EXHIBIT F

PRESURVEY NOTIFICATION FORM

Applicant/Permittee's Mailing Address:
David Ball
Bureau of Ocean Energy Management
760 Paseo Camarillo, Suite 102
Camarillo, CA 93010

Date: 5/13/16
Jurisdiction: Federal ____ State ____ Both _X_
If Sate: Permit #PRC 9307
Region: II
Area: Northern Channel Islands, CA

GEOPHYSICAL SURVEY PERMIT

Check one: ___X___New survey _____ Time extension of a previous survey

Bureau of Ocean Energy Management with San Diego State University (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 June 6 to 10, 2016
2. Hours of Operation 7am to 5pm
3. Vessel Name R/V Shearwater
4. Vessel Official Number R6201, MMSI-366875820
5. Vessel Radio Call Sign WDB2424
6. Vessel Captain's Name Terrance Shin
7. Vessel will monitor Radio Channel(s) 12/16/70
8. Vessel Navigation System Coastal Explorer/Rose Point 2011

EXHIBIT F

9. Equipment to be used:

1. Klein 3000H sidescan sonar

a. Frequency (Hz, kHz) 455 kHz and 900 kHz

b. Source level (dB re 1 µPa at 1 meter (m) [root mean square (rms)]) 225 dB

c. Number of beams, across track beamwidth, and along track beamwidth 1 beam, 40 x 21 degrees

d. Pulse rate and length 8-100 ms, variable

e. Rise time 30 seconds, variable

f. Estimated distances to the 190 dB, 180 dB, and 160 dB re 1 µPa (rms) isopleths: 190 dB – 23 m, 180 db = 75 m, 160 dB – 185 m. NOTE: This instrument is operated above 200 kHz.

g. Deployment depth 2-50 m

h. Tow speed 4 kts

i. Approximate length of cable tow 50-150 m

2. Edgetech 3200, 512 Chirp sub-bottom profiler

a. Frequency (Hz, kHz) 1-16 kHz

b. Source level (dB re 1 µPa at 1 meter (m) [root mean square (rms)]) 212 dB

c. Number of beams, across track beamwidth, and along track beamwidth 1 beam, variable width depending on frequency range (16-41 degrees)

d. Pulse rate and length pulse rate 1 per second; pulse length ranges from 5-30 ms

e. Rise time NA

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

190 dB – 35 m; 180 dB – 50 m; 160 dB – 75 m

g. Deployment depth 6 m

h. Tow speed 4 kts

i. Approximate length of cable tow 50 m

EXHIBIT F

2. Edgetech 4200 sidescan sonar

   a. Frequency (Hz, kHz) 400 kHz

   b. Source level (dB re 1 µPa at 1 meter (m) [root mean square (rms)]) 196 dB

   c. Number of beams, across track beamwidth, and along track beamwidth 1 beam, along track - 0.4 degrees, across track - 50 degrees

   d. Pulse rate and length pulse rate 1 per second; pulse length up to 10 ms

   e. Rise time 30 seconds, variable

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

      190 dB – 2 m, 180 dB = 6 m, 160 dB – 40 m. NOTE: This instrument is operated above 200 kHz.

   g. Deployment depth 2-50 m

   h. Tow speed 4 kts

   i. Approximate length of cable tow 50-150 m

Applicants Representative:
Dave Ball
Bureau of Ocean Energy Management
760 Paseo Camarillo, Suite 102
Camarillo, CA 93010
805-384-6340

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

BOEM Representatives:
Joan Barminski
Regional Supervisor
Office of Strategic Resources
770 Paseo Camarillo
Camarillo, CA 93010

David Ball
Preservation Officer
760 Paseo Camarillo
Camarillo, Ca. 93010
(805) 384-6340

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	
☒	☐	Geophysical Survey Permit Exhibit F
☒	☐	Survey Location (including a full-sized navigation chart and GPS coordinates for each proposed track line and turning point): Explanation: Map on page 6, Table on page 7
☐	☒	Permit(s) or Authorization from other Federal or State agencies (if applicable) Explanation: Permit from Channel Island Marine Sanctuary acquired, but is in the mail and could not be included with this submission. An email from NOAA is included (Pages 47-52).
☒	☐	21-Day Written Notice of Survey Operations to Statewide Geophysical Coordinator/
☒	☐	U.S. Coast Guard Local Notice to Mariners/ Page 11
☒	☐	Harbormaster and Dive Shop Notifications Explanation: Pages 12-14
☒	☐	Marine Wildlife Contingency Plan Explanation: Pages 15-42
☒	☐	Oil Spill Contingency Plan Explanation: Pages 43-44
☐	☒	Verification of California Air Resources Board's Tier 2-Certified Engine Requirement Explanation: Engines compliant with MARPOL 73/78 (IMO), Annex VI NOx Limits, EPA Tier II and consume less than 790 gallons daily, meeting Santa Barbara County

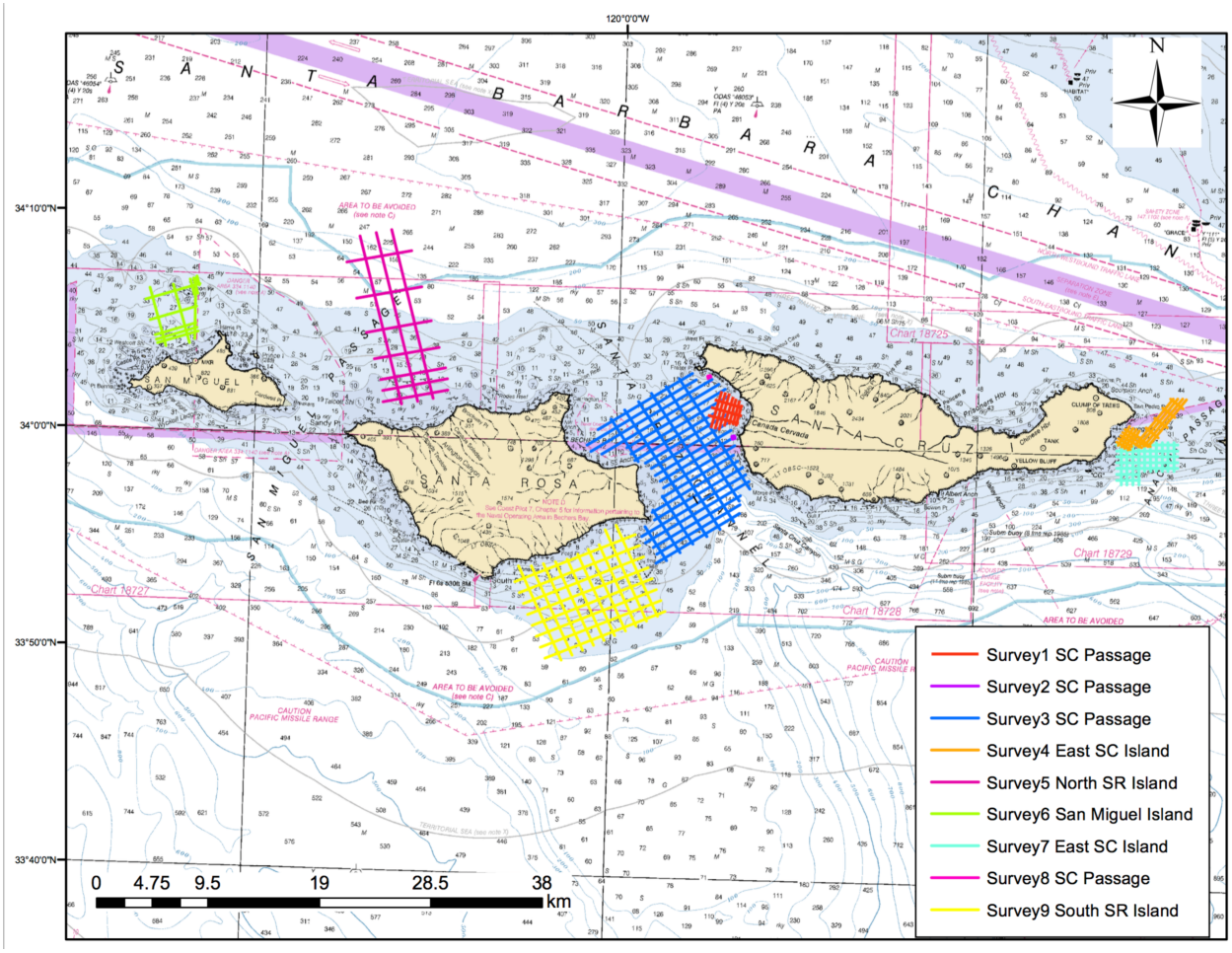
☒ ☐ Verification of Equipment Service and/or Maintenance (must verify sound output)
Explanation: Pages 45-46

☐ ☒ Permit(s) or Authorization from California Department of Fish and Wildlife for surveys in or affecting Marine Protected Area(s) (if applicable)
Explanation: Surveys do not extend into any Marine Protected Areas

---

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

Jillian Maloney (SDSU) spoke with Dan Lawson (562-980-3209) at the NOAA Long Beach office on May 11, 2016 regarding marine mammal activity within the survey area. NOAA confirmed that there has been no unusual marine wildlife activity in the vicinity of the survey beyond what we expect to encounter as documented in the Marine Wildlife Contingency Plan included in this notification package (Pages 15-42)



Map 1: The above map shows the planned survey lines. See Table 1 for survey line coordinates.

Table 1: The table below shows the start and end points in geographic decimal degrees for each line shown in the above map.

Name	Start Latitude	Start Longitude	End Latitude	End Longitude
Survey 1				
1	34.040241	-119.896318	34.011858	-119.905199
2	34.017304	-119.887164	34.023214	-119.915679
3	34.023187	-119.884499	34.029097	-119.913016
4	34.029674	-119.884490	34.034949	-119.909904
5	34.037869	-119.893019	34.014800	-119.900558
6	34.016427	-119.896071	34.036320	-119.889951
7	34.016031	-119.892621	34.035052	-119.887043
8	34.015238	-119.889844	34.032049	-119.884914
9	34.041037	-119.899984	34.012653	-119.908864
10	34.041832	-119.903650	34.013447	-119.912529
Survey 2				
1	34.005603	-119.891842	34.007385	-119.892505
2	34.005995	-119.890277	34.007800	-119.890945
3	34.007772	-119.890908	34.007225	-119.893075
4	34.006466	-119.890401	34.005922	-119.892576
5	34.005479	-119.892371	34.007280	-119.893044
6	34.005924	-119.890540	34.007729	-119.891206
7	34.006254	-119.890318	34.005709	-119.892494
8	34.007559	-119.890820	34.007018	-119.892982
9	34.005550	-119.892112	34.007340	-119.892768
10	34.005660	-119.891583	34.007456	-119.892258
11	34.005861	-119.890795	34.007667	-119.891475
12	34.005792	-119.891063	34.007598	-119.891729
13	34.005728	-119.891331	34.007527	-119.891985
14	34.007122	-119.890650	34.006578	-119.892820
15	34.006042	-119.890230	34.005490	-119.892411
16	34.007339	-119.890735	34.006791	-119.892903
17	34.006681	-119.890488	34.006125	-119.892662
18	34.006903	-119.890549	34.006350	-119.892744
Survey 3				
1	33.960063	-119.955648	33.923999	-119.926147
2	34.025383	-119.992550	33.929851	-119.913534
3	34.050520	-119.943123	33.967444	-119.875236
4	34.038706	-119.968213	33.942035	-119.889290
5	34.044079	-119.955106	33.957921	-119.884704
6	34.025342	-119.908605	33.986658	-119.981886
7	34.023687	-119.898766	33.985009	-119.972050

8	33.988452	-119.886951	33.947177	-119.964387
9	33.993044	-119.890916	33.959027	-119.955368
10	34.000265	-119.890276	33.966248	-119.954733
11	34.018966	-119.894613	33.981176	-119.966219
12	34.011938	-119.894237	33.975820	-119.962675
13	34.006974	-119.890944	33.971510	-119.958143
14	33.983799	-119.882562	33.941428	-119.962331
15	33.962076	-119.883768	33.920406	-119.962682
16	33.978212	-119.879364	33.928441	-119.973673
17	33.948440	-119.883910	33.908231	-119.959583
18	33.955122	-119.884002	33.915393	-119.959281
19	33.973247	-119.876073	33.923723	-119.969938
20	33.949117	-119.964025	33.917102	-119.937855
21	33.998652	-119.970316	33.929851	-119.913534
22	34.032011	-119.980098	33.935902	-119.901602
23	33.936058	-119.970750	33.910518	-119.949873
24	34.043362	-119.900379	33.996473	-119.989361
25	34.038241	-119.896944	33.991565	-119.985624
26	34.047096	-119.906443	33.990874	-120.012589
27	34.050768	-119.912685	33.992778	-120.022586
28	34.049890	-119.927286	33.997544	-120.026247
29	34.054799	-119.931023	34.009710	-120.016667
30	34.017911	-120.004885	33.985906	-119.978678
Survey 4				
1	34.020585	-119.530754	34.014422	-119.517087
2	34.018239	-119.532568	34.008589	-119.511171
3	34.013540	-119.536457	34.007874	-119.523890
4	34.010937	-119.538054	34.005270	-119.525487
5	34.015806	-119.534327	34.007025	-119.514855
6	34.005013	-119.527587	34.019653	-119.517421
7	34.006057	-119.530560	34.020697	-119.520395
8	34.008239	-119.536745	34.022880	-119.526581
9	34.007112	-119.533560	34.021752	-119.523396
10	34.044782	-119.489179	34.037708	-119.477682
11	34.037754	-119.496590	34.030682	-119.485093
12	34.022068	-119.511412	34.014997	-119.499916
13	34.016484	-119.520689	34.008037	-119.506955
14	34.029845	-119.503386	34.022773	-119.491889
15	34.008026	-119.509078	34.044597	-119.474686
16	34.008372	-119.512818	34.045270	-119.478121
17	34.009020	-119.520674	34.044920	-119.486920
18	34.007598	-119.517650	34.044894	-119.482582

Survey 5				
1	34.029921	-120.169629	34.158169	-120.212539
2	34.024595	-120.198474	34.152536	-120.241757
3	34.142632	-120.193455	34.132197	-120.252943
4	34.089207	-120.173387	34.078784	-120.232841
5	34.069094	-120.165414	34.058676	-120.224856
6	34.053381	-120.158813	34.042966	-120.218244
7	34.045129	-120.156959	34.034716	-120.216386
8	34.036565	-120.156126	34.026152	-120.215547
9	34.115136	-120.183302	34.104707	-120.242772
10	34.027267	-120.183737	34.155509	-120.226667
Survey 6				
1	34.110882	-120.412341	34.066513	-120.395659
2	34.107891	-120.434080	34.063525	-120.417387
3	34.117857	-120.391003	34.111055	-120.388445
4	34.099017	-120.437383	34.112306	-120.387947
5	34.083057	-120.432947	34.094655	-120.390248
6	34.068416	-120.426517	34.078513	-120.389348
7	34.115347	-120.397072	34.103772	-120.392720
8	34.116311	-120.393923	34.104735	-120.389571
9	34.071876	-120.427574	34.081973	-120.390403
10	34.065708	-120.425234	34.075804	-120.388066
11	34.116461	-120.391812	34.069977	-120.391035
Survey 7				
1	34.010399	-119.534025	33.978146	-119.532981
2	33.999588	-119.537742	34.000738	-119.481412
3	34.010520	-119.528616	33.978267	-119.527574
4	34.010641	-119.523207	33.978388	-119.522167
5	34.010762	-119.517797	33.978509	-119.516759
6	34.010883	-119.512388	33.988959	-119.511683
7	34.011003	-119.506978	33.989079	-119.506275
8	34.011123	-119.501569	33.989200	-119.500867
9	34.011243	-119.496159	33.989319	-119.495459
10	34.011363	-119.490750	33.989439	-119.490051
11	34.011482	-119.485340	33.989558	-119.484643
12	33.995083	-119.537608	33.996232	-119.481281
13	34.004093	-119.537876	34.005243	-119.481543
14	33.990578	-119.537474	33.991727	-119.481150
15	34.008598	-119.538010	34.009748	-119.481674
16	33.986073	-119.537340	33.986501	-119.516478
17	33.981568	-119.537206	33.981996	-119.516345
Survey 8				

1	34.051357	-119.915581	34.053138	-119.916245
2	34.051749	-119.914015	34.053553	-119.914684
3	34.053525	-119.914647	34.052978	-119.916815
4	34.052219	-119.914139	34.051675	-119.916315
5	34.051232	-119.916110	34.053033	-119.916784
6	34.051678	-119.914278	34.053482	-119.914945
7	34.052007	-119.914056	34.051462	-119.916233
8	34.053312	-119.914559	34.052771	-119.916722
9	34.051303	-119.915850	34.053093	-119.916508
10	34.051413	-119.915321	34.053210	-119.915997
11	34.051614	-119.914533	34.053420	-119.915214
12	34.051545	-119.914801	34.053351	-119.915468
13	34.049507	-119.914344	34.053280	-119.915725
14	34.052875	-119.914388	34.052331	-119.916560
15	34.051796	-119.913968	34.051243	-119.916150
16	34.053093	-119.914474	34.052543	-119.916642
17	34.052434	-119.914226	34.051878	-119.916401
18	34.052656	-119.914287	34.052103	-119.916484
Survey 9				
1	33.903336	-120.086234	33.831979	-120.044233
2	33.890960	-120.088990	33.929719	-119.979605
3	33.882670	-120.084760	33.921424	-119.975382
4	33.874379	-120.080530	33.913129	-119.971161
5	33.866088	-120.076302	33.904834	-119.966940
6	33.857797	-120.072074	33.896539	-119.962721
7	33.849506	-120.067847	33.888244	-119.958502
8	33.841214	-120.063621	33.879948	-119.954284
9	33.832923	-120.059396	33.871652	-119.950067
10	33.903532	-120.074310	33.835948	-120.034539
11	33.905480	-120.063419	33.839916	-120.024845
12	33.907193	-120.052389	33.843884	-120.015150
13	33.909469	-120.041691	33.847850	-120.005454
14	33.913438	-120.031989	33.851817	-119.995757
15	33.917407	-120.022287	33.855782	-119.986059
16	33.921374	-120.012583	33.859747	-119.976360
17	33.932811	-120.007226	33.863711	-119.966661
18	33.936774	-119.997518	33.867670	-119.956958
19	33.882670	-120.084760	33.921424	-119.975382

SAN DIEGO STATE UNIVERSITY

Jillian Maloney <jmaloney@mail.sdsu.edu>

Local Notice to Mariners - Sonar Survey, northern Channel Islands

Jillian Maloney <jmaloney@mail.sdsu.edu> Wed, May 11, 2016 at 9:33 AM
To: D11LNM@uscg.mil
Cc: Todd Braje <tbraje@mail.sdsu.edu>, "Ball, David" <david.ball@boem.gov>, Donna Schroeder <donna.schroeder@boem.gov>

Dear Sir/Madam,

I'm writing to notify you of upcoming sonar surveys in the vicinity of the northern Channel Islands. This work will be conducted under the California State Lands Commission Geophysical Survey Permit No. 9307 with the Bureau of Ocean Energy Management and San Diego State University.

We will be operating surveys from NOAA's R/V Shearwater with daily transits in and out of Santa Barbara Harbor. The survey will include a towed sidescan sonar and subbottom Chirp sonar. The surveys will take place from June 6-10, 2016 with survey hours between 7am and 5pm.

Planned survey lines are shown on the attached map. The center coordinates for each survey area are:

Survey 1 - 34.0311 N, 119.9084 W
Survey 2 - 34.0068 N, 119.8916 W
Survey 3 - 33.9993 N, 119.9326 W
Survey 4 - 31.0154 N, 119.5102 W
Survey 5 - 34.0862 N, 120.2046 W
Survey 6 - 34.0917 N, 120.4068 W
Survey 7 - 33.9977 N, 119.5077 W
Survey 8 - 34.0529 N, 119.9155 W
Survey 9 - 33.8815 N, 120.0187 W

Please let me know if you have any questions. You can reach me through email (jmaloney@mail.sdsu.edu) or by phone (619-228-6075).

--
Jillian M. Maloney
Department of Geological Sciences
San Diego State University
5500 Campanile Dr.
San Diego, CA 92182-1020
lab: 619-594-6394
cell: 619-228-6075
website

SDSU_Shearwater_SurveyLines.pdf
698K

SAN DIEGO STATE UNIVERSITY

Jillian Maloney <jmaloney@mail.sdsu.edu>

Notification of sonar survey, northern Channel Islands

Jillian Maloney <jmaloney@mail.sdsu.edu> Wed, May 11, 2016 at 9:36 AM
To: "McCullough, Stephen" <smccullough@santabarbaraca.gov>
Cc: Todd Braje <tbraje@mail.sdsu.edu>, "Ball, David" <david.ball@boem.gov>, Donna Schroeder <donna.schroeder@boem.gov>

Dear Mr. McCullough,

I'm writing to notify you of upcoming sonar surveys in the vicinity of the northern Channel Islands. This work will be conducted under the California State Lands Commission Geophysical Survey Permit No. 9307 with the Bureau of Ocean Energy Management and San Diego State University.

We will be operating surveys from NOAA's R/V Shearwater with daily transits in and out of Santa Barbara Harbor. The survey will include a towed sidescan sonar and subbottom Chirp sonar. The surveys will take place from June 6-10, 2016 with survey hours between 7am and 5pm.

Planned survey lines are shown on the attached map. The center coordinates for each survey area are:

Survey 1 - 34.0311 N, 119.9084 W
Survey 2 - 34.0068 N, 119.8916 W
Survey 3 - 33.9993 N, 119.9326 W
Survey 4 - 31.0154 N, 119.5102 W
Survey 5 - 34.0862 N, 120.2046 W
Survey 6 - 34.0917 N, 120.4068 W
Survey 7 - 33.9977 N, 119.5077 W
Survey 8 - 34.0529 N, 119.9155 W
Survey 9 - 33.8815 N, 120.0187 W

Please let me know if you have any questions. You can reach me through email (jmaloney@mail.sdsu.edu) or by phone (619-228-6075).

--
Jillian M. Maloney
Department of Geological Sciences
San Diego State University
5500 Campanile Dr.
San Diego, CA 92182-1020
lab: 619-594-6394
cell: 619-228-6075
website

SDSU_Shearwater_SurveyLines.pdf
698K

SAN DIEGO STATE UNIVERSITY

Jillian Maloney <jmaloney@mail.sdsu.edu>

Notification of sonar survey, northern Channel Islands

Jillian Maloney <jmaloney@mail.sdsu.edu> Wed, May 11, 2016 at 9:38 AM
To: jhiggins@venturaharbor.com
Cc: Todd Braje <tbraje@mail.sdsu.edu>, "Ball, David" <david.ball@boem.gov>, Donna Schroeder <donna.schroeder@boem.gov>

Dear Mr. Higgins,

I'm writing to notify you of upcoming sonar surveys in the vicinity of the northern Channel Islands. This work will be conducted under the California State Lands Commission Geophysical Survey Permit No. 9307 with the Bureau of Ocean Energy Management and San Diego State University.

We will be operating surveys from NOAA's R/V Shearwater with daily transits in and out of Santa Barbara Harbor. The survey will include a towed sidescan sonar and subbottom Chirp sonar. The surveys will take place from June 6-10, 2016 with survey hours between 7am and 5pm.

Planned survey lines are shown on the attached map. The center coordinates for each survey area are:

Survey 1 - 34.0311 N, 119.9084 W
Survey 2 - 34.0068 N, 119.8916 W
Survey 3 - 33.9993 N, 119.9326 W
Survey 4 - 31.0154 N, 119.5102 W
Survey 5 - 34.0862 N, 120.2046 W
Survey 6 - 34.0917 N, 120.4068 W
Survey 7 - 33.9977 N, 119.5077 W
Survey 8 - 34.0529 N, 119.9155 W
Survey 9 - 33.8815 N, 120.0187 W

Please let me know if you have any questions. You can reach me through email (jmaloney@mail.sdsu.edu) or by phone (619-228-6075).

--
Jillian M. Maloney
Department of Geological Sciences
San Diego State University
5500 Campanile Dr.
San Diego, CA 92182-1020
lab: 619-594-6394
cell: 619-228-6075
website

SAN DIEGO STATE UNIVERSITY

Jillian Maloney <jmaloney@mail.sdsu.edu>

Notification of sonar survey, northern Channel Islands

Jillian Maloney <jmaloney@mail.sdsu.edu> Wed, May 11, 2016 at 9:48 AM
To: shop@blueh20.com, info@sealanding.net, Mike Schechter <info@cisdivers.com>, staff@venturadive.com, staff@raptordive.com, info@spectrediveboat.com, info@dive-sar.com

Dear Sir/Madam,

I'm writing to notify you of upcoming sonar surveys in the vicinity of the northern Channel Islands. This work will be conducted under the California State Lands Commission Geophysical Survey Permit No. 9307 with the Bureau of Ocean Energy Management and San Diego State University.

We will be operating surveys from NOAA's R/V Shearwater with daily transits in and out of Santa Barbara Harbor. The survey will include a towed sidescan sonar and subbottom Chirp sonar. The surveys will take place from June 6-10, 2016 with survey hours between 7am and 5pm.

Planned survey lines are shown on the attached map. The center coordinates for each survey area are:

Survey 1 - 34.0311 N, 119.9084 W
Survey 2 - 34.0068 N, 119.8916 W
Survey 3 - 33.9993 N, 119.9326 W
Survey 4 - 31.0154 N, 119.5102 W
Survey 5 - 34.0862 N, 120.2046 W
Survey 6 - 34.0917 N, 120.4068 W
Survey 7 - 33.9977 N, 119.5077 W
Survey 8 - 34.0529 N, 119.9155 W
Survey 9 - 33.8815 N, 120.0187 W

Please let me know if you have any questions. You can reach me through email (jmaloney@mail.sdsu.edu) or by phone (619-228-6075).

--
Jillian M. Maloney
Department of Geological Sciences
San Diego State University
5500 Campanile Dr.
San Diego, CA 92182-1020
lab: 619-594-6394
cell: 619-228-6075
website

SDSU_Shearwater_SurveyLines.pdf
698K

MARINE WILDLIFE CONTINGENCY PLAN
Archaeological and Biological Assessment of Submerged Landforms off the Pacific Coast
Northern Channel Islands, CA
June 6-10, 2016

1.0 INTRODUCTION

This Marine Wildlife Contingency Plan (MWCP) is prepared in compliance with the Bureau of Ocean Energy Management's (BOEM) existing State Geophysical Permit PRC 9307. This plan is intended to provide guidance to vessel operators and scientific field personnel collecting geophysical data for a cooperative agreement between the Bureau of Ocean Energy Management (BOEM) and San Diego State University (SDSU) in the northern Channel Islands, CA.

This MWCP discusses mitigation efforts that are designed to reduce the impact of survey activities on marine wildlife, and is specific to the equipment, activities, and area proposed for this survey. The proposed monitoring and mitigation actions have been shown to be effective in reducing or eliminating potential impacts to marine mammals and reptiles, and follow the CSLC's guidelines set forth in its Mitigation Monitoring Program Exhibit B.

This MWCP includes measures that specify 1) the distance, speed, and direction transiting vessels will maintain when in proximity to marine wildlife; 2) qualifications, number, location and authority of onboard marine wildlife monitors; and 3) reporting requirements in the event of an incident, and following the completion of the survey.

1.1 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 (NOAA) National Marine Fisheries Service (NMFS) implement the Endangered Species Act. A National Marine Sanctuaries Permit has been acquired from NOAA to use the equipment identified in this document to conduct scientific data acquisition in the Channel Islands National Marine Sanctuary. At the time of this mailing, the permit was in transit to San Diego State University from the NOAA office. Please see the attached email correspondence with Sean Hastings at NOAA (Pages 38-43). A copy of the permit will be submitted upon receipt.

1.2 Geophysical Survey Purpose and Objectives

The goal of this project is to improve models of submerged archaeological resources by incorporating geophysical mapping and geological sampling in order to aid in identification of cultural landforms from remote sensing data. We are also studying seep ecosystems in order to quantify the trophic subsidy provided by relict hydrocarbon features to the benthic community. The following are a list of objectives for this project:

1. Synthesize existing geological and geophysical data sets from offshore southern California;
2. Develop and field test a new geospatial model that will aid in identification and classification of potential cultural landforms from

existing remote sensing data, seafloor maps, and the distribution of known and newly discovered Paleocoastal sites above current sea level;
3. Conduct field investigations of areas identified as having high potential to be associated with submerged cultural landforms;
4. Refine local sea-level curve models in investigation areas;
5. Improve models of submerged archeological resources by incorporating archaeological and biological sampling data, and where possible, mapping submerged terraces and shoreline angles representing sea-level stillstands, and mapping paleochannels and possible submerged springs, toolstone outcrops, and caves and rockshelters;
6. Quantify the trophic subsidy provided by relict hydrocarbon features to the benthic community, and explore the spatial extent of this subsidy and its effects on composition, abundance, and food web structure.

This survey falls under objective number three above. The data from these geophysical surveys will help us to reconstruct the paleolandscapes that are now submerged around the northern Channel Islands. These data will then be used to identify landforms that might be sensitive sites for archaeological resources and to refine models for locating these sites in the future.

SDSU contacted the NOAA Long Beach Office staff on May 11, 2016 to acquire information on the current composition and relative abundance of marine wildlife offshore as well as any pinniped haul out sites. Additionally, one day prior to survey activities, the NOAA Long Beach office and local whale watching operations 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.

A review of environmental responsibility of project operations will be conducted by the chief scientist in charge of the survey operations prior to commencing the first day of operations. When new personnel are added to 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 during the geophysical survey 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. A copy of the Marine Wildlife Contingency Plan will be provided to the crew of our survey vessels.

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

1.3 Survey Schedule and Layout

The Project schedule will be from June 6-10, 2016. The proposed mapping areas are along the continental shelf adjacent to the northern Channel Islands, between Santa Rosa Island and Santa Cruz Island, north of Santa Rosa Island, northwest of San Miguel Island, and east of Santa Cruz Island (Map 1). Daily activities will include a transit from Santa Barbara harbor to the survey location near the northern Channel Islands, deployment of geophysical gear, geophysical survey, recovery of gear, and transit back to Santa Barbara harbor. The Chirp profiler will be deployed from the U-frame and towed behind the stern of the ship. The sidescan sonar will also be deployed from the stern of the ship using a winch system bolted to the deck. Survey speed will be maintained at ~4 knots. We anticipate 10 hours at sea each day, including transit (2-3 hours round trip daily). The survey lines will only be collected when conditions are safe and swimmers, divers and paddlers not present. The shallowest depth of survey lines will be ~10 m. Survey data will be monitored in real-time aboard the vessel for any potential submerged landforms or archaeological sites.

Our survey locations are illustrated in Map1 (page 6). Coordinates for each anticipated ship track line are included in Table 1 (page 7). All surveys are designed to fit our scientific goals, the safety of the crew and vessel, and our environmental mitigation plans.

2.0 SURVEY EQUIPMENT

We propose to use the following equipment to collect the required data:

1. Klein 3000H, 455 kHz or 900 kHz digital sidescan sonar, provided by the National Park Service
2. Edgetech 3200, 512 towfish, 0.5-16 kHz swept pulse sub-bottom Chirp profiler, provided by the Scripps Institution of Oceanography
3. Edgetech 4200, 100 kHz or 400 kHz digital sidescan sonar, provided by the Scripps Institution of Oceanography (this will only be used as backup in the event of technical issues with the Klein 3000H sonar)

The Klein and Edgetech sidescan sonar will be operated above a 200 kHz frequency and therefore do not require safety zone monitoring. The Edgetech Chirp profiler is a sub-bottom profiler and therefore has a safety zone radius of 100 meters. Equipment maintenance documentation is included in this notification on pages 36-37.

3.0 MARINE WILDLIFE

The following discusses the marine wildlife that are most likely to be within the project region during survey operations, and the subsequent section (4.0) outlines the methods that will be instituted by the vessel operator and crew to reduce or eliminate potential impacts to marine wildlife during transit and survey operations.

Table 3-1 details the marine mammal species possibly occurring in the survey area, along with their status and population estimates and trends by stock. Table 3-2 describes the likelihood of occurrence within the project area according to the species' seasonality.

Table 3-1: Marine Mammal and Reptile Protection Status and Population Estimates and Trends by Stock

Common Name ***Scientific Name***	**Protected Status**	**Minimum Population Estimate**	**Current Population Trend**
Mysticeti			
North Pacific right whale *Eubalaena japonica*	FE, M	17 (based on-photo identification) (Eastern North Pacific Stock)	No long-term trends suggested
California grey whale *Eschrichtius robustus*	M	18,017 (Eastern North Pacific Stock)	Fluctuating annually
Humpback whale *Megaptera novaeangliae*	FE, M	1,878 (California/Oregon/Washington Stock)	Increasing
Minke whale *Balaenoptera acutorostrata*	M	202 (California/Oregon/Washington Stock)	No long-term trends suggested
Sei whale *Balaenoptera borealis*	FE, M	83 (Eastern North Pacific Stock)	No long-term trends suggested
Fin whale *Balaenoptera physalus*	FE, M	2,624 (California/Oregon/Washington Stock)	Increasing off California
Blue whale *Balaenoptera musculus*	FE, M	2,046 (Eastern North Pacific Stock)	Unable to determine
Odonteceti			
Sperm whale *Physeter macrocephalus*	FP, FE	751 (California/Oregon/Washington Stock)	No long-term trends suggested
Dwarf sperm whale *Kogia sima*	M	Unknown (California/Oregon/Washington Stock)	No long-term trends due to rarity
Curvier's beaked whale *Ziphius cavirostris*	M	1,298 (California/Oregon/Washington Stock)	No long-term trends due to rarity
Baird's beaked whale	M	615 (California/Oregon/Washington	No long-term trends due to rarity

Berardius bairdii		Stock)	
Mesoplodont beaked whales	M	576 (California/Oregon/Washington Stock)	No long-term trends due to rarity
Bottlenose dolphin *Tursiops truncatus*	M	684 (California/Oregon/Washington Offshore Stock) 290 (California Coastal Stock)	No long-term trends suggested
Striped dolphin *Stenella coeruleoalba*	M	8,231 (California/Oregon/Washington Stock)	No long-term trends due to rarity
Short-beaked common dolphin *Delphinus delphis*	M	343,990 (California/Oregon/Washington Stock)	Unable to determine
Long-beaked common dolphin *Delphinus capensis*	M	17,127 (California Stock)	Unable to determine
Pacific white-sided dolphin *Lagenorhynchus obliquidens*	M	21,406 (California/Oregon/Washington Stock)	No long-term trends suggested
Northern right whale dolphin *Lissodelphis borealis*	M	6,019 (California/Oregon/Washington Stock)	No long-term trends suggested
Risso's dolphin *Grampus griseus*	M	4,913 (California/Oregon/Washington Stock)	No long-term trends suggested
Killer whale *Orcinus orca*	M	162 (Eastern North Pacific Offshore Stock) 354 (West Coast Transient Stock)	No long-term trends suggested Slight decrease sing mid-1990's
Short finned pilot whale *Globicephala macrorhynchus*	M	465 (California/Oregon/Washington Stock)	No long-term trends suggested
Dall's porpoise *Phcoenoides dalli*	M	32,106 (California/Oregon/Washington Stock)	Unable to determine

Pinnipeds			
Guadalupe fur seal *Arctocephalus townsendi*	FT, M	3,028 (Mexico Stock) Undetermined in California	Increasing
Northern fur seal *Callorhinus ursinus*	M	5,395 (San Miguel Island Stock)	Increasing
Pacific harbor seal *Phoca vitulina richardsi*	M	31,600 (California Stock)	Stable
California sea lion *Zalophus californianus*	M	141,842 (California Stock)	Unable to determine; increasing in most recent three year period
Northern elephant seal *Mirounga angustirostris*	M	74,913 (California Breeding Stock)	Increasing
Cyptodira			
Green turtle *Chelonia mydas*	FT	3,319 (Eastern Tropical Pacific)	Increasing
Loggerhead turtle *Caretta caretta*	FE	1,000 (California)	Decreasing
Olive Ridley turtle *Lepidochelys olivacea*	FT	1.39 million (Eastern Tropical Pacific)	Increasing
Leatherback turtle *Dermochelys coriacea*	FE	178 (California)	Decreasing

Marine Mammal Sources: NMFS 2008, 2011a. "stock assessment report"
Marine Turtle Sources: NMFS 2004, Marquez, et al. 2002, Eguchi et al. 2007, and Benson et al. 2007. Estimates are based on number of current numbers of nesting females.
Protected Status Codes: FE- Federally listed Endangered; FT- Federally listed Threatened; M- Protected under Marine Mammal Protection Act

Table 3-2. Marine Wildlife Species and Most Likely Periods of Occurrence within the Project Area

Species	Month of Occurrence											
	J	F	M	A	M	J	J	A	S	O	N	D
Mysticeti												
North Pacific right whale												
California grey whale												
Humpback whale												
Minke whale												
Sei whale												
Fin whale												
Blue whale												
Odonteceti												
Sperm whale												
Dwarf sperm whale												
Curvier's beaked whale												
Baird's beaked whale												
Mesoplodont beaked whales												
Bottlenose dolphin												
Striped dolphin												
Short-beaked common dolphin												
Long-beaked common dolphin												
Pacific white-sided dolphin												
Northern right whale dolphin												
Risso's dolphin												
Killer whale												
Short finned pilot whale												
Dall's porpoise												
Pinnipeds												
Guadalupe fur seal												
Northern fur seal												
Pacific harbor seal												
California sea lion												
Northern elephant seal												

Cyptodira													
Green turtle													
Loggerhead turtle													
Olive Ridley turtle													
Leatherback turtle													

	Not expected to occur
	Most likely to occur due to seasonal distribution
	Relatively uniform distribution

Sources: Bonnell and Dailey 1993, NMFS 2011, NCCOS 2007

4.0 ONBOARD MITIGATIONS

4.1 Fishing Gear Clearance

In addition to submitting the required Notice to Mariners (Page 11) that will advise commercial fishers of pending on-water activities, prior to the start of each survey the vessel will note and record the presence of deployed fishing gear within the survey area. No survey lines within 30 m (100 ft) of the observed fishing gear will be completed. The survey crew will not remove or relocate any fishing gear; removal or relocation will only be accomplished by the owner or by an authorized CDFG agent.

4.2 Marine Wildlife Monitoring

We submitted a request on May 11, 2016 to conduct the survey operations with one marine wildlife monitor (MWM) based on the small vessel size and short duration of daily surveys. See letter of request included as Appendix B. Greg Sanders, with the Bureau of Ocean Energy Management will be the primary MWM and a second member of the crew, trained/experienced in marine wildlife monitoring, will act as the second MWM. The second MWM has been trained by a certified and registered MWM at Scripps Institution of Oceanography. Training included images of wildlife we expect to encounter, examples of data collection, review of CSLCs requirements for MWMs, and review of the authority of each MWM while aboard the vessel. For additional information on MWM qualifications, see Appendices A and B. The MWM will be provided with standard data collection sheets (Appendix C), binoculars, and reference documentation for marine mammal species. All monitoring activities will be documented and copies of datasheets will be provided to CSLC upon completion of the survey.

The MWM is responsible for monitoring during the survey equipment operations. The MWM will monitor within the safety zone of 100 m radius for sub-bottom profiler geophysical equipment as identified in Section 2.0 of this mitigation plan. Sightings of marine mammals within the safety zone will be recorded with location, date & time, and species where identification is possible. The MWM will record daily weather conditions and any occasions where geophysical equipment was shut-down due to the presence of marine mammals.

The MWM shall have the authority to stop (i.e., shut down) survey operations if a marine mammal or reptile is observed within the specified safety zone. If an animal is sighted within the safety zone, the equipment must be shut down and not ramped-up to full power until the animal is sighted outside of the safety zone or has not been observed for 15 minutes.

The MWM shall also have authority to recommend continuation (or cessation) of operations during periods of limited visibility (i.e., fog, rain) based on the observed abundance of marine wildlife. Periodic reevaluation of weather conditions and reassessment of the continuation/cessation recommendation shall be completed by the onboard MWM. During operations, if an animal's actions are observed to be irregular, the monitor shall have authority to recommend that equipment be shut down until the animal moves further away from the sound source. If irregular behavior is observed, the equipment shall be shut-off and will be restarted and ramped-up to full power, as applicable, or will not be started until the animal(s) is/are outside of the safety zone or have not been observed for 15 minutes.

The survey operator shall use a "soft start" technique at the beginning of survey activities each day (or following a shut down) to allow any marine mammal that may be in the immediate area to leave before the sound sources reach full energy. Surveys shall not be conducted at nighttime or when the safety zone cannot be effectively monitored. Operators shall initiate each piece of equipment at the lowest practical sound level, increasing output in such a manner as to increase in steps not exceeding approximately 6 decibels (dB) per 5-minute period. During ramp-up, the MWM shall monitor the safety zone. If marine mammals are sighted within or about to enter the safety zone, a power-down or shut down shall be implemented as though the equipment was operating at full power. Initiation of ramp-up procedures from shut down requires that the MWM be able to visually observe the full safety zone.

4.3 Mitigations During Transit and Survey

The research vessel will transit during day-light hours from Santa Barbara harbor. During transits, there is a potential for encountering marine wildlife and the vessel operators will take every precaution to avoid close proximity to wildlife. If the vessel operator observes a large cetacean within the path of the transiting vessel, they will immediately slow the vessel and/or change course in order to avoid contact. Cetaceans (whales) vary in their swimming patterns and duration of dives and therefore all shipboard personnel will be watchful as the vessel crosses the path of a whale or anytime whales are observed in the area.

If whales are observed during transits, the vessel operator will institute the following measures:

- Maintain a minimum distance of 100 m from large sighted whales;
- Do not cross directly in front of or across the path of sighted whales;
- When transit directions is parallel to whale path, maintain constant speed that is not greater than the whales speed, or alter transit direction away from whale path;
- Do not position the vessel in such a manner to separate female whales from their calves
- If a whale engages in evasive or defensive action, slow the vessel and move away from the animal or stop the vessel until the animal calms or moves out of the area.

During survey operations, the vessel will maintain survey a speed of approximately 4 knots and will maintain a heading that coincides with survey track lines. If marine wildlife is observed within the vicinity of the vessel, the vessel operator will take

precautions to avoid collision, ending and restarting the track line survey if necessary.

If a collision with marine wildlife occurs, the vessel operator will document the conditions under which the accident occurred, including the following:

- Location of the vessel when the collision occurred (latitude and longitude);
- Date and time;
- Speed and heading of the vessel;
- Observed conditions (e.g., wind speed and direction, swell height, visibility in miles or kilometers, and presence of rain or fog);
- Species of marine wildlife contacted; and
- Organization, vessel ID and name of master in charge of the vessel at time of accident.

In accordance with NOAA requirements, after a collision, the vessel should stop, if safe to do so. The vessel may proceed after confirming that it will not further damage the animal by doing so. The vessel will then communicate by radio or telephone all details to the vessel's base of operations. The BOEM or SDSU chief scientist will contact the Stranding Coordinator, NMFS, Southwest Region, Long Beach, to obtain instructions. Alternatively, the vessel captain may contact the NMFS Stranding Coordinator directly using the marine operator to place the call or directly from an onboard telephone, if available to:

NOAA Southwest Regional Stranding Coordinator
National Marine Fisheries Service
501 West Ocean Blvd, Suite 4200
Long Beach, CA 90802-4213
562-980-4017
Contact: Sarah Wilkin
Email: sarah.wilkin@noaa.gov

It is unlikely that the vessel will be asked to stand by until NOAA or CDFG personnel arrive, however this will be determined by the Stranding Coordinator. The vessel operator is not allowed to aid injured marine wildlife or recover the carcass unless requested to do so by the NOAA Stranding Coordinator.

Reports will be communicated to the federal and state agencies listed below:

Federal	**State**	**State**
Sarah Wilkin, Stranding Coordinator Southwest Region National Marine Fisheries Service Long Beach, California (562)980-4017	Enforcement Dispatch Desk California Department of Fish and Game Long Beach, California (562) 590-5132	California State Lands Commission Division of Environmental Planning and Management Sacramento, California (916) 574-1938

4.4 Operational Measures

In addition to the procedures outlined above for MWMs (Section 4.2), the ship's crew will take the following precautionary measures to minimize impact to marine wildlife:

- Use a "soft start" technique at the beginning of survey activities each day (or following a shutdown) to allow any marine mammal that may be in the immediate area to leave before the sound sources reach full energy
- Not approach within 300 m of haul-out sites (consistent with NMFS guidelines) (Fig. 2-1);

Fig. 4-1: Pinniped haul out sites in Southern California identified by colored points. The proposed survey area does not approach any identified haul out sites within 300 m .
Source: NOAA NMFS, http://www.arcgis.com/home/webmap/viewer.html?webmap=2ff3fabe20cf4c83959cae1597500b09

- Expedite survey activity in this area in order to minimize the potential for disturbance of pinnipeds on land;
- Continuously monitor the survey area to ascertain the presence, species and location of any marine wildlife apparent in the intended survey area.
- Make every effort to maintain distance from sighted marine mammals and other marine wildlife;
- Do not cross directly in front of (perpendicular to) whales
- When paralleling large cetaceans, the vessel will operate at a constant speed that is not faster than that of the animals;
- 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.
- The vessel operator will refrain from erratic operating behavior when transiting and will operate at 4 kts during surveys
- Limit the frequency, pulse length, and pulse rate whenever possible to reduce potentially harmful noises.

4.5 Monitoring Reporting

A post-survey field report will be submitted to CSLC staff as soon as possible but no more than 30 days after the completion of survey activities.

APPENDIX A:
MARINE WILDLIFE OBSERVER CERTIFICATIONS

Scripps Institution of Oceanography (SIO) at the University of San Diego, California has provided training for Marine Wildlife Monitors (MWMs) in support of low power geophysical surveys in California State Waters and Federal Waters under NOAA National Marine Fisheries (NMFS) jurisdictions. This training was provided for sea-going personnel, including research assistants and technical support staff, to support scientific geophysical surveys and to meet marine mammal mitigation obligations pursuant to California State Lands Commission (CSLC) and NMFS requirements.

The MWM training was conducted by certified MWM Michelle Lande, a marine biologist and staff scientist at SIO at the time of the training (resume and certification included). Ms. Lande holds a B.A. in biology (Wellesley College) and an M.A.S. in Marine Biodiversity and Conservation (SIO). She was trained and certified as an MWM during a 3-day workshop at RPS Group in Houston, Texas, and has all of the instructional material (handouts, identification manuals, slides, video, etc.) for teaching the workshop at SIO. Ms. Lande also has extensive experience working at sea, identifying marine wildlife, and working in environmental regulation.

The training was conducted during a one day workshop at SIO that covered multiple topics important for marine wildlife observation. These included identification of marine mammal species, normal and abnormal behaviors, status and trends of marine wildlife species, determination of safety zones for geophysical equipment, and the authority of the MWM to recommend equipment shutdown. The training included visual images, documentation of rules and regulations, and example datasheets. As part of the training, personnel performed typical MWM duties aboard an SIO vessel including continuous observation, wildlife identification, and data recording. Datasheets used for recording MWM activities and marine wildlife detections are included as Appendix C.

<u>Certified Marine Wildlife Monitors</u>
James Holmes
Shannon Klotsko
Jillian Maloney
Lana Graves
Gulsen Ukarcus
Valarie Sahakian

Michelle Lande

6120 Tarragona Dr. San Diego, CA 92115
619.246.4453
michelle.lande@gmail.com

Education

Scripps Institution of Oceanography, UCSD: *M.A.S., Marine Biodiversity and Conservation*, 2009
Wellesley College: *B.A., Biological Sciences*, 2006

Professional Experience

Biologist/Regulatory Specialist
AECOM, Inc.
San Diego, CA
2015- Present

- Conduct biological assessments, author biological technical reports and impact reports
- Complete regulatory permit applications
- Support CEQA and NEPA compliance
- Ensure MMPA, ESA, CESA compliance

Coastal Outreach Coordinator
Louisiana Wildlife Federation
Baton Rouge, LA
2014-2015

- Analyzed coastal restoration project proposals in the Louisiana Coastal Master Plan
- Provided comments on RESTORE Act rules, regulations and project proposals
- Provided recommendations in response to natural resource use permit applications
- Analyzed state natural resource legislation and represented LWF in the legislature
- Represented LWF at conferences, hearings, and public meetings

Protected Species Observer
Scripps Inst. of Oceanography
UC San Diego
San Diego, CA
2013

- Worked with CA State agencies on permit application
- Ensured research activities complied with protected species laws
- Prepared Marine Wildlife Contingency plan describing protected species mitigation
- Trained, scheduled, and supervised Protected Species Observers
- Collected, analyzed, and reported wildlife data from research cruises

Program Representative II
UC, Cooperative Extension
San Diego, CA
2011-2013

- Co-authored reports about water quality research conducted in San Diego Bay
- Distilled technical reports into 5 fact sheets for the general public
- Developed and executed an educational workshop series
- Represented the University at stakeholder meetings and public hearings
- Built and maintained databases of clientele and stakeholders
- Evaluated program effectiveness, reported to the University and funders
- Oversaw administrative tasks including budgets, purchasing, and contracts

CA Fisheries Technician
CA Dept. of Fish and Wildlife
San Diego, CA
2010-2011

- Collected coastal fisheries field data in San Diego County
- Compiled and edited data for entry
- Acted as liaison between the CA Dept. of Fish and Wildlife and the public

Naturalist
Safari Boat Excursions
Maui, HI
2006-2008

- Educated recreational anglers on the Marine Life Protection Act
- Detected wildlife during tours and narrated whale watches
- Designed and executed environmental education talks Communicated marine science and conservation on eco-tours
- Acted as boat crew and ensured safety of guests at sea

Outreach and Scientific Publications

Michelle Lande, Leigh Johnson, Sabrina Drill and Darren Haver. *2013*. Identification and Detection Best Management Practices for Aquatic Invasive Species for Southern California. *UCCE-SD* Field Guide 2013-1.

Carolynn Culver, Leigh Johnson and **Michelle Lande**. *2012*. The Influence of Boat Hull Coatings on Fouling Growth. *UCCE-SD/UC-SGEP* Fact Sheet 2012-2.

Carolynn Culver, Leigh Johnson and **Michelle Lande**. *2012*. Hull Fouling Species of Concern in Southern California Coastal Marinas. *UCCE-SD/UC-SGEP* Fact Sheet 2012-1.

Carolynn Culver, Leigh Johnson and **Michelle Lande**. *2012*. IPM for Boats: Integrated Pest Management for Hull Fouling in Southern California Marinas. *UCCE-SD/UC-SGEP* Technical Report # T-074.

Leigh Johnson, Linda Fernandez and **Michelle Lande**. *2012*. Crossing Boundaries: Managing Invasive Species and Water Quality Risks for Coastal Boat Hulls in California and Baja California. *UCCE-SD/UC-SGEP* Technical Report # T-073.

Gregory B. Bissonette, **Michelle D. Lande**, Gabriela J. Martins, and Elizabeth Powell. *2012*. Versatility of the mouse reversal/set-shifting test: effects of topiramate and gender. *Physiology and Behavior*.

Michelle Lande, Leigh Johnson and Carolynn Culver. *2011.* Hull Fouling and Copper Tolerance- 2011 Scientific Review. *UCCE-SD/UC-SGEP* Fact Sheet 2011-5.

Margot L. Stiles, Julie Stockbridge, **Michelle Lande**, Michael F. Hirshfield. *2010.* Impacts of Bottom Trawling on Fisheries, Tourism and the Marine Environment. *Oceana*.

Skills and Certifications

Computer Skills: Microsoft Office (Word, Excel, Access, Outlook, PowerPoint), Adobe Media Suite (Photoshop, Illustrator, Premier, Audition), website content management (Wordpress, WesiteBuilder, SiteBuilder 3, Droople), ArcGIS, database management (Constant Contact, SPSS, VisualFoxPro, FileMakerPro), image processing (Analyze).

Research Skills: Marine science data collection, wildlife species identification, basic microbiology and behavior laboratory techniques

Certifications & Training: Protected Species Observer Training (June 23, 2013 at RPS Group, 411 N. Sam Houston Parkway, STE 400, Houston TX, 281-448-6188), Conflict Management & Mediation Training (UC), Essential Facilitation Training (UC), Supervisor 101 Training (UC), Grant Proposal Development Training (SDSU), SCUBA to Advanced Open Water Certification (SSI, PADI), CPR Certification (Red Cross).

RPS Offshore Protected Species Observer Training

This is to verify that

Michelle Lande

Has successfully completed a course of instruction in
Training for Seismic Mitigation
Under BOEM NTL 2012-G02

This certificate of Completion awarded
This 23rd day of May 2013

RPS

411 N Sam Houston Pkwy, Suite 400
Houston, Texas 77060
Telephone (281) 448-6188 Fax (281) 448-6189
www.rpsgroup.com

BOEM Approved Instructor

APPENDIX A
MARINE WILDLIFE OBSERVER QUALIFICATIONS
Gregory S. Sanders

Current Position:	Wildlife Biologist, Marine Mammal/Sea Turtle Specialist, Bureau of Ocean Energy Management (2006-Present)
Past Positions:	Fish and Wildlife Biologist, Sea Otter/Habitat Conservation Specialist, U.S. Fish and Wildlife Service (1987-2006)
	Park Ranger, Interpretation Division, Channel Islands National Park (1987)
Formal Education:	B.A. Aquatic Biology, University of California at Santa Barbara, 1983
	Initial marine mammal identification, taxonomy, behavior and pathology training was provided at the University and the Santa Barbara Museum of Natural History Museum under the late Dr. Charles D. Woodhouse, curator of vertebrate marine biology and the founder of the first formal California Marine Mammal Stranding Program (established in 1976).
Wildlife Viewing Experience:	Led tours of the Channel Islands National Park, including identification and natural history of marine wildlife. (1987)
	Member of the southern sea otter survey team since 1988. Surveys conducted biannually through 2008 and annually thereafter. Currently the lead surveyor for the southern California portion of the survey. Experience conducting wildlife surveys from land, by sea and by air.
	Stationed full-time on San Nicolas Island (offshore southern California) 1988-1990. Conducted marine mammal surveys in conjunction with monitoring of boat traffic around the island.
	Currently provide oversight of offshore activities including wildlife monitoring and marine mammal studies. Thousands of hours at sea aboard research vessels, dive boats, whale-watch boats and offshore industry vessels.

United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT

Pacific OCS Region
760 Paseo Camarillo, Suite 102
Camarillo, CA 93010-6064

MAY 11 2016

Richard Greenwood
California State Lands Commission
200 Oceangate, 12th floor
Long Beach, CA 90802-4331

Dear Mr. Greenwood,

I am writing in accordance with the California State Lands Commission Geophysical Survey Permit No. 9307, to petition to conduct survey operations with one (1) Marine Wildlife Monitor (MWM) aboard the vessel.

Our geophysical survey cruise is scheduled for June 6-10, 2016 on NOAA's R/V Shearwater vessel, located in Santa Barbara Harbor. We will be conducting surveys in the area offshore the northern Channel Islands, in water depths from 0-150 meters. Survey areas will be located northwest of San Miguel Island, north of Santa Rosa Island, between Santa Rosa and Santa Cruz Islands, and east of Santa Cruz Island. The vessel will transit from Santa Barbara Harbor to the survey location and back to Santa Barbara Harbor each day.

Surveys will be conducted aboard NOAA's R/V Shearwater, which is 62 feet in length and has an upper deck that provides 360 degree views of the surrounding water. (http://channelislands.noaa.gov/research/vessels.html and http://channelislands.noaa.gov/research/vessels/vesselparticulars.html)

Surveys will include one sidescan sonar operated at >200 kHz and one sub-bottom profiler operated at 1-16 kHz. Both towfish will be deployed and towed from the aft of the vessel, allowing for simultaneous monitoring of both safety zones. Surveys will be conducted only during daylight hours and we anticipate that the survey will run for 6-7 hours each day. Based on these criteria, we believe that one (1) MWM can effectively monitor the geophysical surveys during the upcoming research cruise and we request your approval of this petition.

If you have any questions, please do not hesitate to contact David Ball at 805-384-6340 or david.ball@boem.gov

Sincerely,

acting For
Dr. Ann Bull
Chief, Environmental Science Section

Effort Form to Record MWM activities, general conditions, and general survey information

Date	
Observer Location	
Observer Initials	
Start Time	
Start Lat	
Start Long	
Water Depth	
End Time	
End Lat	
End Long	
Compass Heading	
Vessel Speed	
Line Number	
Vessel Activity	
Array Volume	
Array Depth	
Precipitation	
Light/Dark	
Visibility	
Glare Severity	
Glare Direction	
Sea State	
Swell	
Wind Speed	
Wind Direction	
Comments/Notes	

Form Number:
Corresponding Forms:

Detection Form to Record Marine Wildlife Sightings and Vessel Response

Date	
Visual Detection Number	
Detection Method	
Detection Cue	
Common Name	
Scientific Name	
Family	
Certainty of Identification	
Number of Adults	
Number of Juveniles	
Total Number	
Bearing to Animals	
Number of Reticles or Eyeball	
Initial Behavior	
Behavior 2	
Animal Pace	
Direction of Travel	
Initial Heading of animal	
Final Heading of Animal	
Description	
Source Activity at Final Detection	
Time Animals Entered EZ	
Time Animals Left EZ	
Closest Distance of Animals to Source	
Closest Distance of Animals to Vessel	
Time at Closest Approach to Source	

Form Number:

Corresponding Effort Form:

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
Air Quality and Greenhouse Gas (GHG) Emissions (MND Section 3.3.3)						
MM AIR-1: Engine Tuning, Engine Certification, and Fuels. The following measures will be required to be implemented by all Permittees under the Offshore Geophysical Permit Program (OGPP), as applicable depending on the county offshore which a survey is being conducted. Pursuant to section 93118.5 of CARB's Airborne Toxic Control Measures, the Tier 2 engine requirement applies only to diesel-fueled vessels.	All Counties: Maintain all construction equipment in proper tune according to manufacturers' specifications; fuel all off-road and portable diesel-powered equipment with California Air Resources Board (CARB)-certified motor vehicle diesel fuel limiting sulfur content to 15 parts per million or less (CARB Diesel).	Daily emissions of criteria pollutants during survey activities are minimized.	Determine engine certification of vessel engines. Review engine emissions data to assess compliance, determine if changes in tuning or fuel are required.	OGPP permit holder and contract vessel operator; California State Lands Commission (CSLC) review of Final Monitoring Report.	Prior to, during, and after survey activities. Submit Final Monitoring Report after completion of survey activities.	
	Los Angeles and Orange Counties: Use vessel engines meeting CARB's Tier 2-certified engines or cleaner; the survey shall be operated such that daily NO_x emissions do not exceed 100 pounds based on engine certification emission factors. This can be accomplished with Tier 2 engines if daily fuel use is 585 gallons or less, and with Tier 3 engines if daily fuel use is 935 gallons or less.		Verify that Tier 2 or cleaner engines are being used. Calculate daily NO_x emissions to verify compliance with limitations.			
	San Luis Obispo County: Use vessel engines meeting CARB's Tier 2-certified engines or cleaner, accomplished with Tier 2 engines if daily fuel use is 585 gallons or less; all diesel equipment shall not idle for more than 5 minutes; engine use needed to maintain position in the water is not considered idling; diesel idling within 300 meters (1,000 feet) of sensitive receptors is not permitted; use alternatively fueled construction equipment on site where feasible, such as compressed natural gas, liquefied natural gas, propane or biodiesel.		Verify that Tier 2 or cleaner engines are being used. Inform vessel operator(s) of idling limitation. Investigate availability of alternative fuels.			
	Santa Barbara County: Use vessel engines meeting CARB's Tier 2-certified engines or cleaner, accomplished with Tier 2 engines if daily fuel use is 790 gallons or less.		Verify that Tier 2 or cleaner engines are being used. Investigate availability of alternative fuels.			
	Ventura County: Use alternatively fueled construction equipment on site where feasible, such as compressed natural gas, liquefied natural gas, propane or biodiesel.		Investigate availability of alternative fuels.			

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
MM BIO-1: Marine Mammal and Sea Turtle Presence – Current Information.	All State waters; prior to commencement of survey operations, the geophysical operator shall: (1) contact the National Oceanic and Atmospheric Administration Long Beach office staff and local whale-watching operations and shall acquire information on the current composition and relative abundance of marine wildlife offshore, and (2) convey sightings data to the vessel operator and crew, survey party chief, and onboard Marine Wildlife Monitors (MWMs) prior to departure. This information will aid the MWMs by providing data on the approximate number and types of organisms that may be in the area.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Document contact with appropriate sources. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder; Inquiry to NOAA and local whale watching operators.	Prior to survey.	
MM BIO-2: Marine Wildlife Monitors (MWMs).	Except as provided in section 7(h) of the General Permit, a minimum of two (2) qualified MWMs who are experienced in marine wildlife observations shall be onboard the survey vessel throughout both transit and data collection activities. The specific monitoring, observation, and data collection responsibilities shall be identified in the Marine Wildlife Contingency Plan required as part of all Offshore Geophysical Permit Program permits. Qualifications of proposed MWMs shall be submitted to the National Oceanic and Atmospheric Administration (NOAA) and CSLC at least twenty-one (21) days in advance of the survey for their approval by the agencies. Survey operations shall not commence until the CSLC approves the MWMs.	Competent and professional monitoring or marine mammals and sea turtles; compliance with established monitoring policies.	Document contact with and approval by appropriate agencies. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	
MM BIO-3: Safety Zone Monitoring.	Onboard Marine Wildlife Monitors (MWMs) responsible for observations during vessel transit shall be responsible for monitoring during the survey equipment operations. All visual monitoring shall occur from the highest practical vantage point aboard the survey vessel; binoculars shall be used to observe the surrounding area, as appropriate. The MWMs will survey an area (i.e., safety or exclusion zone) based on the equipment used, centered on the sound source (i.e., vessel, towfish), throughout time that the survey equipment is operating. Safety zone radial distances, by equipment type, include:	No adverse effects to marine mammals or sea turtles due to survey activities are observed; compliance with established safety zones.	Compliance with permit requirements (observers); compliance with established safety zones. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	

<table>
<tr><th>Mitigation Measure (MM)</th><th>Location and Scope of Mitigation</th><th>Effectiveness Criteria</th><th>Monitoring or Reporting Action</th><th>Responsible Party</th><th>Timing</th><th>Implementation Date(s) and Initials</th></tr>
<tr><td></td><td>
<table>
<tr><th>Equipment Type</th><th>Safety Zone (radius, m)</th></tr>
<tr><td>Single Beam Echosounder</td><td>50</td></tr>
<tr><td>Multibeam Echosounder</td><td>500</td></tr>
<tr><td>Side-Scan Sonar</td><td>600</td></tr>
<tr><td>Subbottom Profiler</td><td>100</td></tr>
<tr><td>Boomer System</td><td>100</td></tr>
</table>

If the geophysical survey equipment is operated at or above a frequency of 200 kilohertz (kHz), safety zone monitoring and enforcement is not required; however, if geophysical survey equipment operated at a frequency at or above 200 kHz is used simultaneously with geophysical survey equipment less than 200 kHz, then the safety zone for the equipment less than 200 kHz must be monitored. The onboard MWMs shall have authority to stop operations if a mammal or turtle is observed within the specified safety zone and may be negatively affected by survey activities. The MWMs shall also have authority to recommend continuation (or cessation) of operations during periods of limited visibility (i.e., fog, rain) based on the observed abundance of marine wildlife. Periodic reevaluation of weather conditions and reassessment of the continuation/cessation recommendation shall be completed by the onboard MWMs. During operations, if an animal's actions are observed to be irregular, the monitor shall have authority to recommend that equipment be shut down until the animal moves further away from the sound source. If irregular behavior is observed, the equipment shall be shut-off and will be restarted and ramped-up to full power, as applicable, or will not be started until the animal(s) is/are outside of the safety zone or have not been observed for 15 minutes.

For nearshore survey operations utilizing vessels that lack the personnel capacity to hold two (2) MWMs aboard during survey operations, at least twenty-one (21) days prior to the commencement of survey activities, the Permittee may petition the CSLC to conduct survey operations with one (1) MWM aboard. The CSLC will consider such authorization on a case-by-case basis and</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
	factors the CSLC will consider will include the timing, type, and location of the survey, the size of the vessel, and the availability of alternate vessels for conducting the proposed survey. CSLC authorizations under this subsection will be limited to individual surveys and under any such authorization; the Permittee shall update the MWCP to reflect how survey operations will occur under the authorization.					
MM BIO-4: Limits on Nighttime OGPP Surveys.	All State waters; nighttime survey operations are prohibited under the OGPP, except as provided below. The CSLC will consider the use of single beam echosounders and passive equipment types at night on a case-by-case basis, taking into consideration the equipment specifications, location, timing, and duration of survey activity.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Presurvey request for nighttime operations, including equipment specifications and proposed use schedule. Document equipment use. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Approval required before survey is initiated. Monitoring Report following comple-tion of survey.	
MM BIO-5: Soft Start.	All State waters; the survey operator shall use a "soft start" technique at the beginning of survey activities each day (or following a shut down) to allow any marine mammal that may be in the immediate area to leave before the sound sources reach full energy. Surveys shall not commence at nighttime or when the safety zone cannot be effectively monitored. Operators shall initiate each piece of equipment at the lowest practical sound level, increasing output in such a manner as to increase in steps not exceeding approximately 6 decibels (dB) per 5-minute period. During ramp-up, the Marine Wildlife Monitors (MWMs) shall monitor the safety zone. If marine mammals are sighted within or about to enter the safety zone, a power-down or shut down shall be implemented as though the equipment was operating at full power. Initiation of ramp-up procedures from shut down requires that the MWMs be able to visually observe the full safety zone.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Compliance with permit requirements (observers); compliance with safe start procedures. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Imme-diately prior to survey.	

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
MM BIO-6: Practical Limitations on Equipment Use and Adherence to Equipment Manufacturer's Routine Maintenance Schedule.	All State waters; geophysical operators shall follow, to the maximum extent possible, the guidelines of Zykov (2013) as they pertain to the use of subbottom profilers and side-scan sonar, including: • Using the highest frequency band possible for the subbottom profiler; • Using the shortest possible pulse length; and • Lowering the pulse rate (pings per second) as much as feasible. Geophysical operators shall consider the potential applicability of these measures to other equipment types (e.g., boomer). Permit holders will conduct routine inspection and maintenance of acoustic-generating equipment to ensure that low energy geophysical equipment used during permitted survey activities remains in proper working order and within manufacturer's equipment specifications. Verification of the date and occurrence of such equipment inspection and maintenance shall be provided in the required presurvey notification to CSLC.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Document initial and during survey equipment settings. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Imme-diately prior to and during survey.	JM May 26, 2016
MM BIO-7: Avoidance of Pinniped Haul-Out Sites.	The Marine Wildlife Contingency Plan (MWCP) developed and implemented for each survey shall include identification of haul-out sites within or immediately adjacent to the proposed survey area. For surveys within 300 meters (m) of a haul-out site, the MWCP shall further require that: • The survey vessel shall not approach within 91 m of a haul-out site, consistent with National Marine Fisheries Service (NMFS) guidelines; • Survey activity close to haul-out sites shall be conducted in an expedited manner to minimize the potential for disturbance of pinnipeds on land; and • Marine Wildlife Monitors shall monitor pinniped activity onshore as the vessel approaches, observing and reporting on the number of pinnipeds potentially disturbed (e.g., via head lifting, flushing into the water). The purpose of such reporting is to provide CSLC and California Department of Fish and Wildlife (CDFW) with information regarding potential disturbance associated with OGPP surveys.	No adverse effects to pinnipeds at haul outs are observed.	Document pinniped reactions to vessel presence and equipment use. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Monitoring Report following comple-tion of survey.	

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
MM BIO-8: Reporting Requirements – Collision.	All State waters; if a collision with marine mammal or reptile occurs, the vessel operator shall document the conditions under which the accident occurred, including the following: • 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 presence of rain or fog) at the time of collision; • Species of marine wildlife contacted (if known); • Whether an observer was monitoring marine wildlife at the time of collision; and, • Name of vessel, vessel owner/operator, and captain officer in charge of the vessel at time of collision. After a collision, the vessel shall stop, if safe to do so; however, the vessel is not obligated to stand by and may proceed after confirming that it will not further damage the animal by doing so. The vessel will then immediately communicate by radio or telephone all details to the vessel's base of operations, and shall immediately report the incident. Consistent with Marine Mammal Protection Act requirements, the vessel's base of operations or, if an onboard telephone is available, the vessel captain him/herself, will then immediately call the National Oceanic and Atmospheric Administration (NOAA) Stranding Coordinator to report the collision and follow any subsequent instructions. From the report, the Stranding Coordinator will coordinate subsequent action, including enlisting the aid of marine mammal rescue organizations, if appropriate. From the vessel's base of operations, a telephone call will be placed to the Stranding Coordinator, NOAA National Marine Fisheries Service (NMFS), Southwest Region, Long Beach, to obtain instructions. Although NOAA has primary responsibility for marine mammals in both State and Federal waters, the California Department of Fish and Wildlife (CDFW) will also be advised that an incident has occurred in State waters affecting a protected species.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Monitoring Report following comple-tion of survey.	

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
MM BIO-9: Limitations on Survey Operations in Select Marine Protected Areas (MPAs).	All MPAs; prior to commencing survey activities, geophysical operators shall coordinate with the CLSC, California Department of Fish and Wildlife (CDFW), and any other appropriate permitting agency regarding proposed operations within MPAs. The scope and purpose of each survey proposed within a MPA shall be defined by the permit holder, and the applicability of the survey to the allowable MPA activities shall be delineated by the permit holder. If deemed necessary by CDFW, geophysical operators will pursue a scientific collecting permit, or other appropriate authorization, to secure approval to work within a MPA, and shall provide a copy of such authorization to the CSLC as part of the required presurvey notification to CSLC. CSLC, CDFW, and/or other permitting agencies may impose further restrictions on survey activities as conditions of approval.	No adverse effects to MPA resources due to survey activities are observed.	Monitor reactions of wildlife to survey operations; report on shutdown conditions and survey restart. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder; survey permitted by CDFW.	Prior to survey.	
MM HAZ-1: Oil Spill Contingency Plan (OSCP) Required Information.	Permittees shall develop and submit to CSLC staff for review and approval an OSCP that addresses accidental releases of petroleum and/or non-petroleum products during survey operations. Permittees' OSCPs shall include the following information for each vessel to be involved with the survey: • Specific steps to be taken in the event of a spill, including notification names, phone numbers, and locations of: (1) nearby emergency medical facilities, and (2) wildlife rescue/response organizations (e.g., Oiled Wildlife Care Network); • Description of crew training and equipment testing procedures; and • Description, quantities, and location of spill response equipment onboard the vessel.	Reduction in the potential for an accidental spill. Proper and timely response and notification of responsible parties in the event of a spill.	Documentation of proper spill training. Notification of responsible parties in the event of a spill.	OGPP permit holder and contract vessel operator.	Prior to survey.	
MM HAZ-2: Vessel fueling restrictions.	Vessel fueling shall only occur at an approved docking facility. No cross vessel fueling shall be allowed.	Reduction in the potential for an accidental spill.	Documentation of fueling activities.	Contract vessel operator.	Following survey.	
MM HAZ-3: OSCP equipment and supplies.	Onboard spill response equipment and supplies shall be sufficient to contain and recover the worst-case scenario spill of petroleum products as outlined in the OSCP.	Proper and timely response in the event of a spill.	Notification to CSLC of onboard spill response equipment/supplies inventory, verify	Contract vessel operator.	Prior to survey.	

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
			ability to respond to worst-case spill.			
MM HAZ-1: Oil Spill Contingency Plan (OSCP) Required Information.	Outlined under **Hazards and Hazardous Materials** (above)					
MM HAZ-2: Vessel fueling restrictions.	Outlined under **Hazards and Hazardous Materials** (above)					
MM HAZ-3: OSCP equipment and supplies.	Outlined under **Hazards and Hazardous Materials** (above)					
MM BIO-9: Limitations on Survey Operations in Select MPAs.	Outlined under **Biological Resources** (above)					
MM REC-1: U.S. Coast Guard (USCG), Harbormaster, and Dive Shop Operator Notification.	All California waters where recreational diving may occur; as a survey permit condition, the CSLC shall require Permittees to provide the USCG with survey details, including information on vessel types, survey locations, times, contact information, and other details of activities that may pose a hazard to divers so that USCG can include the information in the Local Notice to Mariners, advising vessels to avoid potential hazards near survey areas. Furthermore, at least twenty-one (21) days in advance of in-water activities, Permittees shall: (1) post such notices in the harbormasters' offices of regional harbors; and (2) notify operators of dive shops in coastal locations adjacent to the proposed offshore survey operations.	No adverse effects to recreational divers from survey operations.	Notify the USCG, local harbormasters, and local dive shops of planned survey activity. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
MM FISH-1: U.S. Coast Guard (USCG) and Harbormaster Notification.	All California waters; as a survey permit condition, the CSLC shall require Permittees to provide the USCG with survey details, including information on vessel types, survey locations, times, contact information, and other details of activities that may pose a hazard to mariners and fishers so that USCG can include the information in the Local Notice to Mariners, advising vessels to avoid potential hazards near survey areas. Furthermore, at least twenty-one (21) days in advance of in-water activities, Permittees shall post such notices in the harbormasters' offices of regional harbors.	No adverse effects to commercial fishing gear in place.	Notify the USCG and local harbormasters of planned survey activity. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	
MM FISH-2: Minimize Interaction with Fishing Gear.	To minimize interaction with fishing gear that may be present within a survey area: (1) the geophysical vessel (or designated vessel) shall traverse the proposed survey corridor prior to commencing survey operations to note and record the presence, type, and location of deployed fishing gear (i.e., buoys); (2) no survey lines within 30 m (100 feet) of observed fishing gear shall be conducted. The survey crew shall not remove or relocate any fishing gear; removal or relocation shall only be accomplished by the owner of the gear upon notification by the survey operator of the potential conflict.	No adverse effects to commercial fishing gear in place.	Visually observe the survey area for commercial fishing gear. Notify the gear owner and request relocation of gear outside survey area. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Imme-diately prior to survey (prior to each survey day).	
MM FISH-1: USCG and Harbormaster Notification.	Outlined under **Commercial and Recreational Fisheries** (above)					

Acronyms/Abbreviations: CARB = California Air Resources Board; CDFW = California Department of Fish and Wildlife; CSLC = California State Lands Commission; dB = decibels; kHz = kilohertz; MPA = Marine Protected Area; MWCP = Marine Wildlife Contingency Plan; MWM = Marine Wildlife Monitor; m= meter(s); NOAA = National Oceanic and Atmospheric Administration; NO_x = Nitrogen Oxide; OGPP = Offshore Geophysical Permit Program; OSCP = Oil Spill Contingency Plan; USCG = U.S. Coast Guard

OIL SPILL CONTINGENCY PLAN
Archaeological and Biological Assessment of Submerged Landforms off the Pacific Coast Northern Channel Islands, CA
June 6-10, 2016

1.0 INTRODUCTION
The survey operations will be conducted on NOAA's R/V Shearwater and it is anticipated that response to any operational spills will be quickly identified and response will be initiated quickly and efficiently by the vessel operator. Oil spills in United States (U.S.) marine waters shall be reported immediately.

2.0 OPERATIONAL SPILLS
Operational spills might involve one or more of the following substances carried on board the vehicles: (i) fuel and (ii) lube oil. The vessel is equipped with woven polypropylene sheets for rapid absorption of surface oil and protective gloves, and a disposal bag. All of the liquids (listed below) that could cause a hazardous spill are either in the fuel tank or in the vehicle engine. Spill occurrence will likely be during fueling, in the event of grounding or if any instance occurred that punctured the gas tank. In the event a spill occurred in the engine compartment, the absorbent sheets 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 .25 gallons.

(i) Fuel:

Absorbent sheets, protective gloves, and a disposal bag 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 master shall notify the Coast Guard and port facility.

(ii) Lube oil:

Absorbent sheets, protective gloves, and a disposal bag shall be available for use in the event of a spill. If the oil is spilled 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 vehicle operator 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 clean up materials are located on the vessel.

4.0 VESSEL FUELING
All vessel fueling will be conducted at an approved docking facility. No cross vessel fueling will be performed. Appropriate spill avoidance measures during filling procedures will be observed.

5.0 PRIORITY ACTIONS TO ENSURE PERSONNEL AND VESSEL SAFETY
Safety of vessel and crew are paramount. In the event that a crewman's injuries require outside emergency assistance, the PCMG safety officer shall be contacted immediately and emergency personnel contacted. While awaiting emergency assistance, the on board vessel master or qualified vessel crew personnel will render first aid and/or CPR.

6.0 MITIGATING ACTIVITIES
If safety of both the vessel and the personnel has been addressed, the vessel master 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 leak proof 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.

7.0 EMERGENCY CONTACTS FOR STATE AND FEDERAL AGENCIES

Emergency numbers for U.S.C.G. for the San Francisco and Central Coast Areas are:
Pacific SAR Coordinator - Alameda: 510-437-3700
Rescue Coordination Center, Alameda: 510-437-3700

Any oil spill in U.S. marine waters shall be reported immediately to the following state and agencies:
West Coast Oil Spill hot-line 800-OELS-911, *or*
Department of Fish and Game CalTIP 888-CFG-CALTip (Californians Turn In Poachers & Polluters) (888-334-2258). *and*
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. Spill location
c. What was spilled (oil, gas, diesel, etc.)
d. Estimated size of spill
e. The date & time spill was identified (same day).
f. Any oiled or threatened wildlife
g. Source of spill, if known h. Activity observed 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 Southern California area, these include the following contacts:

Oiled Wildlife Care 1-877-UCD-OWCN	Network Animal Advocates 323-651-1336
California Wildlife Center 310-458-9453	South Bay Wildlife Rehab 310-378-9921

GEOPHYSICAL SOUND SOURCE SYSTEMS MAINTENANCE RECORDS
Archaeological and Biological Assessment of Submerged Landforms off the Pacific Coast
Northern Channel Islands, CA
June 6-10, 2016

Scripps Institution of Oceanography Marine Facility (MARFAC) operates an arsenal of remote sensing instruments ranging from swath bathymetry to multi-channel seismic systems. Data acquisition is world wide and such an operation requires extensive testing of the geophysical equipment before deployment by a talented group of marine technicians and engineers. SIO operates, maintains, and repairs all geophysical equipment employed to support their field campaigns.

Edgetech 512i Chirp sub-bottom sonar:
The 512i Edgetech CHIRP sonar is operated and owned by Scripps Institution of Oceanography and has been thoroughly checked, tested and calibrated according to the manufacturer's recommended procedures. The system is also sent back to Edgetech regularly to ensure the acoustic transducers are calibrated and perform to manufactures' specifications as well as upgrades to topside software and hardware.

The system includes;
1) a DF1000 towfish and topside unit
2) a X-Star subbottom sonar including:

a) a SB0512 tow fish with
i) 2 planar receiving arrays
ii) Woofer/tweeter transmitting pair covering the range of 0.5 -16 kHz
iii) 31" pressure housing containing matching transformers, 2 channel power amp, 2 channel receiving amp, matching transformers, 2 channel DGA and A/D converters and associated DSP processors, Pentium 2 computer, ADSL telemetry transceiver, 300 VDC to 48/12/5 VDC power supplies
iv) Pitch/Roll sensor

b) A shipboard interface unit (SIU) that provides 300 VDC power to fish and the ADSL telemetry transceiver, hardware and software diagnostics, and an Ethernet output. There is a Pentium host.

c) A topside Pentium processor with an ethernet input from the SIU. This performs the following
i) Subbottom image display during acquisition and playback
ii) Navigation interface
iii) Seg-Y storage of subbottom and navigation data

Prior to all cruises, the system undergoes a thorough evaluation of all components, cables, connectors and electronics for any signs of corrosion, wear and/or damage. Acoustic tests and calibration are performed to confirm system performance meets manufactures' specifications. The 512i Edgetech CHIRP system is fully compliant with Edgetech stated capabilities and

specifications.

Edgetech 4200 Sidescan Sonar:
The Edgetech 4200 sidescan sonar is operated and owned by Scripps Institution of Oceanography and has been thoroughly checked, tested and calibrated according to the manufacturer's recommended procedures. The system is also sent back to Edgetech regularly to ensure the acoustic transducers are calibrated and perform to manufactures' specifications as well as upgrades to topside software and hardware.

Prior to all cruises, the system undergoes a thorough evaluation of all components, cables, connectors and electronics for any signs of corrosion, wear and/or damage. Acoustic tests and calibration are performed to confirm system performance meets manufactures' specifications. The Edgetech 4200 system is fully compliant with Edgetech stated capabilities and specifications.

Klein 3000H Sidescan Sonar:

The Klein 3000H side scan sonar is operated and owned by the National Park Service and has been thoroughly checked, tested and calibrated according to the manufacturer's recommended procedures. The National Park Service's side scan sonars are routinely used, all cables are repaired by the manufacturer, and the side scan used for this project had a full service inspection and cable repair in May 2015 by the manufacturer. All equipment has been further inspected and tested by NPS personnel in August 2015. All sonar systems are in working order and remain operationally ready.

SAN DIEGO STATE UNIVERSITY

Jillian Maloney <jmaloney@mail.sdsu.edu>

Sanctuary Permit?

Sean Hastings <sean.hastings@noaa.gov> Wed, May 11, 2016 at 3:58 PM
To: Jillian Maloney <jmaloney@mail.sdsu.edu>
Cc: Todd Braje <tbraje@mail.sdsu.edu>, Ryan Freedman - NOAA Affiliate <ryan.m.freedman@noaa.gov>

Hi Jillian,

The permit went out in the mail last Thursday, so you should have it soon.

Let me know if you don't get it by tomorrow.

Thank you

Sean Hasting

On May 11, 2016, at 9:15 AM, Jillian Maloney <jmaloney@mail.sdsu.edu> wrote:

> Hi Sean,
>
> Any news on the permit? Our first cruise is schedule for June 6 and I need to submit notifications to the California State Lands Commission by this coming Friday. It would be good to include info on the CINMS permit, if available.
>
> This upcoming cruise is only for geophysical survey. If the sediment coring is holding up the permit, would it be possible to issue two separate permits - one for the first two geophysical cruises, and a second for the sediment coring?
>
> Thank you!
> Jillian
>
> On Tue, Apr 26, 2016 at 5:08 PM, Jillian Maloney <jmaloney@mail.sdsu.edu> wrote:
>> Hi Sean,
>>
>> Thanks for the update. We have applied for a permit from CDFW for the sampling work.
>>
>> I apologize for neglecting the number of cores in the application. Our sampling isn't scheduled until mid-August so we didn't have exact numbers when I put the application together. The details about the coring equipment and size of the cores are included in the methods. Please let me know if you feel that anything else is missing.
>>
>> Jillian
>>
>> On Tue, Apr 26, 2016 at 5:01 PM, Sean Hastings - NOAA Federal <sean.hastings@noaa.gov> wrote:
>>> Jillian -
>>>
>>> Thanks for the additional detail, it is very helpful. This is the kind of information that should be provided in the methods section of the permit application. Please share any additional methodology information.
>>>
>>> While we can permit the disturbance to the seafloor, we can't permit take in the state water marine reserves. Have you secured a scientific collection permit from the CA Dept. of Fish and Wildlife (CDFW)? If you plan on grabbing or coring through sediment in the marine reserves in

state water you will need a permit from them. Brian Owens is your contact with CDFW - **brian.owens@wildlife.ca.gov.**

You can expect paperwork from us by the end of the week.

Best Regards -

Sean

On Thu, Apr 14, 2016 at 4:19 PM, Jillian Maloney <jmaloney@mail.sdsu.edu> wrote:

Hi Sean,

We will be collected 16 vibracores and 36 box cores We'll have four ~1 km x 1 km survey areas and from each of those areas we'll collect 4 vibracores and 4 box cores. One of those four areas will be designated as a seep site and additional box cores (~20) will be collected from that area.

Let me know if you have other questions.

Jillian

On Wed, Apr 13, 2016 at 1:12 PM, Sean Hastings - NOAA Federal <sean.hastings@noaa.gov> wrote:

Hello Jillian and Todd -

We are about to get a permit out to you and have one question - how many total cores and sediment grabs do you intend to conduct within the sanctuary? how many in any one particular site/area? My apologies if this is detailed in the application or other materials you provided.

Thank you,

Sean

On Tue, Mar 8, 2016 at 4:28 PM, Jillian Maloney <jmaloney@mail.sdsu.edu> wrote:

Hi Sean,

Please find our permit application attached. I'm also attaching our executed Geophysical Permit for the CA State Lands Commission for this research. We're also working on a geological permit from CA SLC as well as permits from the US Army Corp of Engineers, and the CA Department of Fish & Game. These are in process, but please let me know if I should pass along any of those applications as well.

Thank you!
Jillian

On Mon, Mar 7, 2016 at 5:09 PM, Sean Hastings - NOAA Federal <sean.hastings@noaa.gov> wrote:

Hi Jillian -

One detailed permit application will suffice.

Thank you,

Sean

On Mon, Mar 7, 2016 at 4:57 PM, Jillian Maloney <jmaloney@mail.sdsu.edu> wrote:

Hi Sean,

Thanks for getting back to us. If you have a minute, I just want to make sure we are going about this in the correct way. Our field operations will be conducted in 2 parts.

The first will be only geophysical surveys. This work involves towing equipment within the water column that is used to map the seafloor and subseafloor. There will be no disturbance of the seafloor.

The 3rd cruise will be to collected sediment cores. This will involve vibracore and box core operations that collect 4" diameter tubes and 0.5 m sq. boxes, respectively.

Will we need to submit 2 separate permits for each of these activities? Or should we include everything on a single permit application? The geophysical cruises will be conducted in June and July and the coring cruise in August.

Thank you,
Jillian

On Mon, Mar 7, 2016 at 4:42 PM, Sean Hastings - NOAA Federal <sean.hastings@noaa.gov> wrote:

> Hi Todd,
>
> From what I understand of the project you should apply for a research permit.
>
> Thanks,
>
> Sean
>
> On Tue, Mar 1, 2016 at 3:17 PM, Todd Braje <tbraje@mail.sdsu.edu> wrote:
>
> > Hi Sean,
> >
> > Hope all is well. We are making progress on lining up everything for fieldwork for our BOEM project this summer. We just nailed down the CA lands geophysical permit and will be applying to the sanctuary for a sea floor coring permit. We have one question, however, do we need a general research permit for our geophysical surveys this summer? Based on the information on the website, it seems like this is not necessary, but I wanted to double check with you.
> >
> > Thanks so much,
> > Todd
> >
> > --
> > Todd J. Braje, Ph.D.
> > San Diego State University
> > Associate Professor of Anthropology
> > Co-Editor, Journal of Island and Coastal Archaeology
> > Smithsonian Research Associate
> > tbraje@mail.sdsu.edu
> > http://www-rohan.sdsu.edu/~tbraje/Site/Welcome.html
> > Fax: 619-594-1150
>
> --
>
> **Sean Hastings**
> **Resource Protection Coordinator**
> **Channel Islands National Marine Sanctuary**
>
> sean.hastings@noaa.gov
> (805) 893-6424 wk
> (805) 705-1790 cell

(805) 568-1582 fax

University of California Santa Barbara
Ocean Science Education Building 514, MC 6155
Santa Barbara, CA 93106-6155

The mission of NOAA's national marine sanctuaries is to conserve, protect and enhance the biodiversity, ecological integrity and cultural legacy of these special underwater places.

--
Jillian M. Maloney
Department of Geological Sciences
San Diego State University
5500 Campanile Dr.
San Diego, CA 92182-1020
lab: 619-594-6394
cell: 619-228-6075
website

--

Sean Hastings
Resource Protection Coordinator
Channel Islands National Marine Sanctuary

sean.hastings@noaa.gov
(805) 893-6424 wk
(805) 705-1790 cell
(805) 568-1582 fax

University of California Santa Barbara
Ocean Science Education Building 514, MC 6155
Santa Barbara, CA 93106-6155

The mission of NOAA's national marine sanctuaries is to conserve, protect and enhance the biodiversity, ecological integrity and cultural legacy of these special underwater places.

--
Jillian M. Maloney
Department of Geological Sciences
San Diego State University
5500 Campanile Dr.
San Diego, CA 92182-1020
lab: 619-594-6394
cell: 619-228-6075
website

--

Sean Hastings
Resource Protection Coordinator
Channel Islands National Marine Sanctuary

sean.hastings@noaa.gov
(805) 893-6424 wk
(805) 705-1790 cell
(805) 568-1582 fax

University of California Santa Barbara
Ocean Science Education Building 514, MC 6155
Santa Barbara, CA 93106-6155

The mission of NOAA's national marine sanctuaries is to conserve, protect and enhance the biodiversity, ecological integrity and cultural legacy of these special underwater places.

--
Jillian M. Maloney
Department of Geological Sciences
San Diego State University
5500 Campanile Dr.
San Diego, CA 92182-1020
lab: 619-594-6394
cell: 619-228-6075
website

--

Sean Hastings
Resource Protection Coordinator
Channel Islands National Marine Sanctuary

sean.hastings@noaa.gov
(805) 893-6424 wk
(805) 705-1790 cell
(805) 568-1582 fax

University of California Santa Barbara
Ocean Science Education Building 514, MC 6155
Santa Barbara, CA 93106-6155

The mission of NOAA's national marine sanctuaries is to conserve, protect and enhance the biodiversity, ecological integrity and cultural legacy of these special underwater places.

--
Jillian M. Maloney
Department of Geological Sciences
San Diego State University
5500 Campanile Dr.

San Diego, CA 92182-1020
lab: 619-594-6394
cell: 619-228-6075
website

--

Jillian M. Maloney
Department of Geological Sciences
San Diego State University
5500 Campanile Dr.
San Diego, CA 92182-1020
lab: 619-594-6394
cell: 619-228-6075
website