



# MARINE MAMMAL COMMISSION

16 August 2010

Mr. P. Michael Payne, Chief  
Permits, Conservation, and Education Division  
Office of Protected Resources  
National Marine Fisheries Service  
1315 East-West Highway  
Silver Spring, MD 20910-3225

Dear Mr. Payne:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application submitted by the Exploratorium seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act to take small numbers of marine mammals by harassment. The taking would be incidental to pile driving during the Exploratorium's relocation project, occurring from September 2010 through the spring of 2011. The Commission also has reviewed the National Marine Fisheries Service's 22 July 2010 *Federal Register* notice (75 Fed. Reg. 42691) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

## RECOMMENDATIONS

The Marine Mammal Commission recommends that, prior to issuing the incidental harassment authorization, the National Marine Fisheries Service—

- require that observations be made during all soft-starts of pile-driving activities to gather the data needed to analyze and report on its effectiveness as a mitigation measure; and
- require the Exploratorium to monitor the presence and behavior of marine mammals during all impact and vibratory pile-driving activities.

## RATIONALE

The Exploratorium plans to relocate from the Palace of Fine Arts to Piers 15 and 17 along San Francisco's waterfront. The relocation project would include the installation, repair, and removal of piles at Pier 15, removal of wharf decking between Piers 15 and 17, and expansion of the southern portion of Pier 15. The Exploratorium proposes to install up to 69 new steel piles (thirty 72-in, twenty-six 24-in, and thirteen 20-in-dia piles) and repair and remove existing piles using hydraulic or hand-held cutting tools. The applicant would use a vibratory hammer to install most of the piles, although an impact hammer (80,000–100,000 ft-lbs per strike) might be necessary for the final seating of the 72-in-dia piles. An average of three piles would be installed daily, resulting in 1 to 2.5 hours of pile driving per day. Installation of all the piles would require a total of 28 hours distributed throughout the entire installation period. Two to ten barges or floats would support the construction activities near Piers 15 and 17.

The Service preliminarily has determined that the proposed activities, at most, would result in a temporary modification in the behavior of small numbers of up to four species of marine mammals (harbor seal, harbor porpoise, California sea lion, and gray whale) and that any impact on the affected species is expected to be negligible. The Service also does not anticipate any take of marine mammals by death or serious injury and believes that the potential for temporary or permanent hearing impairment will be at the least practicable level because of the proposed mitigation measures. The applicant would use sound attenuation devices (e.g., wood block and/or bubble curtain) with the impact hammer. The applicant also would establish safety zones, verify sound levels within those zones using on-site measurements, and adjust them if necessary. In addition, protected species observers would monitor the safety zones 30 minutes before, during, and 30 minutes after all impact pile-driving activities. At least one protected species observer also would conduct behavioral monitoring at and around the site twice per day from 1 December 2010 to 28 February 2011 and twice per week from 1 March to 30 November 2011.

### **Mitigation**

The Marine Mammal Commission has reviewed the proposed mitigation measures and believes that, for the most part, they are appropriate. However, as the Commission has noted in previous correspondence, often in the context of seismic surveys, the effectiveness of ramp-up as a mitigation measure has yet to be empirically verified. As with the ramp-up of airguns, the Service should not assume, absent empirical verification, that using soft-starts when pile driving constitutes an effective mitigation method. Such verification may require not only collecting opportunistic data but also designing and conducting studies to test specific hypotheses regarding the utility of soft-starts and analysis of responses of the various species encountered. For those reasons, the Marine Mammal Commission repeats its recommendation that the National Marine Fisheries Service require that observations be made during all soft-starts of pile-driving activities to gather the data needed to analyze and report on its effectiveness as a mitigation measure. Collecting such data should be relatively straightforward and the resulting analyses—also straightforward—would provide a scientific basis for assessing the usefulness of this particular mitigation measure. The Commission would be pleased to discuss with the Service the collection and analysis of such data and the design of experiments to promote a better understanding of the utility and shortcomings of soft-starts and ramp-up as effective mitigation measures. If the Service decides not to require collection of such data, please contact the Commission to discuss why the Service has decided that it will not take the steps necessary to verify this measure.

### **Monitoring**

Protected species observers will monitor the safety zones for 30 minutes before, during, and for 30 minutes after impact pile-driving activities. However, during vibratory pile driving, protected species observers will be used only for intermittent behavioral observations (i.e., twice per day from 1 December to 28 February and twice per week from 1 March to 30 November). The Service has indicated that it does not intend to require continuous observations during vibratory pile driving because it believes that sound levels from this activity at this site will not cause Level A harassment.

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For a number of reasons, the Commission believes that it would be prudent to monitor marine mammal behavior during all vibratory pile driving, as well as during impact pile-driving activities. First, the response of marine mammals to vibratory pile driving is not well known and, in the event that marine mammals respond in unexpected ways, continuous monitoring would ensure that those responses are documented. Second, as the Service notes, the four species of marine mammals identified in its notice may not be the only marine mammals in the area at the time of pile driving. If species other than those included in the authorization approach and enter safety zones, then the activity should be halted until those individuals move out of the area. Third, given the short period of time during which pile driving would occur, it is not clear that an intermittent sampling regime would yield representative results. For example, if monitoring does not occur during all pile-driving activities or when marine mammals are most likely to be present, then the resulting observations may not be indicative of actual effects and the estimated number of takes may be biased low. Fourth, because the total amount of time during which pile driving will occur (28 hours over approximately three weeks), monitoring should be relatively inexpensive. And finally, by monitoring during all pile-driving activities (impact and vibratory), the applicant and the Service can be more confident that they are causing the least practicable impact. For all of these reasons, the Marine Mammal Commission recommends that the National Marine Fisheries Service require the Exploratorium to monitor the presence and behavior of marine mammals during all impact and vibratory pile-driving activities.

Please contact me if you have questions regarding the Commission's recommendations and comments.

Sincerely,



Timothy J. Ragen, Ph.D.  
Executive Director