



BILLING CODE: 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XC031

Takes of Marine Mammals Incidental to Specified Activities; Construction and Race Event Activities for the 34th America's Cup in San Francisco Bay, California

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that we have issued an incidental harassment authorization (IHA) to the America's Cup Event Authority (ACEA) and the Port of San Francisco (Port) to incidentally harass, by Level B harassment only, several species of marine mammals during construction activities associated with the 34th America's Cup in San Francisco Bay.

DATES: This authorization is effective for a period of 1 year from the date of issuance.

ADDRESSES: A copy of the IHA and related documents are available by writing to Michael Payne, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910.

A copy of the application, including references used in this document, may be obtained by visiting the internet at: <http://www.nmfs.noaa.gov/pr/permits/incidental.htm>. For those members of the public unable to view these documents on the internet, a copy may be obtained by writing to the address specified above or telephoning the contact listed below (see FOR

FURTHER INFORMATION CONTACT). Associated documents prepared pursuant to the National Environmental Policy Act (NEPA) are also available at the same site. Documents cited in this notice may also be viewed, by appointment, during regular business hours, at the aforementioned address.

FOR FURTHER INFORMATION CONTACT: Ben Laws, Office of Protected Resources, NMFS, (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 et seq.) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is published in the Federal Register to provide public notice and initiate a 30-day comment period.

Authorization for incidental taking shall be granted if we find that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. We have defined 'negligible impact' in 50 CFR 216.103 as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the United States can apply for an authorization to incidentally take small numbers of marine mammals by Level B harassment as defined below. Section 101(a)(5)(D) establishes a 45-day time limit for our review of an application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of marine mammals. Within 45 days of the close of the comment period, we must either issue or deny the authorization. If authorized, an IHA may be effective for a maximum of one year from date of issuance.

Except with respect to certain activities not pertinent here, the MMPA defines ‘harassment’ as: “any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].”

Summary of Request

We received an adequate and complete application on April 27, 2012, from ACEA and the Port requesting issuance of an IHA for the taking, by Level B harassment only, of marine mammals incidental to activities conducted in support of the 34th America’s Cup (AC34) in San Francisco, California. A series of yacht races will be held in San Francisco Bay during 2012-13. The specified activities include the installation of temporary dock facilities along with certain permanent improvements at the venue sites to accommodate the AC34 events; these activities will require pile driving and will be conducted in advance of AC34 events. Components of the AC34 race events that may result in harassment of marine mammals include helicopter operations and fireworks displays. Authorization of incidental take was requested for the harbor

seal (Phoca vitulina), California sea lion (Zalophus californianus), harbor porpoise (Phocoena phocoena), and elephant seal (Mirounga angustirostris). Based on the best available information, we have authorized the applicants to incidentally harass up to 14,063 California sea lions, 686 harbor seals, 63 harbor porpoises, and two northern elephant seals during the IHA, which is valid for one year from the date of issuance. Any activities that may result in incidental harassment of marine mammals that fall outside of the 1-year period of validity will require subsequent authorization.

Description of the Specified Activity

The America's Cup (AC34) is a series of sailing regattas and match races to be held in San Francisco Bay (the Bay) in 2012-13. These were described in greater detail in the Federal Register notice of proposed authorization (hereafter, the FR notice; 77 FR 32573; June 1, 2012) and will not be repeated here. A number of project sites, or venues, which will provide all aspects of AC34 facilities and services are planned to accommodate these events. Construction of these venues will require pile driving for the installation of temporary floating docks as well as for permanent improvements to existing waterfront facilities. Helicopters will be used for AC34 2012 and 2013 races to serve broadcasting and media operations. Commercial-grade fireworks displays are planned at the opening and closing ceremonies for the 2013 America's Cup events only. The action area (i.e., San Francisco Bay) was described in greater detail in the FR notice.

Temporary floating docks will be installed utilizing 18-in steel pipe piles; all piles for floating docks will be installed via vibratory pile driver only. Floating docks will be located at Piers 80, 30-32, 14 North, 9, 23 North and South, 27 South, 29 and adjacent to Marina Green (please see Figure 1 of the AC34 application for location overview and Figures 3-9 for detailed

location diagrams). The floating docks will be installed at various stages starting in late summer of 2012 and extending through the spring of 2013. A total of 244 18-in steel pipe piles will be installed for temporary floating docks; project engineers estimate that a maximum of eight piles may be installed per day. Accounting for unforeseen delays, installation of floating docks is expected to require approximately 2 weeks at each location (with varying amounts of actual pile driving days), although the time may vary depending on number of piles to be driven and any unforeseen difficulties. In addition, repairs and improvements are planned for Pier 19 (see Figure 8 of the application for a site plan). Pier 19 repairs will require driving of 224 12-in wood piles; these will be installed via impact hammer with an estimated maximum production rate of eight piles per day. Pier 19 repairs are expected to require approximately 28 days over the course of 4 months. Table 1 details the extent and location of pile driving activity.

Location	# of piles
Pier 80	26
Pier 32 South	27
Pier 14 North	44
Pier 9	15
Pier 23 North	21
Pier 23 South	16
Pier 27	55
Pier 29 East	5
Pier 29 North	21
Marina Green offshore	14
Total piles for vibratory installation	244
Pier 19*	224

* Pier 19 repairs will require impact driving of 12-in wood piles. All other piles will be 18-in steel piles installed with vibratory driver.

Depending on the location and logistics, piles will likely be installed from existing deck structures using land-based pile driving equipment or from a barge. Impact pile driving will not occur concurrently with any other known project using an impact hammer; however, there will be no restriction on concurrent vibratory driving. Vibratory pile driving for installation of floating docks is planned for late summer of 2012 and approximately March through June of

2013, while installation of 12-inch wood piles at Pier 19 is planned for sometime between August and December 2012.

A brief overview of plans for the actual race events was provided in the FR notice. Because we do not plan to authorize take of marine mammals incidental to these activities, they were not described in detail. However, several commenters raised concerns relating to the potential for take incidental to race activities, whether from direct vessel strike or from behavioral harassment resulting from the presence of increased numbers of vessels associated with race activities. These concerns are addressed in greater detail later in this document (see “Comments and Responses”).

Helicopters will be used for AC34 2012 and 2013 races to serve broadcasting and media operations. The helicopters following each race will fly between 100 and 400 feet above sea level (asl; 30-122 m) within the race area. The coordination of the helicopters during race events will be such that one or two will stay above 400 ft asl and other helicopters will fly between 100-400 ft asl to more closely cover the racing action. To protect sensitive avian species, the project sponsors will restrict helicopter operations such that they will avoid the air space within at least 1,000 ft (vertically and horizontally; 305 m) around Alcatraz Island and Crissy Beach Wildlife Protection Area; these measures will also mitigate any possibility of incidental harassment of marine mammals at these locations. During flight operations, helicopters will minimize impacts to pinnipeds at Pier 39 by avoiding low flying (less than 100 ft asl). Final details of helicopter operations will be provided in the Water and Air Traffic Plan that will be developed and implemented for AC34 prior to any race and/or helicopter events.

Commercial grade fireworks displays are planned at the opening and closing ceremonies for the 2013 AC events only; therefore, it is likely that no fireworks events will occur during the

1-year period of validity for this IHA. However, this potentially harassment-inducing activity is precautionarily considered here to provide the event organizers with flexibility in scheduling such events. The location of the fireworks barge will be near Piers 27-29 and up to four fireworks displays will occur lasting 30-45 minutes each. It is anticipated that aerial shells will be launched to altitudes of 200 to 1,000 ft (61-305 m) where they will explode and ignite internal burst charges and incendiary chemicals. Most of the incendiary elements and shell casings burn up in the atmosphere; however, portions of the casings and some internal structural components and chemical residue fall back to the ground or water, depending on prevailing winds. The project sponsors have coordinated and will continue to coordinate with the USCG regarding limitations on the location, frequency and duration of the fireworks to minimize potential environmental impacts. Any fireworks displays will be subject to approval by the USCG through the USCG Marine Event Permit process.

Description of Sound Sources and Distances to Thresholds

An in-depth description of sound sources in general was provided in the FR notice (77 FR 32573; June 1, 2012). In-water construction activities associated with the project will include impact and vibratory pile driving. The sounds produced by these activities are considered pulsed and non-pulsed (and specifically continuous), respectively. The distinction between these two general sound types is important because they have differing potential to cause physical effects, particularly with regard to hearing (e.g., Ward, 1997 in Southall et al., 2007). Please see Southall et al., (2007) for an in-depth discussion of these concepts.

Since 1997, we have used generic sound exposure thresholds as guidelines to estimate when harassment may occur. Current practice regarding exposure of marine mammals to sound defines thresholds as follows: cetaceans and pinnipeds exposed to sound levels of 180 and 190

dB root mean square (rms; note that all underwater sound levels in this document are referenced to a pressure of 1 μPa) or above, respectively, are considered to have been taken by Level A (i.e., injurious) harassment, while behavioral harassment (Level B) is considered to have occurred when marine mammals are exposed to sounds at or above 120 dB rms for continuous sound (such as will be produced by vibratory pile driving) and 160 dB rms for pulsed sound (produced by impact pile driving), but below injurious thresholds. For airborne sound, pinniped disturbance from haul-outs has been documented at 100 dB (unweighted) for pinnipeds in general, and at 90 dB (unweighted) for harbor seals (note that all airborne sound levels in this document are referenced to a pressure of 20 μPa).

The underwater acoustic environment consists of ambient sound, defined as environmental background sound levels lacking a single source or point (Richardson *et al.*, 1995). The ambient underwater sound level of a region is defined by the total acoustical energy being generated by known and unknown sources, including sounds from both natural and anthropogenic sources. The sum of the various natural and anthropogenic sound sources at any given location and time depends not only on the source levels (as determined by current weather conditions and levels of biological and industrial or other anthropogenic activity) but also on the ability of sound to propagate through the environment. In turn, sound propagation is dependent on the spatially and temporally varying properties of the water column and sea floor, and is frequency-dependent. As a result of the dependence on a large number of varying factors, the ambient sound levels at a given frequency and location can vary by 10-20 dB from day to day (Richardson *et al.*, 1995). Ambient underwater sound levels are comprised of multiple sources, including physical (e.g., waves, earthquakes, ice, atmospheric sound), biological (e.g., sounds produced by marine mammals, fish, and invertebrates), and anthropogenic sound (e.g., vessels,

dredging, aircraft, construction). Because the San Francisco waterfront is a heavily used urban and industrial environment, anthropogenic sound creates a typically loud environment. In San Francisco Bay, the average broadband ambient underwater sound levels were measured at 133 dB re 1 μ Pa in the Oakland Outer Harbor (Strategic Environmental Consulting, Inc., 2004).

There is a general lack of information regarding the sound source levels for driving of timber piles in the available literature. However, underwater sound produced by impact driving of 12-in timber piles with use of cushion blocks, as is planned for the specified activity, has been measured in the Bay area at 170 dB rms at 10 m (Caltrans, 2007). Caltrans (2007) has also measured SPLs associated with vibratory pile driving in the Bay area; vibratory driving for 12-in steel pipe piles was measured at 155 dB rms and for 36-in steel pipe piles at 170 dB rms, both at 10 m distance. Averaging these values provides a conservative estimate of 162.5 dB rms for 18-in piles, as will be used in the specified activities. Using practical spreading loss – 4.5 dB reduction in level for each doubling of distance from the source – to approximate site-specific sound propagation characteristics, these data provide estimated source levels of 185 dB rms for impact driving of 12-in timber piles with use of a cushion block and 177.5 dB rms for vibratory driving of 18-in steel pipe piles. On the basis of these estimated source levels, the estimated distances to various thresholds (presented for reference only) are presented in Table 2. Impact pile driving activity is not likely to produce SPLs of sufficient intensity to potentially cause injury to pinnipeds (i.e., 190 dB rms), and SPLs produced by vibratory pile driving will likely be low enough to preclude the potential for injury to any marine mammal (i.e., below 180 dB rms).

Table 2. Estimated Distances to Underwater Marine Mammal Sound Thresholds during Pile Driving

Threshold	Distance
Impact driving, pinniped injury (190 dB)	n/a

Impact driving, cetacean injury (180 dB)	2.2 m
Impact driving, disturbance (160 dB)	46 m
Impact driving, airborne disturbance (100 dB)	5.3 m
Impact driving, airborne disturbance (90 dB)	17 m
Vibratory driving, pinniped injury (190 dB)	n/a
Vibratory driving, cetacean injury (180 dB)	n/a
Vibratory driving, disturbance (133 dB ¹)	926 m
Vibratory driving, airborne disturbance (100 dB)	6.8 m
Vibratory driving, airborne disturbance (90 dB)	22 m

*Distance to disturbance zone calculated on basis of ambient sound measurement of 133 dB rms in vicinity of San Francisco waterfront. Marine mammals present in the project area are likely acclimated to non-pulsed sound at levels well above NMFS' threshold for harassment for these types of sound (i.e., 120 dB rms).

There is a general lack of data regarding airborne SPLs from similar pile driving events; however, acoustic monitoring of pile driving events conducted recently by the U.S. Navy in Hood Canal provides approximate source levels of 114.5 and 116.7 dB rms for impact driving and vibratory driving, respectively, of steel piles of 24- to 48-in diameter. Impact driving of 12-in timber piles with a cushion block will likely produce sound at somewhat lower intensity. It is extremely unlikely that pinnipeds will be exposed to airborne SPLs above the relevant thresholds, given the source levels and likely distance between pinnipeds and the activity. Please see Table 2 for estimated distances to thresholds.

Comments and Responses

We published a notice of receipt of the AC34 application and proposed IHA in the Federal Register on June 1, 2012 (77 FR 32573). We received comments from the Marine Mammal Commission (Commission), Golden Gate Cetacean Research (GGCR), The Marine Mammal Center (Center), Oceanic Society Expeditions (OSE), and a private citizen. Several commenters expressed concern that the potential for interaction between marine mammals and

AC34-related vessels during race events was underestimated. Specifically, commenters believed that interaction could occur between vessels and small cetaceans or pinnipeds, and that we did not consider the best available information for harbor porpoise. These concerns are addressed with greater specificity in comment response. However, we do not believe that take incidental to race events is likely to occur, as described below. With regard to the potential for vessel strike resulting from race events, we believe measures that will be developed and implemented by the Port, ACEA, and the USCG (the permitting authority for race events), in cooperation with interested parties such as GGCR, will be sufficient to mitigate the possibility of vessel strikes. In the event that a vessel strike did occur and could be connected to the AC34 race events, it would be considered an unauthorized take under the MMPA and could be subject to enforcement action.

In addition, it was pointed out that we did not address three species with known occurrence in San Francisco Bay: bottlenose dolphin (*Tursiops truncatus*), Steller sea lion (*Eumetopias jubatus*), and minke whale (*Balaenoptera acutorostrata*). The information provided in relation to the occurrence of these three species in the Bay did not lead us to believe that authorization of incidental take is warranted; the information provided by commenters may be found in “Description of Marine Mammals in the Area of the Specified Activity”. The comments, and our responses, are provided here. We have determined that the mitigation measures described here will effect the least practicable impact on the species or stocks and their habitats.

Comment 1: The Commission recommends that we assess and use the average ambient sound level minus two standard deviations down to the 120-dB re 1 μ Pa threshold as a basis for establishing the Level B harassment zone for vibratory pile driving.

Response: For this action, we concur and will implement the Commission's recommended approach.

Comment 2: The Commission recommends that we require the applicants to implement soft-start procedures after 15 minutes if pile driving was delayed or shut down because of the presence of a marine mammal within or approaching the shutdown zone and observers did not see that marine mammal leave the zone.

Response: We disagree with this recommendation. The Commission believes it is possible that marine mammals may remain in the shutdown zone beyond the 15 minute required clearance period and not be observed, thus creating a risk of exposure to sound that could result in unauthorized Level A harassment. While this is possible in theory, we find it extremely unlikely that an animal could remain undetected in such a small zone and under typical observation conditions at the San Francisco waterfront. Vibratory driving for this activity is unlikely to produce sound levels above 180 dB rms, while impact driving of 12-in timber piles with a cushion block is predicted to produce sound levels exceeding 180 dB rms at a distance of only 2.2 m from the pile being driven. Neither activity is expected to produce sound exceeding 190 dB rms. It is highly unlikely that a marine mammal could remain within a radius of 10 m (i.e., the radial distance to the conservative shutdown zone to be established by the Port) and not be detected, much less 2.2 m (i.e., the predicted radial distance to the 180 dB isopleths). Further, the required protocol for shutdowns and restarts (assuming the animal is not observed to exit the defined shutdown zone) is founded upon the premise that, based upon dive times and breathing patterns, small cetaceans and pinnipeds are typically unlikely to remain within variably-sized, but usually small, shutdown zones for longer than 15 minutes. A requirement to implement soft-start following a 15 minute shutdown would implicitly reject that premise, i.e., there is no reason

to make such a requirement if, as we believe, the 15 minute shutdown period is sufficient for small cetaceans and pinnipeds to clear a defined shutdown zone. We would be interested in and would carefully review any information from the public potentially demonstrating that the 15 minute shutdown period is insufficient.

We believe the possibility of a marine mammal remaining undetected in the shutdown zone, in relatively shallow water, for greater than 15 minutes is discountable. A requirement to implement soft-start after every shutdown or delay less than 30 minutes in duration would be impracticable, potentially resulting in significant construction delays and therefore extending the overall time required for the project, and thus the number of days on which disturbance of marine mammals could occur.

Comment 3: The Commission recommends that we require the applicants to monitor before, during, and after all soft-starts of vibratory and impact pile driving to gather the data needed to determine the effectiveness of this technique as a mitigation measure.

Response: The Commission states that the effectiveness of the soft-start technique as a mitigation measure has yet to be empirically verified, and that we should not assume that these procedures constitute an effective mitigation measure. While the Commission is correct in that the effectiveness of the technique has yet to be empirically verified, we would note that we have never made any claims as to any specific degree of efficacy nor have we ever attempted to reflect such an assumption in our estimations of potential incidental take. We do believe it reasonable to expect that the use of soft-start procedures may mitigate the effects of pile driving activity and, in the absence of empirical study, are often required to use measures on the basis of presumed rather than demonstrated efficacy. However, we share with the Commission the desire to

empirically verify the efficacy of any measures required, including soft-start, and would welcome suggestions on how best to design and conduct a study accomplishing that goal.

The presumed efficacy of soft-start rests upon the premise that, if a sound is unpleasant to marine mammals, they will generally move away from it, behavioral context notwithstanding. Therefore, if sound is introduced into the marine environment gradually, or at a lower level than would be produced by full-power pile driving, marine mammals should have the opportunity to depart the area of effect before being exposed to maximum sound pressure levels. Any study of soft-start procedures should address questions relating to these assumptions, e.g., what behavior marine mammals exhibit in response to soft-starts and whether sound pressure levels produced during soft-starts are lower than those produced during full-power driving.

The U.S. Navy completed a pile driving project in the Hood Canal, Washington, during 2011. As part of the monitoring effort required for that project, we requested the Navy to investigate the efficacy of soft-start. Their study was generally inconclusive: during vibratory pile driving, sound levels during soft-starts were typically lower than levels measured at the initiation and completion of driving; however, levels varied considerably during driving and were at times lower than those produced during the soft-starts. Mean levels during soft-start were approximately 2 dB lower than those produced during continuous driving, but measured values ranged from 16 dB louder during soft-start than during continuous driving to 14 dB louder during continuous driving – a range of 30 dB. As such, it is difficult to assign a level that describes how much lower the soft-start sound levels were than continuous driving levels. For impact pile driving, data show more consistently that levels were generally lower during soft-starts than during full-power driving, by approximately 4.5 dB. Overall, behavioral monitoring showed minimal variation in the frequency at which most behavioral patterns were observed

among different construction categories (soft-starts, vibratory pile driving, and impact pile driving) and non-construction time periods. Animals were occasionally noted diving in conjunction with the onset of soft-start events and subsequently reemerging further away and continuing their previous movements. However, diving behaviors associated with a soft-start event occurred with the same frequency as diving behaviors during non-pile driving times. Despite the inconclusive nature of this opportunistic study, we see value in continuing to request the collection of such information from applicants within the context of agreed-upon monitoring plans. However, it is unclear how expanded monitoring in this case, in the absence of specific experimental design, would satisfy the Commission's request for empirical verification of efficacy.

Comment 4: The Commission recommends that we require the applicants to monitor the Level A and B harassment zones to detect the presence and characterize the behavior of marine mammals during all vibratory and impact pile driving activities.

Response: We proposed, in conjunction with the applicants, that monitoring be conducted during all impact pile driving and for no less than one-third of total vibratory pile driving days. The Commission believes that this level of monitoring effort is not sufficient, and that monitoring should be conducted during 100 percent of pile driving activity. The Commission states that because marine mammal reactions to different sources of disturbance are not always predictable, continuous monitoring is the only way to ensure that unexpected reactions are detected, documented, and evaluated. We agree that marine mammal reactions to a given stimulus are not always predictable; however, the monitoring effort is allocated such that days when extreme reactions might be more likely (i.e., when activity begins at a new site) as well as days that are representative of typical levels of activity are accounted for. Marine

mammal reactions to continuous sound, such as is produced by vibratory pile driving, have not typically been observed to be extreme or unexpected. The purpose of this monitoring is to verify the number and intensity of behavioral reactions that might be considered incidental takes, and the monitoring plan is sufficient to accomplish that task. Further, while dedicated observers are not present during the non-monitored days, construction personnel and project staff are on-site. While lacking the specialized training required of biological observers, they are capable of noticing extreme behavioral reactions of smaller marine mammals or the presence of large whales occurring within 1,000 m of the shore, and notifying the project monitoring team or implementing shutdown as appropriate. Should extreme reactions of marine mammals occur in response to vibratory pile driving (which will not produce sound exceeding thresholds for Level A harassment), the applicants will stop the activities and consult with us.

In addition, we considered and rejected this expanded plan when developing the proposed IHA, and provided a discussion of the reasoning and justification for that decision in the proposed IHA FR notice. Please see that discussion for complete justification of this decision. The Commission has not provided any new information that would change our determination that the monitoring plan is sufficient when considering benefit to the species and practicability for the applicant.

Comment 5: GGCR recommends that we require the establishment of a marine mammal observer network to monitor the presence of marine mammals during all AC34 race events, especially those attracting large crowds of spectator vessels. Additionally, GGCR suggests conducting pre- and post-race studies to both verify the distribution of marine mammals prior to racing events and to determine any long-term effects. The Center also expressed concern about potential incidental take from race events and the lack of an effective monitoring and

mitigation plan for such incidents involving small cetaceans or pinnipeds. A private citizen noted that the spectator fleet associated with AC34 race events will cause increased levels of ambient sound in the Central Bay and expressed concern that this may result in acoustic masking, increasing the probability of vessel strike.

Response: We thank the commenters for their concerns and for the information presented. Before addressing those concerns, we need to correct an inaccuracy found in the GGCR comment letter and provide additional information. First, GGCR states that ACEA is predicting over 5,000 spectator vessels on peak days for the 2013 race events. In fact, ACEA predicts that a maximum of 880 boats would be on the water during a peak day in 2013, and that 80 percent of these would be sailboats (i.e., smaller vessels incapable of high rates of speed or erratic maneuvering). An estimated maximum of 340 boats would be present during peak days for 2012 events. Please see “America’s Cup 34 Visitation Analysis”, provided on our website. Second, GGCR believes that, depending on tidal cycle, harbor porpoises could be blocked from entering or leaving the Bay. However, the USCG’s Special Local Regulations allow for the races to take place only between 11:00 a.m. and 4:00 p.m. on race days, meaning that races will take less than five hours. Although it will take additional time following the close of racing for spectator vessels to disperse, it seems unlikely that movements would be completely blocked over the diel cycle (i.e., 24-hour cycle).

There are two avenues by which take of marine mammals incidental to race events might occur: behavioral harassment (resulting from vessel noise and/or the physical presence of large numbers of vessels) and direct strike. According to information available from GGCR, the areas with greatest frequency of harbor porpoise sightings are in the vicinity of the Golden Gate, primarily within approximately 2-3 km to the east of the bridge, and the waters between Angel

Island and Tiburon. The primary race area, as designated by the USCG, overlaps a portion of this area in the Central Bay and along the south shore to the east of the bridge, although the bulk of the primary race area and designated transit zone do not overlap with the areas of highest sighting frequency. Harbor porpoises could occur within most of the primary race area.

We do not propose to authorize take incidental to AC34 race events. We believe that any effects on marine mammals stemming from race events could occur through behavioral responses to spectator vessels and that direct strike of a marine mammal is unlikely. All vessels associated with race events will be subject to USCG restrictions, and spectator vessels will congregate in designated areas or transit the race area through a designated transit zone at low levels of speed. The actual racing yachts will travel at much higher rates of speed, but in much lesser numbers and on more predictable courses. We believe it most likely that harbor porpoises would avoid areas with a high density of spectator vessels. One commenter expressed concern that vessel noise from spectator vessels could result in acoustic masking, making it more likely that harbor porpoises may not detect the vessels and be unable to avoid strike. We find this unlikely, as most vessels produce sound that, while audible to harbor porpoises, is well below their range of best hearing (Richardson et al., 1995; Southall et al., 2007).

Richardson et al. (1995) summarized observations of behavioral disturbance for odontocetes by noting that avoidance can occur and that harbor porpoises in particular tend to change behavior and move away from vessels. However, no clear evidence that habitat use patterns are altered because of vessel traffic exists, especially over short durations as will occur here. For other odontocetes, observed reactions have been related to behavioral context (e.g., resting animals may show avoidance while foraging animals ignore vessels). While it is possible that the increased presence of spectator vessels associated with race events could result in

behavioral changes in harbor porpoises or other marine mammals in the Central Bay, it is not possible to predict what responses might be likely. The animals could simply avoid the area where spectator vessels gather, remaining instead in other areas of high sighting frequency to the west of the Golden Gate or to the north of the primary race area near Cavallo Point, or, if attempting to transit through the area where spectator vessels are present, could potentially react to those vessels in ways that might be construed as harassment. It is unclear whether the presence of spectator vessels would cause harbor porpoises to avoid areas of importance for foraging (and no information has been presented indicating that the race course contains such areas) or otherwise alter behavior such that fitness consequences might ensue. However, given that race events will occur over relatively short periods of time – the Event Authority estimates that there would be approximately 4 race days each in August and October 2012, and approximately 44 race days between July and September 2013 – it seems unlikely that these potential behavioral changes may accrue to affect an individual’s fitness, much less the viability of the resurgent San Francisco Bay population. Nevertheless, any potential incidences of behavioral harassment resulting from race events would be difficult to quantify.

Because we do not think that take incidental to race events is likely to occur, and the applicants have not requested (and we have not authorized) such take, we have not prescribed additional means for effecting the least practicable impact (i.e., mitigation measures) or requirements pertaining to monitoring and reporting. However, while the preceding paragraphs describe our reasoning in determining that take authorization is not warranted, we appreciate the commenters’ concerns and agree that it would be beneficial to ensure that event organizers are aware of marine mammal activity in the vicinity of the course and are able to take appropriate action to further ensure that marine mammals are not harmed. In order to address the

commenters' concerns, we have encouraged the applicants to develop a monitoring plan specific to race events and to solicit the expertise of GGCR staff in implementing the plan. Any such plan would be voluntary and in addition to the Water and Air Traffic Plan and any restrictions placed on vessels associated with race events by the permitting authority (USCG). The applicants have presented a draft plan, as follows, to be finalized prior to race events. Portions of this plan involving GGCR staff involvement are subject to final concurrence by GGCR.

America's Cup Race Management will conduct visual monitoring for marine mammals during all race events. During events with less than 500 spectator boats (i.e., greater than 50 percent of estimated peak attendance), monitoring will be conducted by AC34 course marshals in addition to regular duties. A subset of marshals will have been through training prior to race events, and each marshal vessel will have at least one trained marshal aboard. During 2013 race events with greater than 500 spectator boats, monitoring will be conducted by course marshals in concert with professional observers who will have no other duties. AC Race Management will coordinate with GGCR staff to supervise monitoring during those events with greater than 500 spectator boats. The monitoring effort will have three basic components:

(1) Monitoring for large whales: Any occurrence of large whales will be communicated to advisory staff and amongst course marshals. Based upon the location and activity of the animal(s) a decision will be made regarding delay or postponement of the race event as appropriate.

(2) Monitoring for small cetaceans: Any occurrence of harbor porpoises or bottlenose dolphins will be communicated to advisory staff and amongst course marshals. ACEA is not currently considering postponements of race events in response to the presence of small cetaceans, but will communicate observations of cetacean activity within and around the race

area to all race participants and spectators via a designated VHF radio channel. Based upon the location and activity of the animal(s) a decision will be made regarding advisories to mariners as appropriate.

(3) Other monitoring: Any observations of interest (e.g., unusual behaviors) for any marine mammals (including pinnipeds) will be recorded and communicated to GGCR and included in any final reporting.

Coordination will include the following:

- GGCR has already and will continue to provide training for AC34 course marshals. Course marshal training includes education regarding marine mammal identification and patterns to look for in their movements and behavior around the bay.
- GGCR will provide one senior staff person to attend weekly briefings during 2013 racing events and provide pertinent information to course marshals for that week. Information may include areas of specific concern related to transit and feeding activities of cetaceans within the proposed race area.
- A dedicated observer will be positioned on the Golden Gate Bridge during 2013 race events with greater than 500 spectator boats with binoculars during each race (30 minutes before and after racing) to record and report any sighting of marine mammal activity.
- During 2013 race events with greater than 500 spectator boats at least 10 percent of GGCR-trained marshals will be on the water (i.e., a minimum of eight trained AC34 staff on as many marshal boats).
- Develop communication chain of command during a race:
 - Course marshals will report any dense activity within the 2012 or 2013 race course to GGCR senior staff. GGCR staff will advise as to significance of activity.

- A communication chain will be developed. The course marshals will communicate observations of marine mammal activity to AC Race Management and the USCG.
- America's Cup Race Management will submit a report to GGCR and NMFS at the conclusion of the 2013 racing events documenting observations.

Monitoring for marine mammals will include pre-race surveys (60 minutes prior to first race) on days with greater than 500 spectator boats, monitoring during races, post-race surveys (60 minutes after last race) on days with greater than 500 spectator boats, and reporting. We are pleased to advise the applicants on this plan but final development and implementation will be the responsibility of the event organizers and any other entities they choose to involve.

Comment 6: The Center recommends that transit routes to and from locations where pile driving is scheduled to occur be made available for public review and that these be planned to avoid the harbor seal haul-out at Yerba Buena Island (YBI).

Response: It is not anticipated that construction vessels used along the San Francisco waterfront would transit past the harbor seal haul-out on YBI. Any transit routes for personnel and materials associated with pile driving would follow established routes that are frequented by commercial traffic and would not add appreciably to any effects on marine mammals. In 2013 a transit route for race events will be established in the USCG's Special Local Regulations (see USCG SLR map for 2013, available at <http://www.nmfs.noaa.gov/pr/permits/incidental.htm>). This transit zone will enable both commercial and recreational users continued access to waterfront berths and facilities during the races. To prevent crowding and congestion in this area, vessels are prohibited from loitering or anchoring in the transit zone. This marine transit zone is located over two miles from the YBI haul-out area.

Comment 7: OSE and the private citizen contend that we failed to adequately consider potential incidental take of gray whales.

Response: The gray whale is typically observed migrating southward along the Central California coast between December and February and then again heading northward between February and July. Observations in San Francisco Bay are typically made from December through May, during the whales' coastal migration. Pile driving activities could overlap with the southbound migrating whales; however, southbound migrants typically travel farther offshore and are less likely to enter into the Bay.

The commenters describe research conducted by OSE in the Bay from 1999-2001, which was presented in 2001 at the 14th Biennial International Conference on Marine Mammals. We have been unable to find any published representation of this work, and no citation was provided. However, the commenters note the study showed that gray whales consistently utilize the Bay – predominantly the Central Bay – and have been observed in the Bay in every month save August, while also noting that over 95 percent of all sightings during the study occurred during the northbound migration, from February through May.

As described in the FR notice, and supported by the research referenced by the commenters, the vast majority of expected gray whale occurrence will not overlap with either pile driving activity or race events. However, there is some chance that gray whales could occur in the Central Bay during those activities. In order to prevent unauthorized take of gray whales, the applicants will shut down pile driving activity if gray whales are observed within defined harassment zones. Similarly, the plan being developed by the applicants for managing race events will establish monitoring protocols for marine mammals. If any large whales are observed prior to race events, those events will be delayed or postponed as appropriate to avoid the

potential for interaction with vessels. We do not believe that authorization of incidental take for gray whales is warranted.

Comment 8: A private citizen expressed concern that the effects of low-level helicopter operations on harbor porpoises were not addressed.

Response: The commenter does not provide any information regarding what may be considered “low-level” operations or what specific circumstances might be expected to result in behavioral harassment of harbor porpoises. Helicopter overflights are known to cause startle reactions among certain hauled-out pinnipeds – though it is unclear to what degree a group that is habituated to disturbance may react – but there is no data illustrating what reactions may be expected from cetaceans, if any. We do not generally consider airborne sound to be a significant concern for cetaceans, although the visual stimulus provided by the helicopter may cause a behavioral response. Helicopter operations will only occur in conjunction with race events - which cetaceans may avoid anyway because of increased vessel activity – and helicopters will be restricted from skimming the water (i.e., no flight below 100 ft). While the potential for behavioral harassment of cetaceans from helicopter operations may not be entirely discountable, we do not believe the limited duration of planned helicopter operations to be of concern and any impacts are impossible to quantify. We do not believe that authorization of incidental take for harbor porpoises, specific to helicopter overflights, is warranted.

Description of Marine Mammals in the Area of the Specified Activity

Marine mammals with confirmed occurrences in San Francisco Bay are the harbor seal, California sea lion, harbor porpoise, elephant seal, gray whale, Steller sea lion, bottlenose dolphin, minke whale, humpback whale (Megaptera noveangliae), and sea otter (Enhydra lutris). The FR notice (77 FR 32573; June 1, 2012) summarizes the population status and abundance of

the first four species and provides detailed life history information. Gray whale presence was described in greater detail in the FR notice and in the response to comments provided previously. Bottlenose dolphins, Steller sea lions, and minke whales were not considered in the FR notice, and are addressed in somewhat more detail here. Humpback whales are considered extremely rare in San Francisco Bay and are highly unlikely to be present in the action area, while sea otters are under the jurisdiction of the U.S. Fish and Wildlife Service. Therefore, these two species have not been discussed in detail. Here, we provide supplemental information regarding certain species as submitted through public comment.

Minke Whale

GGCR notes that individuals observed outside of the Golden Gate may occasionally forage within the Bay, and has recorded four minke whale sightings within the Bay since October 2009. We do not believe this information demonstrates that incidental take authorization for minke whales is warranted. As described elsewhere, the applicants will delay or postpone race events if large whales are observed and there is believed to be a risk of interaction. Pile driving activity would be shut down if any species for which take is not authorized were observed within defined harassment zones.

Bottlenose Dolphin

Although the NMFS Stock Assessment Report considers the northern limit of the coastal bottlenose dolphin stock to be the outer coast of San Francisco, GGCR reports observations of bottlenose dolphins within the Central Bay. GGCR suggests that bottlenose dolphins may regularly use those waters for feeding, with small groups observed to enter the Bay for several hours at a time, approximately twice a week, during warmer water months from July through October. At least 25 individuals known from Monterey Bay have been identified in the Bay.

Although bottlenose dolphins may regularly use portions of the Central Bay, we do not believe the information, as presented by GGCR and as found in the sources cited by GGCR, indicates that dolphins are likely to occur in nearshore waters of the San Francisco waterfront, i.e., within defined harassment zones for pile driving. Therefore, no incidental take authorization is warranted for bottlenose dolphin.

Harbor Porpoise

GGCR described the evident resurgence of harbor porpoises in the Bay in greater detail than we provided in the FR notice. In summary, GGCR notes that harbor porpoises were first observed in the Bay in 2007-08, following an absence of approximately 65 years, and that they have been observed more frequently and in larger groups since that time. In the western portion of the Central Bay (east of the Golden Gate Bridge) during 2011, GGCR conducted 87 surveys from sea, land, and bridge, and recorded 1,796 sightings. GGCR reports a photo identification catalog of 450 individuals resulting from these sightings, but does not provide any specific density or abundance information that would lead us to believe our estimate of potential incidences of harassment incidental to pile driving activity is an underestimate.

Steller Sea Lion

As reported by GGCR, Steller sea lions are occasionally observed in the Bay. GGCR states that 16 sightings were made over a 2-year period beginning in March 2010. These observations were all made in the western Central Bay, from vantage points on land or the Golden Gate Bridge. Photo identification indicates that these sightings represent at least a few different animals. We do not believe this information demonstrates that incidental take authorization for Steller sea lions is warranted.

Harbor Seal

GGCR notes that harbor seals are frequently observed foraging in the Golden Gate area, and believes that these animals likely travel from closer haul-outs west of the Golden Gate Bridge, rather than from the YBI haul-out. We do not believe that this information affects our take estimates or preliminary findings.

Typically, there is very little marine mammal activity in the waters immediately adjacent to the San Francisco waterfront, where pile driving activities are planned. The general lack of marine mammal activity at the San Francisco waterfront – other than a California sea lion haul-out at Pier 39 – is likely due to the high level of human activity, both urban and industrial in nature. The primary route for shipping traffic into and out of the Port of San Francisco and Port of Oakland is located between the San Francisco waterfront and Angel Island, approximately 5 km to the north. Amongst other uses, tugboat activities occur at Piers 15 and 17, ferry traffic around Pier 1 and along the waterfront to Piers 39 and 45, marine shipping and cargo transport to Piers 80 A-D and Piers 92 and 94-96, and cruise vessel traffic at Piers 27 and 35 (see Figures 1-2 of the application for relative locations). As noted previously, ambient underwater sound has been measured at 133 dB rms, significantly above NMFS threshold for behavioral harassment from non-pulsed sound (120 dB).

Harbor seals and California sea lion are the most common marine mammals in the Bay, and may be found at multiple sites either resting or foraging. There are no documented haul-outs in the vicinity of planned construction or race events other than those discussed in succeeding sections. Various sources have observed pinnipeds resting on channel marker buoys throughout the Bay, on the shorelines of Alcatraz or Angel Island and along the San Francisco waterfront but these locations have not been defined as haul-out sites.

Potential Effects of the Specified Activity on Marine Mammals

We have determined that pile driving, as outlined in the project description, has the potential to result in behavioral harassment of marine mammals that may be present in the project vicinity while construction activity is being conducted. Pile driving could potentially harass those marine mammals that may be in the project vicinity while pile driving is being conducted. Behavioral disturbance is also possible when helicopter overflights or fireworks displays occur. The FR notice (77 FR 32573; June 1, 2012) provides a detailed description of marine mammal hearing and of the potential effects of these activities on marine mammals.

Anticipated Effects on Habitat

No permanent detrimental impacts to marine mammal habitat are expected to result from these activities. Pile driving may impact prey species and marine mammals by causing temporary avoidance or abandonment of the immediate area. Site conditions are expected to be substantively unchanged from existing conditions. In addition, local habitat as it exists is significantly degraded as a result of the history of urban and industrial activity. Overall, the activity is not expected to cause significant or long-term adverse impacts on marine mammal habitat or to the prey base for marine mammals.

Mitigation

In order to issue an incidental take authorization (ITA) under Section 101(a)(5)(D) of the MMPA, we must, where applicable, set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses (where relevant).

Estimated distances to various sound thresholds were described previously under ‘Sound Thresholds’, and are used to establish zones of influence (ZOIs) (described in following sections) to be used as mitigation measures for pile driving activities. ZOIs are often used to effectively represent the mitigation zone that will be established around each pile to prevent Level A harassment of marine mammals. In addition to the specific measures described later, ACEA and the Port will employ the following general mitigation measures:

- All work will be performed according to the requirements and conditions of the regulatory permits issued by federal, state, and local governments.
- Briefings will be conducted between the project construction supervisors and crew and marine mammal observer(s) (MMO) as necessary prior to the start of all pile-driving activity, and when new personnel join the work, to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.
- Contractors for construction work will comply with all applicable equipment sound standards and ensure that all construction equipment has sound control devices no less effective than those provided on the original equipment (i.e., equipment may not have been modified in such a way that it is louder than it was initially).
- Only one impact pile driver may be operated simultaneously.
- For impact driving of timber piles, a cushion block or similar device will be used for sound attenuation at all times.

Monitoring and Shutdown

Shutdown Zones – For all pile driving activities, a shutdown zone (defined as, at minimum, the area in which SPLs equal or exceed 180/190 dB rms for cetaceans and pinnipeds, respectively) will be established when applicable. For the specified activity, this will be

necessary only for impact pile driving. The purpose of a shutdown zone is to define an area within which shutdown of activity will occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area), thus preventing injury, serious injury, or death of marine mammals. During all impact pile driving, the Port will establish a conservative shutdown zone of 10 m radius around each pile to avoid exposure of marine mammals to sound levels that could potentially cause injury. The shutdown zone will be monitored during all impact pile driving.

Disturbance Zones – For all pile driving activities, a disturbance zone will be established. Disturbance zones are typically defined as the area in which SPLs equal or exceed 160 or 120 dB rms (for impact and vibratory pile driving, respectively). Disturbance zones provide utility for monitoring conducted for mitigation purposes (i.e., shutdown zone monitoring) by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring of disturbance zones enables MMOs to be aware of and communicate the presence of marine mammals in the project area but outside the shutdown zone and thus prepare for potential shutdowns of activity. However, the primary purpose of disturbance zone monitoring is for documenting incidents of Level B harassment; disturbance zone monitoring is discussed in greater detail later (see Monitoring and Reporting). Disturbance zones will be established with 50 m radius for impact pile driving and 1,000 m radius for vibratory pile driving; these zones will subsume the calculated disturbance zones for harassment from airborne sound.

Monitoring Protocols – The shutdown and disturbance zones will be monitored throughout the time required to drive a pile. If a marine mammal is observed within the disturbance zone, a take will be recorded and behaviors documented. However, that pile segment will be completed without cessation, unless the animal approaches or enters the shutdown zone,

at which point all pile driving activities will be halted. Impact driving will only occur during daylight hours. If the shutdown zone is obscured by fog or poor lighting conditions, pile driving will not be initiated until the entire shutdown zone is visible. Work that has been initiated appropriately in conditions of good visibility may continue during poor visibility.

The shutdown zone will be monitored for the presence of marine mammals before, during, and after any pile driving activity. The shutdown zone will be monitored for 30 minutes prior to initiating the start of pile driving. If marine mammals are present within the shutdown zone prior to pile driving, the start of pile driving will be delayed until the animals leave the shutdown zone of their own volition, or until 15 minutes elapse without resighting the animal(s). The shutdown zone will also be monitored throughout the time required to drive a pile. If a marine mammal is observed approaching or entering the shutdown zone, pile driving operations will be discontinued until the animal has moved outside of the shutdown zone. Pile driving will resume only after the animal is determined to have moved outside the shutdown zone by a qualified observer or after 15 minutes have elapsed since the last sighting of the animal within the shutdown zone.

Monitoring will be conducted using binoculars and the naked eye. When possible, digital video or still cameras will also be used to document the behavior and response of marine mammals to construction activities or other disturbances. Each observer will have a radio or cell phone for contact with other monitors or work crews. Observers will implement shutdown or delay procedures when applicable by calling for the shutdown to the hammer operator. A GPS unit or electric range finder will be used for determining the observation location and distance to marine mammals, boats, and construction equipment.

Monitoring will be conducted by qualified observers. In order to be considered qualified, observers must meet the following criteria:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target.
- Advanced education in biological science, wildlife management, mammalogy, or related fields (bachelor's degree or higher is required).
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).
- Experience or training in the field identification of marine mammals, including the identification of behaviors.
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations.
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior.
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

Soft-start

The objective of a soft-start is to alert any animals close to the activity and allow them time to move away, which should expose fewer animals to loud sounds, including both

underwater and above-water sound. This procedure also ensures that any marine mammals missed during shutdown zone monitoring will move away from the activity and not be injured.

The following soft-start procedures will be used for in-water pile installation:

- A soft-start technique will be used at the beginning of each day's in-water pile driving activities or if pile driving has ceased for more than 30 minutes.
- If a vibratory driver is used, contractors will be required to initiate sound from vibratory hammers for 15 seconds at reduced energy followed by a 30-second waiting period. The procedure will be repeated two additional times before full energy may be achieved.
- For impact driving, contractors will be required to conduct soft start if the technique is feasible given the hammer type. Soft start will be conducted to provide an initial set of strikes from the impact hammer at reduced energy, followed by a 30-second waiting period, then two subsequent sets. The reduced energy of an individual hammer cannot be quantified because they vary by individual drivers. Also, the number of strikes will vary at reduced energy because raising the hammer at less than full power and then releasing it results in the hammer 'bouncing' as it strikes the pile, resulting in multiple 'strikes'.

Helicopter Operations and Fireworks Displays

Approved flight patterns for AC34 contracted and race-affiliated helicopters will be detailed in the Water and Air Traffic Plan, to be created in conjunction with the USCG prior to the conduct of any race events or helicopter operations. The project sponsors are responsible for coordinating with the FAA to ensure compliance with flight regulations and to enforce the flight restrictions identified in the Plan to protect marine mammals. Helicopters will descend/ascend vertically for landing and take-off at the helipad on Treasure Island. Helicopters will not skim the

surface of water (i.e., flight no lower than 100 ft) during the race events nor during landing and takeoff operations. In addition, race-related helicopters will maintain a buffer of at least 1,000 ft (vertically and horizontally) around Alcatraz Island and Crissy Beach Wildlife Protection Area, will avoid direct overflights of the Pier 39 haul-out, and will maintain the restriction on flight below 100 ft in the vicinity of Pier 39 where sea lions are known to haul out.

Any fireworks displays will be limited in terms of frequency and location as necessary to protect marine mammals. There will be no more than four events, two up to 30 minutes and two up to 45 minutes in duration in 2013. The fireworks barge will be in a similar location to and of the same noise intensity as the annual 4th of July fireworks display conducted by the City of San Francisco. These fireworks displays will be regulated through the USCG Marine Event Permit process.

NMFS has carefully evaluated the applicant's mitigation measures as proposed and considered their effectiveness in past implementation to determine whether they are likely to effect the least practicable adverse impact on the affected marine mammal species and stocks and their habitat. Our evaluation of potential measures includes consideration of the following factors in relation to one another: (1) the manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals, (2) the proven or likely efficacy of the specific measure to minimize adverse impacts as planned; (3) the practicability of the measure for applicant implementation, including consideration of personnel safety, and practicality of implementation.

Injury, serious injury, or mortality to marine mammals is extremely unlikely to result from the specified activities even in the absence of any mitigation measures. However, in cooperation with the applicants, we require the described mitigation measures to reduce even

further the probability of such events occurring and to reduce the number of potential behavioral harassments to the level of least practicable impact. We have determined that these mitigation measures provide the means of effecting the least practicable adverse impacts on marine mammal species or stocks and their habitat.

Monitoring and Reporting

In order to issue an ITA for an activity, Section 101(a)(5)(D) of the MMPA states that we must set forth “requirements pertaining to the monitoring and reporting of such taking”. The MMPA implementing regulations at 50 CFR 216 indicate that requests for IHAs must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present.

The monitoring plan, and all methods identified herein, have been developed through coordination between NMFS and the applicants, and are based on the parties’ professional judgment supported by their collective knowledge of marine mammal behavior, site conditions, and project activities. Any modifications to this protocol will be coordinated with us. A summary of the plan, as well as the described reporting requirements, is contained here.

The intent of the monitoring plan is to:

- Comply with the requirements of the MMPA;
- Adequately characterize site-specific ambient sound levels and verify assumptions made regarding sound source levels for impact and vibratory pile driving.
- Avoid injury to marine mammals through visual monitoring of identified shutdown zones and shutdown of activities when animals enter or approach those zones; and

- To the extent possible, record the number, species, and behavior of marine mammals in disturbance zones for specified activities.

As described previously, monitoring for marine mammals during pile driving will be conducted in specific zones established to avoid or minimize effects of elevated levels of sound created by the specified activities. Shutdown and disturbance zones will correspond to the distances described previously in this document.

Acoustic Measurements

Acoustic measurements will be made for ambient sound in the absence of construction activity (Goal 1), as necessary to adequately measure source levels associated with vibratory and impact pile driving (Goal 2), and to characterize site-specific sound propagation (Goal 3).

Monitoring in the absence of construction activities will be conducted to determine ambient underwater noise levels in representative locations during hours that pile driving will occur (6 am-6 pm) for three consecutive days. Beginning with the first days of activity and continuing for as long as is necessary to measure representative pile driving events, the applicants will conduct acoustic monitoring in order to accomplish Goals 2 and 3. All measurements of impact pile driving will be made with the sound attenuation measures discussed previously in place.

Maximum sound pressure levels, as well as approximate distances to relevant thresholds, will be measured and documented. Acoustic monitoring will be conducted in accordance with the Monitoring Plan developed by the applicants and approved by NMFS. Please see that plan, available at <http://www.nmfs.noaa.gov/pr/permits/incidental.htm>, for full details of the required acoustic monitoring.

Visual Monitoring

The established shutdown and disturbance zones will be monitored by qualified marine mammal observers for mitigation purposes, as well as to document marine mammal behavior and incidents of Level B harassment. Monitoring protocols were described in greater detail under “Mitigation”. The monitoring plan will be implemented, requiring collection of sighting data for each marine mammal observed during the specified activities for which monitoring is required, including all impact pile driving and a subset of vibratory pile driving. Disturbance zones, briefly described previously under “Mitigation”, are discussed in greater depth here.

Disturbance Zone Monitoring – Disturbance zones are defined as 50 m radius for impact pile driving and 1,000 m radius for vibratory pile driving. Monitoring of disturbance zones will be implemented as described previously in “Mitigation”. All impact pile driving will be monitored according to described protocols. For vibratory driving, the first two days of representative pile driving activity at each specific location, when the contractors are mobilizing and starting use of the vibratory hammer, will be monitored in order to validate estimates of incidental take and to record behavioral reactions, if any, of marine mammals present in the vicinity. Additional monitoring, to be decided when the schedule of work is provided by the contractor, will be conducted as necessary in each specific location such that a minimum of one-third of the total pile driving days at each location are monitored. These additional days may be scheduled at the discretion of the applicant, but shall include any days of heightened activity (if they occur) or will be representative of typical levels of activity. It is not possible for us to define a ‘typical’ day of pile driving activity. Should it become apparent that greater than anticipated numbers of animals are being harassed, or that animals are displaying behavioral reactions of greater than anticipated intensity, we may require the applicants to expand the monitoring program.

The monitoring biologists will document all marine mammals observed in the monitoring area. Data collection will include a count of all marine mammals observed by species, sex, age class, their location within or in relation to the zone, and their reaction (if any) to construction activities, including direction of movement, and type of construction that is occurring, time that pile driving begins and ends, any acoustic or visual disturbance, and time of the observation. Environmental conditions such as wind speed, wind direction, visibility, and temperature will also be recorded. No monitoring will be conducted during inclement weather that creates potentially hazardous conditions, as determined by the biologist, nor will monitoring be conducted when visibility is significantly limited, such as during heavy rain or fog. During these times of inclement weather, impact pile driving will be halted; these activities will not commence until monitoring has started for the day.

Helicopter Operations and Fireworks Displays – In order to estimate levels of take incidental to these activities and to better understand pinniped sensitivity to disturbance from overflights and fireworks displays, the applicants will conduct monitoring as described here. For helicopter operations, at least one monitor will conduct observations at the California sea lion haul-out at Pier 39 (the only established haul-out within the project area) during a subset of helicopter operations days. Monitoring will be conducted for the first five days on which helicopter operations occur in close proximity to Pier 39 in order to confirm assumptions regarding the degree to which pinnipeds may be disturbed by such operations. If pinnipeds are being disturbed by helicopter operations to a degree similar to that assumed here (see Estimated Take by Incidental Harassment), the applicants shall monitor on additional days, determined by the applicants and contractors, totaling at least one-third of total helicopter operations days. If

pinnipeds at Pier 39 are not being disturbed, or are being disturbed to a much lesser degree than what is assumed here, the applicants may cease monitoring after the initial five days.

For fireworks displays, the applicants will conduct a pre- and post-event census of marine mammals within the acute fireworks impact area (the area where sound, light, and debris effects may have direct impacts on marine organisms and habitats) and will also monitor the California sea lion haul-out at Pier 39. The applicants have preliminarily determined that the acute impact area would be of 500 m radius from the fireworks launch area. The pre-event census, conducted in order to estimate the number of marine mammals that may be harassed by displays, will occur as close to the actual display time as possible, will be conducted for no less than 30 minutes, and will describe all observed marine mammals. However, only hauled-out pinnipeds observed in the area during the pre-event census, if any, will be assumed to be incidentally harassed by the display. Post-event monitoring in the acute fireworks impact area, to occur no later than the morning following the display and for no less than 30 minutes, will be conducted to record injured or dead marine mammals, if any.

During monitoring at the Pier 39 haul-out – during helicopter overflights or fireworks displays – monitors will note pinniped disturbance according to a three-point scale indicating severity of behavioral reaction, as shown in Table 3. The time, source, and duration of the disturbance, as well as an estimated distance between the source and haul-out, will be recorded. Only responses falling into Levels 2 and 3 will be considered as harassment under the MMPA, under the terms of this IHA.

Table 3. Pinniped response to disturbance

Level	Type of response	Definition
1	Alert	Head orientation in response to disturbance. This may include turning head towards the disturbance, craning head and neck while holding the body rigid in a u-shaped position, or changing from a lying to a sitting position. May include slight movement of less than 1 m.

2	Movement	Movements in response to or away from disturbance, typically over short distances (1-3 m).
3	Flight	All flushes to the water as well as lengthier retreats (> 3 m).

All monitoring personnel must have appropriate qualifications as identified previously, with qualifications to be certified by ACEA and the Port (see Mitigation). These qualifications include education and experience identifying marine mammals that may occur in the Bay and the ability to understand and document marine mammal behavior. All monitoring personnel will meet at least once for a training session sponsored by the applicants. Topics will include implementation of the protocol, identification of marine mammals, and reporting requirements.

All monitoring personnel will be provided a copy of the IHA. Monitoring personnel must read and understand the contents of the IHA as they relate to coordination, communication, and identification and reporting incidental harassment of marine mammals.

Reporting

The applicants are required to submit a report on all activities and marine mammal monitoring results to the Office of Protected Resources, NMFS, and the Southwest Regional Administrator, NMFS, 90 days prior to the desired date of validity for any subsequent IHA, or within 90 days of the expiration of the IHA, whichever comes first. A final report will be prepared and submitted within 30 days following receipt of any comments on the draft report. The report will provide descriptions of any observed behavioral responses to the specified activities by marine mammals, including marine mammal observations pre-, during-, and post-activity for pile driving monitoring. At a minimum, the report will include:

- Specifics of the activity: date, time, and location; observation conditions correlated to observer effort; pile driving activity specifications (e.g., size and type of piles, hammer and sound attenuation device specifications);

- Discussion of incidental take, including (1) records of all marine mammal observations as well as observed incidental take events; (2) for vibratory pile driving, the total estimated amount of incidental take based on extrapolation of observed take; and (3) estimates of take for helicopter operations and fireworks displays.
- Description of observed marine mammal behavior, including correlations of observed behavior to activity, including distance to pile being driven or other source of disturbance; and discussion of sensitivity of hauled-out pinnipeds to helicopter overflights and/or fireworks displays as described previously.
 - Discussion of mitigation, including description of any actions performed to minimize impacts to marine mammals; and times when pile driving is stopped or delayed due to presence of marine mammals within shutdown zones and time when pile driving resumes.
 - Any recommendations for improving efficacy and efficiency of monitoring and/or mitigation.
 - Results of acoustic monitoring, including the following: (1) a description of monitoring equipment and protocols; (2) distance from hydrophones to source; (3) depth of hydrophones; (4) event-specific measurements as well as overall mean source levels (peak and rms SPLs) and distances to thresholds; (5) ambient sound measurements.

Estimated Take by Incidental Harassment

ACEA and the Port requested authorization to take harbor seals, California sea lions, northern elephant seals, and harbor porpoises, by Level B harassment only, incidental to the specified activities. Pile driving activities are expected to incidentally harass marine mammals through the introduction of underwater and/or airborne sound to the environment, while helicopter operations and fireworks displays have the potential to harass pinnipeds through some

combination of acoustic and visual stimuli. Based on the nature of the activities and the described mitigation measures, no take by injury, serious injury, or mortality is anticipated or authorized. Estimates of the number of animals that may be harassed by the specified activities is based upon the number of animals believed to potentially be present within relevant areas at the time a given activity is conducted. Table 4 details the total number of estimated takes. In summary, we authorize the incidental take, by Level B harassment only, of 14,063 California sea lions, 686 harbor seals, 63 harbor porpoises, and two elephant seals. These take events will likely represent multiple takes of individuals, rather than each event being of a new individual.

Table 4. Incidental take estimates

Species		Pile driving	Helicopter operations	Fireworks displays
California sea lion	Individuals/day	1	250	250
	Total # days	63	52	4
	Total take estimate	63	13,000	1,000
Harbor seal	Individuals/day	2	10	10
	Total # days	63	52	4
	Total take estimate	126	520	40
Harbor porpoise	Individuals/day	1	n/a	n/a
	Total # days	63	n/a	n/a
	Total take estimate	63	n/a	n/a
Elephant seal		Total request of two individuals for all activities		

Pile Driving

California sea lions and harbor seals may use the waters adjacent to the San Francisco waterfront for foraging or for daily movement between foraging and haul-out locations, and observations have been made at various locations along the San Francisco waterfront. The California sea lion haul-out at Pier 39 is approximately 800-1,000 m from the nearest vibratory driving location – although sound will be attenuated by at least three major piers between, as well as the curvature of the waterfront shoreline – and is approximately 1.6 km from Pier 19, where impact pile driving will occur. As previously described in the FR notice, the nearest known haul-out site for harbor seals is at YBI. Vibratory driving locations range approximately 2.4-6.8 km from the haul-out, while Pier 19, where impact driving of timber piles will occur, is

more than 3.2 km distant from the haul-out. Planned fireworks displays will be approximately 1.6-3.2 km from Pier 39 and 3.2-4.8 km from YBI, depending on the final selected location. No activities will be expected to affect animals at the YBI haul-out. While it is possible that harbor porpoises could occur in the vicinity of the waterfront – and information provided through public comment has been helpful in better understanding recent trends in porpoise occurrence in the Bay – we still consider their presence in the immediate vicinity of the waterfront to be uncommon. Specifically, information provided by GGCR shows that the greatest frequency of sightings has been in the vicinity of the Golden Gate (within a few kilometers to the east) and in the vicinity of Angel Island. It is possible that harbor porpoises will be present in the immediate vicinity of the waterfront, but we do not expect such occurrence and have no information indicating that our estimate of potential incidental take is not conservative.

The most comprehensive monitoring data available was collected by Caltrans for the San Francisco-Oakland Bay Bridge (SFOBB) project; these data represent the best available information for approximating local abundance of these species. While public comment did provide some new information, particularly for harbor porpoise, no new density or abundance estimates for the waterfront area, where pile driving will occur, were offered. The SFOBB monitoring site was located in the vicinity of the YBI haul-out, whereas most of the sites where construction, helicopter, or fireworks activities will occur are in areas of high commercial shipping and boat activity. Therefore, SFOBB monitoring data may be expected to provide conservative estimates of marine mammal abundance. More recent monitoring was conducted during construction associated with the Exploratorium, located at Piers 15 and 17 at the San Francisco waterfront. During vibratory pile driving only, monitoring was conducted on 25 days from January 10-July 29, 2011, to a distance of approximately 2,000 m from the pile driving

location. On those 25 days, the only species observed were the California sea lion and the harbor seal. Harbor seals were observed on 9 of 25 days, while California sea lions were observed on 8 of 25 days. Sightings data provide rates of 0.52 and 0.68 animals observed per monitoring day for harbor seals and California sea lions, respectively.

During monitoring of the SFOBB project over 22 days, abundance estimates of 1.5 seals per day and 0.09 sea lions per day were recorded. Due to the relative tranquility of YBI and the presence of a harbor seal haul-out, the estimate for harbor seals is likely higher than would be found for the San Francisco waterfront. However, as confirmed by information from the Exploratorium monitoring effort, the estimate for California sea lions is likely lower, given that greater numbers of that species may be encountered transiting to and from the Pier 39 haul-out.

The applicants proposed conservative estimates of two harbor seals per day – a slight increase from the SFOBB data – and one California sea lion per day, a slight increase from the Exploratorium observations. The Caltrans SFOBB monitoring reported one observed harbor porpoise in the vicinity of YBI. We believe that, despite observations of larger groups of porpoise reported from the western Central Bay, an estimate of one harbor porpoise per day of activity in the vicinity of the waterfront is a very conservative estimate. Based on estimated pile driving production rates, a maximum of 63 days is anticipated for pile driving under this IHA.

Helicopter Operations and Fireworks Displays

Incidental take resulting from helicopter overflights and/or fireworks displays will likely be limited to California sea lions and harbor seals occurring within the immediate vicinity of a helicopter flight patterns or fireworks displays. Specifically, California sea lions present at Pier 39 will likely be subject to incidental harassment, although there is the potential for harbor seals to be hauled-out within range of stimuli that may cause harassment.

Estimates of the number of California sea lions that could be harassed by helicopter operations and/or fireworks displays are based on information from the Pier 39 haul-out. California sea lion usage of Pier 39 is a relatively recent phenomenon. The first individuals were observed during the winter of 1989-90, however, by the next year the numbers reached an average 500 per day (Goals Project, 2000), with a maximum recorded observation of approximately 800 individuals. Since that the early 1990s, peak numbers during winter have declined and now average about 200-300 animals per day. In order to estimate incidental take, a conservative estimate of 500 animals present per day was considered. Observations of pinniped response to the presence of humans on foot in the Channel Islands indicated that the proportion of California sea lions hauled out at the time of disturbance that are behaviorally harassed is approximately 50 percent (77 FR 12246), although this is likely conservative, given that the animals at Pier 39 are more habituated to stimuli than those in more remote locations.

Estimates of the number of harbor seal that may be present during helicopter operations and/or fireworks displays are based on local observations reported by the applicants – no other information upon which to base the estimate is known to us or to the applicants. Anecdotal information from monitoring of fleet week, National Park Service staff observations, and local sailors reported observations of anywhere from 10-15 seals per day while out on the water. Therefore, in an extremely conservative estimation, we assume that ten animals per day may be hauled-out in locations along the waterfront and that all animals will be harassed. The previously mentioned Channel Islands observations indicate that approximately 75 percent of animals hauled-out at the time of disturbance are harassed by a given stimuli, but it is likely that all animals will flush in this context.

Elephant Seals

As stated previously, elephant seals breed between December and March and have been rarely sighted in the Bay. However, regular, if infrequent, sightings of juveniles have been made in recent years at Crissy Field beach. Therefore, it is possible that an elephant seal could occur within areas that are ensounded above levels that NMFS considers to result in Level B harassment. Although possible, it is unlikely that elephant seals will be harassed; however, in order to be precautionary the applicants have requested authorization for incidental take of two elephant seals over the life of the IHA and we have authorized that take. There is no information upon which to base a quantitative estimate of potential take; therefore, take is estimated on the basis of the few individuals observed at Crissy Field beach.

It is not anticipated that elephant seals will be harassed by helicopter operations and/or fireworks displays because (1) elephant seals have been observed, during the aforementioned Channel Island monitoring, to display behavioral reactions to potentially harassing stimuli less than one percent of the time; (2) Crissy Field beach is over 4 km distant from the nearest potential fireworks display location; and (3) helicopters will avoid Crissy Field beach by 1,000 ft in response to concerns about sensitive avian species.

Negligible Impact and Small Numbers Analysis and Determination

NMFS has defined "negligible impact" in 50 CFR 216.103 as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival." In making a negligible impact determination, NMFS considers a variety of factors, including but not limited to: (1) the number of anticipated mortalities (if any); (2) the number and nature of anticipated injuries (if any); (3) the number, nature, intensity, and duration of Level B harassment; and (4) the context in which the take occurs.

Although the specified activities may harass marine mammals present in the action area, impacts are largely occurring to a localized group of animals (i.e., the California sea lions present in the vicinity of Pier 39 and harbor seals from YBI that may be present at the San Francisco waterfront). Further, any incidents of harassment will be occurring to animals that are habituated to a high level of surrounding human activity, including both urban and industrial activity, and to an already loud environment. Monitoring associated with the Exploratorium project resulted in no observations of discernible reactions to vibratory pile driving or any other work activity, although animals were observed as close as 12 m from pile driving. No avoidance behavior was observed, including even basic reactions such as head alerts. Both sea lions and harbor seals appeared to use the waterfront for travelling along a rough north-south course. Travel was typically slow, although some fast traveling (indicating by porpoising) by sea lions was noted. A few individuals of both species were also observed resting at the surface. Frequent commercial and recreational vessel traffic was consistently observed on all monitoring days, and observed animals were reported as appearing habituated to such traffic.

The authorized number of incidences of harassment for each species can be considered small relative to the population size. There are an estimated 30,196 harbor seals in the California stock, 296,750 California sea lions, 9,189 harbor porpoises in the San Francisco-Russian River stock, and 124,000 northern elephant seals in the California breeding population. Based on the best available information, we have authorized the take, by Level B harassment only, of 14,063 California sea lions, 686 harbor seals, 63 harbor porpoises, and two northern elephant seals, representing 4.7, 2.3, 0.7, and 0.002 percent of the populations, respectively. However, this represents an overestimate of the number of individuals harassed over the duration of the IHA, because these totals represent much smaller numbers of individuals (i.e., resident individuals that

may occur in the vicinity over the course of multiple days) that may be harassed multiple times. No stocks known from the action area are listed as threatened or endangered under the ESA or determined to be depleted or considered strategic under the MMPA. Recent data suggests that harbor seal populations have reached carrying capacity, populations of California sea lions and northern elephant seals in California are also considered healthy, and recent information suggests that the harbor porpoise may be expanding its range on the west coast. No injury, serious injury, or mortality is anticipated, nor is the specified action likely to result in long-term impacts such as permanent abandonment of the Pier 39 haul-out or a permanent reduction in presence in San Francisco Bay. We do not believe that the waterfront activities described here will impact the resurgent presence of harbor porpoise in San Francisco Bay. Apart from the race events occurring in the open waters of the Central Bay, the waterfront activities do not represent a significant departure from typical levels of urban and industrial activity in San Francisco. No impacts are expected at the population or stock level.

Based on the foregoing analysis, behavioral disturbance to marine mammals in the Bay will be of low intensity and limited duration. To ensure minimal disturbance, the applicants will implement the mitigation measures described previously, which we have determined will serve as the means for effecting the least practicable adverse impact on the relevant marine mammal stocks or populations and their habitat. We find that the specified activities will result in the incidental take of small numbers of marine mammals, and that the requested number of takes will have no more than a negligible impact on the affected species and stocks.

Impact on Availability of Affected Species for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by this action.

Endangered Species Act (ESA)

There are no ESA-listed marine mammals expected to occur in the action area; therefore, no consultation under the ESA is required.

National Environmental Policy Act (NEPA)

In compliance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), as implemented by the regulations published by the Council on Environmental Quality (40 CFR parts 1500-1508), and NOAA Administrative Order 216-6, we have prepared an Environmental Assessment (EA) to consider the direct, indirect and cumulative effects to the human environment resulting from issuance of an IHA to ACEA and the Port for the specified activities. We subsequently reached a Finding of No Significant Impact, which was signed on July 27, 2012. Those documents are available for review at <http://www.nmfs.noaa.gov/pr/permits/incidental.htm>.

Authorization

As a result of these determinations, we have issued an IHA to the Port and ACEA to conduct the described activities in San Francisco Bay for a period of one year, provided the previously described mitigation, monitoring, and reporting requirements are incorporated.

Dated: July 31, 2012

Helen M. Golde,
Acting Director,
Office of Protected Resources,
National Marine Fisheries Service.

