat and abundance data, taking photographs, cleaning boat, data entry. Assisted with dolphin necropsy.
- **Research Assistant – Okeanis, USA.** September 2009–December 2010. Responsibilities included driving boat, spotting dolphins, recording data, taking photographs, data entry. Published three studies.
- **Research Assistant – Charleston Dolphin Abundance & Distribution Project, NOAA, USA.** May–August 2009. Collected behavioural data and photographs of dolphins during boat-based surveys. Entered data and photographs into database and matched photographs in catalogue.

PUBLICATIONS & PRESENTATIONS

- Riggins JL and Maldini D. 2010. Photographic case studies of skin conditions in wild-ranging bottlenose dolphin (*Tursiops truncatus*) calves. *Journal of Marine Animals and Their Ecology* 3(1): 5-9.
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- Riggins JL, Watson F, Kibak H. Bathymetric features as predictors of elephant seal rookeries. PowerPoint presentation. Capstone Festival, California State University Monterey Bay. 10 May, 2010.
- Riggins JL, Watson F, Kibak H. Bathymetric features as predictors of elephant seal rookeries. Poster presentation. Sanctuary Currents Symposium, Seaside, California. 10 April, 2010. Honourable Mention, Best Undergraduate Student Poster Award.

J. Riggins, CV 2

ECOSYSTEMS MANAGEMENT ASSOCIATES, INC.

OIL SPILL CONTINGENCY PLAN

Submitted to

California State Lands Commission
Mineral Resources Management Division
200 OceanGate, 12th Floor
Long Beach, CA 90802-4331

by

EcoSystems Management Associates, Inc.
2166 Avenida de la Playa, Suite E
La Jolla, CA 92037

14 August 2014

TABLE OF CONTENTS

1.0 INTRODUCTION..... 1

2.0 OPERATIONAL SPILLS 1

3.0 EMPLOYEE TRAINING ON OIL SPILL CONTINGENCY PLAN 2

4.0 SPILLS RESULTING FROM CASUALTIES AND VESSEL PROBLEMS..... 2

5.0 SPILLS RESULTING FROM VESSEL FUELING 3

6.0 PRIORITY ACTIONS TO ENSURE PERSONNEL AND VESSEL SAFETY..... 3

7.0 MITIGATING ACTIVITIES 3

8.0 MEASURES TO BE TAKEN IN THE EVENT OF CASUALTY 4

9.0 REPORTING AN OIL SPILL TO STATE AND FEDERAL AGENCIES 6

10.0 DIVER CHECKLIST..... 7

ECOSYSTEMS MANAGEMENT ASSOCIATES, INC.

**MANAGEMENT OF ACCIDENTAL DISCHARGE AND VESSEL PROBLEMS
DURING OFFSHORE/ONSHORE GEOPHYSICAL SURVEY**

1.0 INTRODUCTION

At the initiation of each project or project phase, a spill management review will be conducted by the vessels captain who is in all cases the responsible authority. It should be pointed out that any oil spill in United States (U.S.) marine waters shall be reported immediately (on the same day). Reporting information is stated in Section 8.0.

2.0 OPERATIONAL SPILLS

Operational spills might involve one or more of the following substances carried on board the vessel: (i) fuel; (ii) lube oil; (iii) hydraulic oil; or (iv) waste oil. The vessel is equipped with a Buffalo Quick-Response Oil Spill Kit, which includes socks for fast spill containment (three 4'' socks), woven polypropylene sheets (15 sheets) for rapid absorption of surface oil and protective gear, protective gloves (1 pair), disposal bag (1), and a set of instructions. This oil spill kit is located in the forward cabin of the vessel. This spill kit is rated to clean up 5 gallons of liquid. All of the liquids (listed below) that could cause a hazardous spill are either in the fuel tank or are located in the engine room of the vessel. Thus, if a spill occurred, these would be contained in the engine room, or if a grounding or instance occurred that punctured the gas tank, this would leak into the water, which is beyond the scope of our cleanup efforts. In the event a spill occurred in the engine room, the oil spill kit would be used to contain the hazardous liquids and the bilge would not be emptied until it could be pumped out at a hazardous waste facility. We do not anticipate a spill of greater than 5 gallons.

(i) Fuel:

A spill kit shall be available for use in the event of a spill. If the fuel is spilled on the deck, it shall be immediately removed, bagged and disposed of at an appropriate hazardous waste reception facility. In the event of spillage in the water, the vessel foreman shall notify the Coast Guard and port facility.

(ii) Lube oil:

A spill kit shall be available for use in the event of a spill. If the oil is spilled on deck or in the machinery space, it shall be immediately removed, bagged and disposed of at an appropriate hazardous waste reception facility. In the event of spillage in the water, the vessel foreman shall notify the Coast Guard and port facility.

(iii) Hydraulic oil:

A spill kit shall be available for use in the event of a spill. If the oil is spilled on deck or in the machinery space, it shall be immediately removed, bagged and disposed of at an appropriate hazardous waste reception facility. In the event of spillage in the water, the vessel foreman shall notify the Coast Guard and port facility.

(iv) Pipe leakage:

The vessel foreman shall check the piping and rubber hose daily for leakage. Where leakage is found, it shall be repaired immediately. In the event of leakage, the vessel deck engineer shall secure valve(s) at the appropriate tank before repairing the leak. Spilled fuel on the vessel shall be immediately removed, bagged and disposed of at an appropriate hazardous waste reception facility. In the event of spillage in the water, the vessel foreman shall notify the Coast Guard and port facility.

3.0 EMPLOYEE TRAINING ON OIL SPILL CONTINGENCY PLAN

Prior to the launching of the vessel for any activities, all captain and crew members on the vessel will have read the Oil Spill Contingency Plan, understand procedures to be implemented in the event of an oil spill, and know where the oil spill kit is located on the vessel.

4.0 SPILLS RESULTING FROM CASUALTIES AND VESSEL PROBLEMS

In the event of a casualty, the vessel foreman's first priority is to ensure the safety of the vessel's personnel and to initiate actions that may prevent escalation of the incident and marine pollution.

(i) Grounding:

The likelihood of grounding, although remote, could occur when the vessel is working near shore. Should an unforeseeable grounding event occur that causes a spill, the vessel foreman shall immediately report the accident to the Coast Guard and port facility. It is mandatory that the survey company immediately report the incident to the California Office of Emergency Services ("OES").

(ii) Fire or explosion:

If a fire or explosion occurs, the Coast Guard and port facility will be notified immediately by the vessel foreman. While awaiting a response from the USCG or local fireboat agencies, all crewmen shall report to the foreman for a head count. In the event that one or more crewmen are missing, the vessel foreman shall so notify the site safety officer and direct a search for the missing crew where practical. If one or more crewmen are injured, the foreman shall render first aid with the assistance of available crewmen. The foreman shall also notify the site safety officer of any injuries sustained as a result of the fire or explosion.

The crew will fight the fire with portable fire extinguishers if this can be done safely. The foreman shall determine if the fire or explosion warrants abandoning the vessel. If it is determined that the vessel is to be abandoned, the crew shall don life vests and safely enter the water or available life raft.

If there is a spill as a result of the fire or explosion, the vessel foreman shall immediately report the incident to the Coast Guard and port facility. It is mandatory that the survey company immediately report the incident to the OES.

(iii) Collision:

A collision is unlikely to cause a spill unless the vessel sinks or the fuel tank is “holed.” If it is determined that the vessel is to be abandoned, the crew shall don life vests and safely enter the water or available life raft.

If the collision causes a spill from the fuel tank, the foreman shall immediately report the incident to the site safety officer, Coast Guard, and port facility. It is mandatory that the survey company immediately report the incident to the OES.

(iv) Vessel submerged/foundered:

If the vessel is submerged or foundered to the extent that it, or parts of it, is submerged, all measures shall be taken to evacuate all persons on board. Avoid contact with any spilled oil. Alert other vessels/vessels and/or the nearest coastal state for assistance in rescuing lives and the vessel as far as possible.

5.0 SPILLS RESULTING FROM VESSEL FUELING

All vessel fueling will be conducted on land at a gas station or at an approved docking facility. No cross vessel fueling will be performed.

6.0 PRIORITY ACTIONS TO ENSURE PERSONNEL AND VESSEL SAFETY

Safety of vessel personnel and the vessel are paramount. In the event that a crewman’s injuries require outside emergency assistance, the site safety officer shall be contacted immediately and emergency personnel contacted. While awaiting emergency assistance, the survey company’s vessel personnel will render first aid and/or CPR.

7.0 MITIGATING ACTIVITIES

If safety of both the vessel and the personnel has been addressed, the vessel foreman shall care for the following issues:

- Assessment of the situation and monitoring of all activities as documented evidence.
- Care for further protection of the personnel, use of protective gear, assessment of further risk to health and safety.
- Containment of the spilled material by absorption and safe disposal within leakproof containers of all used material onboard until proper delivery ashore, with due consideration to possible fire risk.
- Decontamination of personnel after finishing the cleanup process.

All personnel shall refer to the MSDS's on board for additional information.

8.0 MEASURES TO BE TAKEN IN THE EVENT OF CASUALTY

(i) Response to collision

The vessel foreman and crew shall ensure that the following actions are taken.

- When there is no immediate danger to their own vessel and crew, rescue crew of the other vessel.
- Investigate the damaged area of the vessel and the ingress of water and take emergency measures to prevent the damage from becoming worse.
- When ingress of water is found as a result of damage investigation, take necessary measures to prevent water from coming in, or pump out the water already taken in, according to the position and amount of water taken in. Such measures include the closing of water-tight doors, inserting wooden plugs, use of collision mats, cement box, strengthening of bulkhead, and use of water discharge pumps.
- When water penetration is severe even after countermeasures are taken and there is a danger of the vessel sinking, consider intended grounding on an appropriate shore.

(ii) Response to grounding

If the vessel runs aground, the vessel foreman and crew shall muster and the following steps should be taken immediately.

- (1) Eliminate all avoidable sources of ignition and ban all smoking on board.

Further actions:

- (1) Carry out a visual inspection of the vessel to determine the severity of the situation.
- (2) Take soundings around the vessel to determine the nature and gradient of the seabed.
- (3) Check difference in the tidal ranges at the grounding site.
- (4) Evaluate tidal current in the grounding area.

Having assessed the damage that the vessel has sustained, and taking into account the effects

of hull stress and stability, the foreman should decide whether any action can be taken to avoid further spillage, such as:

- (1) Transfer of cargo and bunkers internally. If the damage is limited—for example, to one or two tanks—consideration should be given to transfer of liquid from damaged to intact tanks.
- (2) Review existing and forecasted weather conditions to see if they will adversely affect the vessel.
- (3) Evaluate the possibility of transferring cargo to barges or other vessels, and request such assistance accordingly.
- (4) Trim or lighten the vessel sufficiently to avoid damage to intact tanks, thereby avoiding additional pollution from spillage of oil or noxious liquid substance.

The foreman should obtain information about the situation, including the following.

- (1) Tides and currents
- (2) Weather, including wind, state of sea and swell.
- (3) Any weather forecast changes.
- (4) Nature of the bottom.
- (5) Depth of water around the vessel, the calculated buoyancy needed to refloat, draught, and trim after refloating.
- (6) Condition of the vessel, including stresses on the hull.

Strict safety precautions should be taken before entering any empty space, in order to avoid any risks from toxic fumes or oxygen deficiency.

Soundings should be taken around the vessel to determine the extent of the grounding/stranding as accurately as possible. If the sea is too rough for accurate sounding, it may be possible to measure the distance from the seabed to the main deck. By marking this on a longitudinal section from the general arrangement drawings, the extent of grounding can be determined.

If the vessel is structurally intact, an immediate attempt may be made to refloat her with or without assistance. In deciding whether to make an immediate attempt to refloat, the foreman should consider the use of the tugs and ground tackle as well as the possible damage that might be caused to the vessel.

Immediate refloating may be the best course to adopt even if the vessel has sustained bottom damage. However, if there are signs of excessive hogging, sagging or of undulations in the sides of the hull, more careful consideration is required before attempting to refloat the vessel. In these circumstances, lightening of the vessel may reduce the risk of further damage and pollution.

- (iii) Response to submerged/foundered

The vessel foreman and crew shall muster and ensure that the following actions are taken immediately.

- If the vessel is wrecked to the extent that it or parts of it are submerged, take all measures to evacuate all persons on board.
- Avoid contact with any spilled oil.
- Alert other vessels and/or the nearest coastal state for assistance in rescuing lives.
- All openings in hull and superstructures are to be checked for watertight integrity. Ensure that all water doors, sewage and other relevant damage control valves are closed.
- Fill bottom tanks with ballast low side first.
- Should the situation appear to be deteriorating, urgency or distress messages should be dispatched as appropriate.

The nearest hospital to our survey area is the San Pedro Urgent Care Facility, located at 1499 W. 1st St. San Pedro, California 90732. The number is: 310-241-2590.

9.0 REPORTING AN OIL SPILL TO STATE AND FEDERAL AGENCIES

Any oil spill in U.S. marine waters shall be reported immediately (on the same day) to the state and federal phone numbers below:

West Coast Oil Spill hot-line	800-OILS-911, <i>or</i>
Department of Fish and Game CalTIP	888-CFG-CALTip
(Californians Turn In Poachers & Polluters)	(888-334-2258). <i>and</i>
U.S. Coast Guard National Response Center	800-424-8802
California Office of Emergency Services (OES)	800-OILS-911 or 800-852-7550.

During the phone call, the following information will be given over the phone.

- a. Name and telephone number of caller.
- b. Where did you see the spill?
- c. What do you think was spilled (oil, gas, diesel, etc.)?
- d. Can you estimate the size of the spill?
- e. The date & time you saw this spill? (PLEASE report on the same day).
- f. Did you see any oiled or threatened wildlife?
- g. Do you have any information or thoughts about who spilled the material?
- h. What, if any, activity did you observe at the spill site?

After taking the necessary actions, the spill will be reported in writing to the Governor's Office of Emergency Services on their forms.

Additionally, California Department of Fish and Game certified wildlife rescue/response organizations will be contacted about the spill. In the Palos Verdes area, these include the following contacts:

Oiled Wildlife Care Network
1-877-UCD-OWCN

Animal Advocates
323-651-1336

California Wildlife Center
818-222-2658
All Wildlife Rescue & Education
562-434-0141

South Bay Wildlife Rehab
310-378-9921

10.0 DIVER CHECKLIST

Prerequisites:

1. Copy of dive manual shall be at work site.
2. Site safety has reviewed work plan.
3. A written pre-job brief has been approved by the manager or designee.
4. All prerequisites required in the dive manual have been met.
5. Verify that a rescue plan is in place.
6. All procedures, drawings, and work documents are available.
7. All video and communication equipment is operable.
8. All diver qualifications are active.
9. Any known hazards have been identified.
10. Verify that all hazard barriers are in place.
11. Verify that waves and tidal conditions will not impact diving operations.
12. A diving supervisor shall be present at all times while the diver is in the water.

Diver Equipment Checkout:

1. Ensure that there are two sources of breathing air available.
2. Ensure that air compressor fuel tank and oil levels are full prior to diving.
3. Ensure that breathing air compressors are not located in an area where the induction of harmful gases is possible.
4. Ensure that the Dive Supervisor inspects the diver's equipment per their daily equipment checklist.
5. Ensure that diver communication equipment checkout is performed.

Placing a Diver in the Water:

1. Notify the control room prior to commencing dive activities. Also:
 - a. Verify method of communication to be used with the control room.
 - b. Notify control room at conclusion of daily dive activities.
2. Verify that standby divers are in the immediate area and in a state of preparedness to enter the water within two minutes.
3. If SCUBA equipment is used, two divers shall be in the water.
4. Remove the diver from the water if any operational changes are encountered.

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 City, State, ZIP+4 Oceanside CA 92056

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 Street, Apt. No.; or PO Box No. 34203 PCH
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Restricted Delivery Fee (Endorsement Required)		\$0.00	
Total Postage & Fees	\$	\$3.79	



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 Street, Apt. No.; or PO Box No. Building 50-2 CG Island
 City, State, ZIP+4 Alameda, CA 94501-5100

PS Form 3800, August 2006 See Reverse for Instructions

The R/V Almar MBES patch test was conducted in the north end of Lake Washington over a known calibration site. The patch tests was processed onboard immediately after patch test acquisition using CARIS HIPS 8.1.8 Calibration Editor. Final offsets are in the table below.

R/V Almar offsets

	Latency (ms)	Pitch (°)	Roll (°)	Yaw (°)
Final offsets	0.00	-2.05	-0.06	-1.92

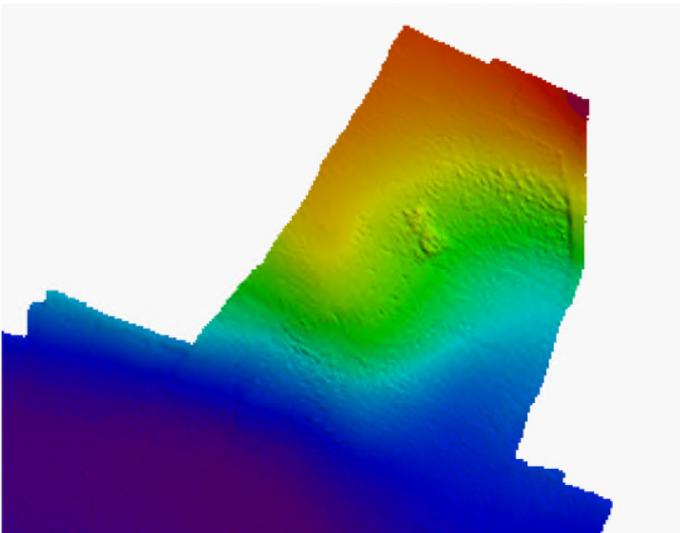


Figure 1 Pre-offset calibration site

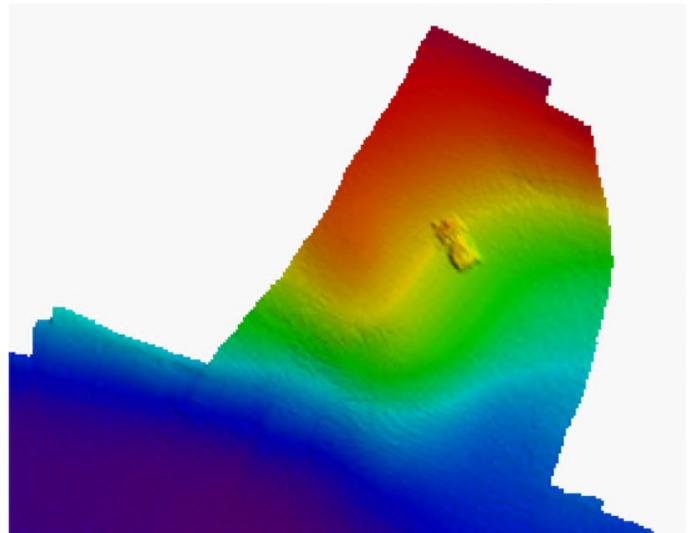


Figure 2 Post offset calibration site

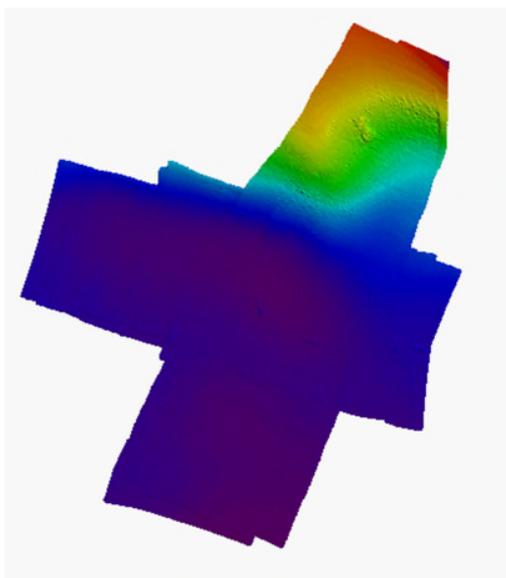


Figure 3 Pre-offset full surface

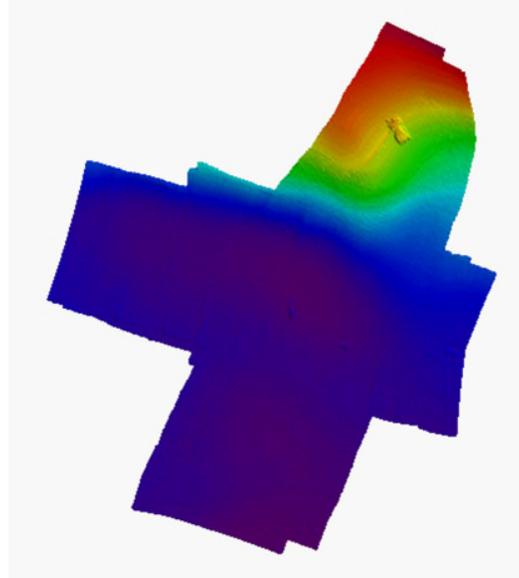


Figure 4 Post offset full surface

BIST – Built-In Self Test

The **BIST (Built-In Self Test)** options provide a number of automatic tests that may be started to check the operation of the echo sounder system.

Note

*The tests may be automatically run at echo sounder startup provided that this option is set to On from the **Tools**→**Custom**→**Set parameters**→**Startup options for the system** page.*

BIST is located on the **Installation parameters** display view.

Various test are available, and the test presented will depend on what system you have.

Parameters

- **Clear all:** Press to clear results of previous BIST tests.
- **Run all BISTs:** Press to run all available BIST tests.

Note

When the button is pressed, all BIST tests will be run, without any further questions.

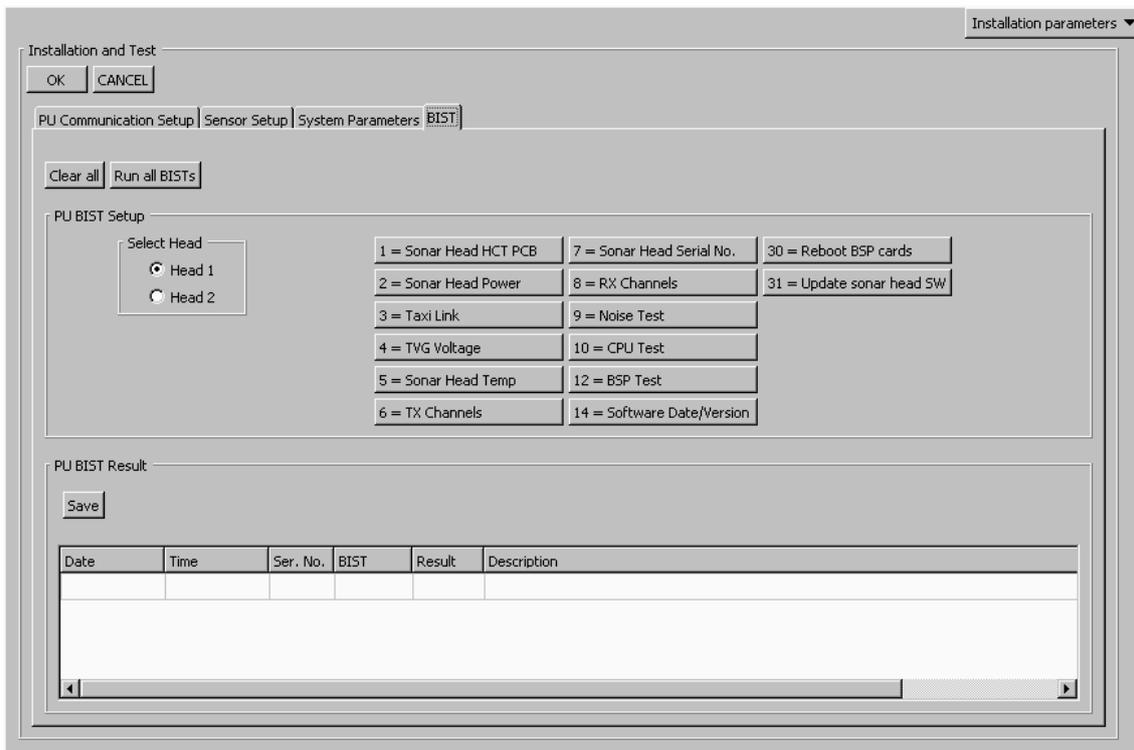
- **BIST test buttons:** Single BIST tests can be run by pressing the corresponding test buttons.

The button turns green if the test results are OK, it turns yellow if the test is not successfully carried out. The button will turn red if the test fails.

Note

When a button is pressed, the selected BIST test will be run, without any further questions.

- **Select Head / Transceiver Unit:** Select the sonar head or transceiver unit you want to run test for.
- **Save:** The results of the BIST tests may be saved to file. Press **Save** to set file name and storage location.
- **PU BIST Result area:** The results are presented in this area with the following information for each test:
 - Date: Date when the test was run.
 - Time: Time when the test was run.
 - Ser. No: Serial number of the transceiver unit.
 - BIST: The number of the BIST test that has been run.
 - Result: The overall result of the test.
 - Description: A description of the test returned from the PU (Processing Unit).

EM 3002 BIST

The following tests are available:

EM 3002 BIST

1	Sonar Head HCT PCB
2	Sonar Head Power
3	TaxiLink
4	TVG Voltage
5	Sonar Head Temp
6	TX Channels
7	Sonar Head Serial No.
8	RX Channels
9	Noise Test
12	BSP Test
14	Software Date/Version
30	Reboot BSP Cards
31	Update Sonar Head SW

For description of the tests please refer to the Instruction Manual

OK

CANCEL

PU Communication Setup | Sensor Setup | System Parameters | **BIST**

Clear all

Run all BISTs

PU BIST Setup

Select Head

 Head 1 Head 2

1 = Sonar Head HCT PCB

7 = Sonar Head Serial No.

30 = Reboot BSP cards

2 = Sonar Head Power

8 = RX Channels

31 = Update sonar head SW

3 = Taxi Link

9 = Noise Test

4 = TVG Voltage

10 = CPU Test

5 = Sonar Head Temp

12 = BSP Test

6 = TX Channels

14 = Software Date/Version

PU BIST Result

Save BIST

Date	Time	Ser. No.	BIST	Result	Description
					CPU-RXI-Slave OK : 1, 2, 3, 4, 5, 6, 7, 8, Errors: None Master-RXI-Slave OK : 1, 2, 3, 4, 5, 6, 7, 8, Errors: None Rawdata FIFO (DMA) OK Input FIFO (DMA) OK : 1, 2, 3, 4, 5, 6, 7, 8, Errors: None

Saved: 2014.09.02 17:59:08

Sounder Type: 3020, Serial no.: 450

Date	Time	Ser. No.	BIST	Result
2014.09.02	17:55:31.461	450	1	OK
EM3002 HCT test ok				
2014.09.02	17:55:31.774	450	2	OK
EM3002 DIGITAL +5V(+/- 0.25V) = 4.92V ANALOG +5V(+/- 0.25V) = 4.88V ANALOG -5V(+/- 0.25V) = -4.85V HVTP +15V(+/- 1V) = 15.02V				
2014.09.02	17:55:32.851	450	3	OK
head 1 TAXI test OK for 2048 samples				
2014.09.02	17:55:33.152	450	4	OK
EM3002 TVG test ok				
2014.09.02	17:55:33.398	450	5	OK
EM3002 TEMP = 25 deg				
2014.09.02	17:55:33.574	450	6	OK
EM3002 TX TEST = ok				
2014.09.02	17:55:53.603	450	7	OK
EM3002 HEAD NO.= 450 HRX NO.= 18119 1DE HCT NO.= 20563 3AE OFFSET 293kHz= +00.0dB OFFSET 300kHz= +00.0dB OFFSET 307kHz= +00.0dB				
2014.09.02	17:55:53.883	450	8	OK
RX CHANNEL RESPONSE TO COMMON TEST SIGNAL				

STAVE	Amp[dB]	Phase[deg]
-------	---------	------------

TEST OK

0	0.3	-10.7
1	-1.3	-12.7
2	-3.6	-13.5
3	-3.0	-3.6
4	-1.4	0.2
5	0.1	1.8
6	-0.3	0.6
7	1.1	-9.7
8	0.5	-1.7
9	0.5	-3.0
10	0.1	-2.8
11	-1.1	-1.6
12	-2.0	9.2
13	0.5	4.0
14	-0.3	1.1
15	-1.9	-2.4
16	-0.6	1.7
17	-0.4	0.3
18	-0.2	3.1
19	-0.9	1.1
20	0.1	1.7
21	-1.1	8.6
22	1.5	-4.8
23	0.4	1.2
24	0.2	4.8
25	0.6	0.8
26	0.7	0.9
27	0.4	-0.8
28	0.0	0.1
29	0.3	6.5
30	1.2	-3.7
31	0.3	-7.0
32	0.7	2.0
33	0.6	2.6
34	1.2	-4.3
35	0.7	-1.8
36	0.4	3.2
37	0.9	-4.7
38	0.9	-2.3
39	-0.2	-2.3
40	0.7	-0.9
41	-0.1	2.2
42	0.6	-4.9
43	0.2	5.6
44	0.8	-7.3
45	-0.2	9.7
46	0.8	-1.6
47	-1.3	-2.7
48	-1.2	7.8
49	0.0	1.5
50	-0.7	5.4
51	0.4	3.2
52	0.2	8.2
53	1.1	4.5
54	0.5	1.5
55	-0.4	0.9
56	1.2	1.5
57	1.7	1.7
58	0.6	1.0
59	0.3	1.8
60	1.4	-2.5
61	0.2	8.4
62	-0.1	1.0
63	0.4	-0.9

BIST_test.txt

64	2.0	-1.7
65	1.0	0.0
66	0.8	4.6
67	-0.3	2.0
68	0.8	2.7
69	1.5	2.2
70	0.2	1.5
71	-0.7	-3.9
72	0.2	0.5
73	0.5	3.9
74	-1.8	4.5
75	-1.0	1.5
76	-1.9	-0.2
77	-2.5	-5.1
78	-0.5	-7.4
79	-1.5	-17.4

AVERAGE AMPLITUDE 48.0
VALUES OUT OF RANGE MARKED WITH * 0 AMPLITUDES 0 PHASES
SAMPLE COUNT ERRORS 0
TEST OK

2014.09.02 17:55:54.145 450 9 OK
AMBIENT NOISE LEVELS in dB relative (uPa^2)/Hz
STAVE LEVEL

0	47.7
1	47.4
2	47.3
3	47.5
4	47.0
5	46.8
6	47.3
7	46.1
8	47.3
9	47.8
10	46.6
11	47.4
12	46.9
13	46.6
14	45.9
15	46.5
16	47.8
17	48.2
18	47.2
19	47.4
20	47.5
21	47.8
22	46.6
23	46.3
24	47.9
25	47.1
26	46.5
27	47.1
28	47.4
29	46.8
30	46.5
31	46.6
32	47.5
33	47.1
34	46.6
35	47.4
36	47.7
37	46.3
38	46.6

BIST_test.txt

39	46.0
40	47.8
41	47.6
42	47.2
43	47.1
44	46.7
45	47.1
46	47.4
47	46.9
48	47.3
49	47.7
50	47.8
51	47.1
52	47.1
53	46.7
54	46.0
55	46.6
56	46.9
57	47.7
58	47.2
59	47.1
60	46.6
61	46.9
62	45.0
63	45.7
64	47.1
65	47.0
66	47.0
67	46.9
68	46.7
69	46.7
70	46.5
71	46.1
72	47.9
73	47.2
74	46.1
75	46.7
76	46.8
77	46.8
78	46.4
79	46.4

AVERAGE 47.0
SAMPLE COUNT ERRORS 0
TEST OK

2014.09.02 17:55:58.395 450 10 OK
CPU Test
CPU: SBS Technologies CT7
Clock 851 MHz
CPU temp : 34 C
Board temp : 31 C
IP address : 157.237.2.61

2014.09.02 17:55:58.468 450 12 OK
BSP67 1 TEST:
Program versions :
BSP67 Master : 2.0.1 101101
BSP67 Slave : 2.0.1 101101
DMA PLD : 0.2 040317
FIFO FPGA : 1.0 040325
MASTER FPGA : 1.0 040329

BIST_test.txt

RXI FPGA : 1.0 040318
cpu to dpram to cpu ok
cpu to dpram to hpi ok
hpi to dpram to cpu ok
master dpram ok

CPU-RXI-Slave OK : 1, 2, 3, 4, 5, 6, 7, 8, Errors: None
Master-RXI-Slave OK : 1, 2, 3, 4, 5, 6, 7, 8, Errors: None
Rawdata FIFO (DMA) OK
Input FIFO (DMA) OK : 1, 2, 3, 4, 5, 6, 7, 8, Errors: None
Output FIFO (DMA) OK : 1, 2, 3, 4, 5, 6, 7, 8, Errors: None
DPRAM Synch. (DMA) OK : 1, 2, 3, 4, 5, 6, 7, 8, Errors: None

2014.09.02 17:55:59.013 450 14 OK
EM3002
HCT: 2.0.9 060126
BSP67 Master: 2.0.1 101101
BSP67 Slave: 2.0.1 101101
PU: 2.1.1 120913
Head: 450
DDS: 3.20 2011/12/09

EcoSystems Management Associates, Inc.

Oceanographic, Geophysics and Underwater Engineering Services

14 March 2014

Mr. Richard Greenwood
Statewide Geophysical Coordinator
California State Lands Commission
Mineral Resource Management Division
200 Oceangate 12th Floor
Long Beach, CA 90802-4331

Subject: Proposed Geophysical Survey Offshore Huntington Beach – AIR-1 Exemption

Dear Mr. Greenwood:

This letter is to document that the ECO-M vessel *Farallon* is exempt from the requirements of the AIR-1: Engine Tuning, Engine Certification, and Fuels requirement outlined in Exhibit H of the Non-Exclusive Geophysical Survey Permit (PRC 8536).

The *Farallon* is a gasoline-powered engine. It has a new engine as of 2011 that has a three-star rating. According to Section 93118.5: Airborne Toxic Control Measures for Commercial Harbor Craft, Subchapter 7.5: Airborne Toxic Control Measures of the California Air Resources Board, only diesel engines are required to comply with the CARB Tier 2 Certification.

Sincerely,

ECOSYSTEMS MANAGEMENT ASSOCIATES, INC.



Hany Elwany, Ph.D.
President