



MARINE MAMMAL COMMISSION

8 May 2018

Ms. Jolie Harrison, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application submitted by the California Department of Transportation (Caltrans) seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act (the MMPA) to take small numbers of marine mammals by harassment. The taking would be incidental to demolition and reuse activities associated with replacement of the east span of the San Francisco-Oakland Bay Bridge (SF-OBB) in California during a one-year period. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 12 April 2018 notice (83 Fed. Reg. 15795) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

Background

Caltrans plans to demolish piers E19 and E20 via a single controlled implosion event. The controlled implosion could include 200 individual delays of charges weighing between 15 and 25 lbs each—all of which would detonate in 11 seconds. Caltrans also plans to reuse piers E21–23 to serve as the foundations for a new pedestrian bridge and observation platforms. Caltrans could install up to 200 piles using a vibratory and/or impact hammer. Temporary piles would be removed using a vibratory hammer or cut off at the mudline. Caltrans would conduct implosion activities on 1 day and pile-driving and -removal activities on up to 60 days during daylight hours¹ only.

NMFS preliminarily has determined that, at most, the proposed activities could cause Level A and/or B harassment of small numbers of seven marine mammal species. NMFS anticipates that any impact on the affected species and stocks would be negligible. NMFS also does not anticipate any take of marine mammals by death or serious injury and believes that the potential for disturbance will be at the least practicable level because of the proposed mitigation measures. The proposed mitigation, monitoring, and reporting measures include—

- implementing a blast attenuation system (BAS) to reduce the shockwave from the implosion event;

¹ Allowing for enough time for pre- and post-implosion monitoring and good visibility to monitor visually the largest Level A harassment zone.

- conducting in-situ hydroacoustic monitoring of the BAS prior to the implosion if necessary and making adjustments as necessary²;
- conducting in-situ hydroacoustic monitoring of the implosion of piers E19 and 20³;
- using only one hammer at a given time³;
- using sound attenuation devices (e.g., bubble curtain or de-watered cofferdam) for impact driving of 24- and 36-in steel piles and 36-in concrete piles and implementing performance standards measures⁴ for the bubble curtain;
- limiting proofing of the steel piles to a maximum of 2 piles⁵ per day⁶;
- using standard soft-start, delay, and shut-down procedures;
- ceasing pile-driving and -removal activities if any marine mammal comes within 10 m of the equipment;
- using eight NMFS-approved protected species observers (PSOs) to monitor the mortality and Level A and B harassment zones for 30 minutes before, during, and for 60 minutes after² the implosion event;
- using two NMFS-approved PSOs to monitor the Level A⁷ and B harassment zones for 30 minutes before, during and for 30 minutes after pile-driving and -removal activities;
- using delay and shut-down procedures, if a species for which authorization has not been granted (including but not limited to Guadalupe fur seals⁸) or if a species for which authorization has been granted but the authorized number of takes are met, approaches or is observed within the Level B harassment zone;
- conducting vessel- or shore-based surveys on each of the two days post-implosion to determine if any marine mammals were injured or stranded—if an injured or stranded animal is discovered, a NMFS-designated stranding team would retrieve the animal and veterinarians would treat the animal or conduct a necropsy²;
- requiring the (1) NMFS-designated stranding facility be prepared to evaluate, assess, and treat marine mammals injured from the implosion and (2) stranding crew and a veterinarian to be on call near piers E19 and 20 to recover and respond to any injured marine mammals²;

² The Commission informally noted that these standard measures for Caltrans' implosion events were included in its application but were omitted from the *Federal Register* notice. NMFS indicated it would include them in the final authorization.

³ The Commission informally noted that these standard measures were omitted from the *Federal Register* notice. NMFS indicated it would include the measures in the final authorization.

⁴ The Commission informally noted that this measure that recently has become standard for activities involving bubble curtains was not included in the *Federal Register* notice. NMFS indicated it would include it in the final authorization.

⁵ Each pile would be driven with no more than 20 blows during a 1-minute period.

⁶ This measure was included in the preamble but not in the proposed authorization. NMFS clarified that it would be included in the final authorization.

⁷ The Commission informally noted that Caltrans may be in a situation in which it is implementing numerous shut downs for harbor seals based on the Level A harassment zones extending to 130 m. Since Caltrans had requested Level A harassment takes of harbor seals, the Commission suggested that it increase the number of takes requested from 19 to 120 to account for up to 2 harbor seals occurring within the various Level A harassment zones each day and to reduce the size of the shut-down zone to 25 m, which should allow Caltrans to complete the proposed activities in a timely manner. NMFS plans to include these revisions in the final authorization.

⁸ Although NMFS did not discuss this species in the *Federal Register* notice, it did discuss Guadalupe fur seals in another recent notice that also pertains to San Francisco Bay (83 Fed. Reg. 18511). NMFS should include in the final authorization a discussion of why taking is not expected for Guadalupe fur seals even though they have occurred in San Francisco Bay in recent years. Similar information also should be included in other *Federal Register* notices that pertain to activities occurring in San Francisco Bay.

- reporting injured and dead marine mammals to NMFS and the West Coast Regional Stranding Coordinator using NMFS's phased approach and suspending activities, if appropriate; and
- submitting a final report.

General concerns and comments

In addition to omitting numerous standard mitigation and monitoring measures from the proposed authorization, the Commission informally noted that NMFS omitted various sections of the preamble. Specifically, NMFS omitted the description of the proposed pile-driving and -removal activities⁹ and the associated effects analyses¹⁰. The Commission also noted multiple typographical and other errors and additional missing information in the preamble text, various tables¹¹, and the final take table¹² in the proposed authorization. Although NMFS plans to fix these omissions and errors in the final incidental harassment authorization, these issues should have been discovered and corrected prior to publishing the *Federal Register* notice. Other proposed authorizations published in recent years have had similar issues¹³.

This lack of attention to detail is particularly troubling when notices pertain to ongoing and previously authorized activities¹⁴. At some point, these omissions from and errors in *Federal Register* notices are significant enough to undermine the ability of the public to review and comment on proposed authorizations. In such cases, NMFS needs to publish corrections to the proposed authorization and not merely correct the omissions and errors when the final authorization is published. To address these issues, the Commission recommends that NMFS review its notices more thoroughly prior to submitting them for publication in the *Federal Register*.

Bubble curtain efficacy

The Commission had previously commented on the assumptions NMFS has used regarding efficacy of bubble curtains¹⁵. NMFS has been inconsistently applying presumed source level reductions when bubble curtains are used during impact pile driving. In some instances, source level reductions are assumed to be 10 dB (for the proposed authorization and 83 Fed. Reg. 18522) when bubble curtains are to be employed, while 0 dB (81 Fed. Reg. 15082), 6 dB (81 Fed. Reg. 26647), and 8 dB (81 Fed. Reg. 19342) have been used in other instances. Some of the variability in attenuation levels is based on differences in device design, site and environmental conditions, and difficulties in properly installing and operating sound attenuation devices—the latter which could be alleviated

⁹ NMFS included the description of the implosion activities in the section regarding pile-driving and -removal activities. Removal activities also were not discussed in Caltrans' application, including the method by which the piles would be removed and the number of days necessary for their removal.

¹⁰ This section was missing altogether.

¹¹ Various source levels and associated references were not specified in either Caltrans' application or the *Federal Register* notice. Multiple Level A and B harassment zones also were either missing or were incorrect in the proposed authorization. NMFS indicated it would include the various revisions in the final authorization.

¹² Which did not include the proposed takes for the implosion event nor did it stipulate the numbers of takes to be authorized for temporary threshold shift vs. behavior.

¹³ For example, see the Commission's [5 September 2017](#) and [2 January 2018](#) letters.

¹⁴ This is the 12th authorization for Caltrans' SF-OBB activities.

¹⁵ See its [3 January 2017 letter](#).

with the requirement to implement various bubble curtain performance standards¹⁶. However, the main reason why bubble curtains do not achieve consistently reduced sound levels is because sound resonates through the ground into the far field.

MacGillivray et al. (2007) measured attenuated and unattenuated impact pile driving of 36-in steel piles in Washington. The bubble curtain provided an approximate 21-dB reduction in peak sound pressure levels (SPL_{peak}) and an approximate 26-dB reduction in root-mean-square sound pressure levels at a distance of 10 m (SPL_{rms} ; Table 2 in MacGillivray et al. 2007). At a distance of 100–1,100 meters, the bubble curtain provided a reduction of 6 to 7 dB for both SPL_{peak} and SPL_{rms} . MacGillivray et al. (2007) indicated that the effectiveness of the mitigation method¹⁷ was range-dependent and sound attenuation diminished with range from the pile.

Caltrans also conducted performance testing of bubble curtains. Effectiveness of the bubble curtain varied with direction and distance from the pile and under different tidal conditions (Caltrans 2005). In general, the bubble curtain provided the greatest reduction in SPLs in the near field¹⁸. At distances of 400–500 m, SPLs were reduced by only 1 to 2 dB. Although a flood tide may have had some effect on the performance of the bubble curtain, the SPL reductions were still 5 to 10 dB at distances of 45–120 m. This finding confirms that, at greater distances, more of the sound emitted during impact pile driving resonates from the ground than through the water column¹⁹. Bubble curtains are not designed to, nor can they, attenuate ground-borne sound. Furthermore, Caltrans (2015) stated that, because of the uncertainties associated with the degree of attenuation that would be provided by a bubble curtain, an assumed source level reduction should be limited to 5 dB. The Commission contends that even a 5-dB reduction could lead to an underestimation of impacts.

Given that Level A harassment is primarily based on thresholds²⁰ associated with SEL_{cum} , it is the far-field sound that matters—particularly when the estimated ranges to Level A harassment are on the order of 500²¹ to 1,000s²² of meters. Level B harassment also would be estimated to occur at comparable or greater far-field distances. And, at those distances, reductions in sound levels have not been shown to consistently produce reductions of 5 dB let alone 10 dB²³. The Commission further notes that bubble curtains may provide effective mitigation as compared to SPL_{peak} thresholds for fish in the near field²⁴, but they have no proven efficacy for substantially reducing sound levels in the far field for marine mammals. Therefore, the Commission recommends that NMFS refrain from using a source level reduction factor for sound attenuation device implementation during impact pile driving for all relevant incidental take authorizations.

¹⁶ NMFS is not including these requirements consistently, as noted herein, for all incidental take authorizations that include bubble curtains.

¹⁷ A similar trend was observed for foam temporary noise attenuation piles.

¹⁸ In general, the majority of the sound level measurements have been collected in the near field (well within 100 m) for studies involving unattenuated and attenuated pile driving using a bubble curtain.

¹⁹ This phenomenon also was noted in Caltrans (2015). If sound was primarily being emitted through the water column, comparable reductions (or greater reductions with increasing water depths) should be produced with increasing distance from the source, not lesser reductions.

²⁰ NMFS uses dual metrics for determining the range to Level A harassment, SPL_{peak} and SEL_{cum} . However, the ranges to SPL_{peak} are always less than the ranges to SEL_{cum} for impact pile-driving activities.

²¹ As referenced in 83 Fed. Reg. 18523 for other activities in San Francisco Bay.

²² As referenced in 83 Fed. Reg. 18791 and other similar notices.

²³ Which would apply to Level B harassment at well.

²⁴ Bubble curtains originally were used to minimize both lethal and sub-lethal effects on fish.

Rounding of take estimates

The method NMFS used to estimate the numbers of takes during the proposed activities, which summed fractions of takes for each species across project days, does not account for and negates the intent of NMFS's 24-hour reset policy. As the Commission has indicated in previous letters regarding this matter²⁵, the issue at hand involves policy rather than mathematical accuracy. Although NMFS developed criteria associated with rounding quite some time ago, NMFS has indicated that the draft criteria need additional revisions before it can share them with the Commission. Therefore, the Commission recommends that NMFS promptly revise its draft rounding criteria in order to share them with the Commission expeditiously.

Proposed one-year authorization renewals

NMFS has indicated that it may issue a second one-year²⁶ incidental harassment authorization renewal for this and other future authorizations on a case-by-case basis without additional public notice or comment opportunity when (1) another year of identical, or nearly identical activities, as described in the 'Specified Activities' section of the *Federal Register* notice is planned or (2) the originally planned activities would not be completed by the time the incidental harassment authorization expires and a renewal would allow for completion of the authorized activities beyond the timeframe described in the 'Dates and Duration' section of the notice. NMFS would consider issuing a renewal only if—

- the request for renewal is received no later than 60 days prior to the expiration of the current authorization;
- the activities to be conducted either are identical to the previously analyzed and authorized activities or include changes so minor (e.g., reduction in pile size) that they do not affect the previous analyses, take estimates, or mitigation and monitoring requirements;
- a preliminary monitoring report provides the results of the required monitoring to date and those results do not indicate impacts of a scale or nature not previously analyzed or authorized;
- the status of the affected species or stocks and any other pertinent information, including the mitigation and monitoring requirements, remain the same and appropriate; and
- the original determinations under the MMPA remain valid.

The Commission agrees that NMFS should take appropriate steps to streamline the authorization process under section 101(a)(5)(D) of the MMPA to the extent possible. However, the Commission is concerned that the renewal process proposed in the *Federal Register* notice is inconsistent with the statutory requirements. Section 101(a)(5)(D) clearly states that proposed authorizations are subject to publication in the *Federal Register* and elsewhere and that there be a presumably concurrent opportunity for public review and comment. NMFS's proposed renewal process would bypass the public notice and comment requirements when it is considering the renewal.

²⁵ See the Commission's [29 November 2016 letter](#) detailing this issue.

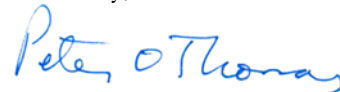
²⁶ NMFS informed the Commission that the renewal would be issued as a one-time opportunity, after which time a new authorization application would be required. NMFS has yet to specify this in any *Federal Register* notice detailing the new proposed renewal process but should do so.

The Commission further notes that NMFS recently implemented an abbreviated authorization process by publishing the required information²⁷ via an abbreviated *Federal Register* notice and by referencing the relevant documents. The abbreviated process preserves the full opportunity for public review and comment, does not appear to be unduly burdensome on either the applicant or NMFS, and is much preferred over NMFS's proposed renewal process²⁸. Thus, the Commission recommends that NMFS refrain from implementing its proposed renewal process and instead use abbreviated *Federal Register* notices and reference existing documents to streamline the incidental harassment authorization process.

If NMFS believes that its proposed renewal process is consistent with the applicable statutory requirements and intends that process to be generally applicable to all incidental harassment authorizations that meet the specified criteria, it should not seek to adopt such a process through a brief notice at the end of a specific proposed authorization. That process should be adopted through more general procedures, preferably a rulemaking, that provides NMFS's rationale and analysis regarding why it believes the proposed renewal process is consistent with the requirements of section 101(a)(5)(D) of the MMPA and adequate public notice and opportunity for comment. If NMFS adopts the proposed renewal process notwithstanding the Commission's recommendation, the Commission further recommends that NMFS provide it and the public with a legal analysis supporting NMFS's conclusion that such a process is consistent with the requirements under section 101(a)(5)(D) of the MMPA. In addition, if NMFS decides to bypass the notice and comment process in advance of issuing a renewal, it should nevertheless publish notice in the *Federal Register* whenever such a renewal has been issued.

The Commission hopes you find its letter useful. Please contact me if you have questions regarding the Commission's recommendations.

Sincerely,



Peter O. Thomas, Ph.D.,
Executive Director

References

- Caltrans. 2005. San Francisco–Oakland Bay Bridge east span seismic safety project: Hydroacoustic monitoring report. State of California Department of Transportation, Sacramento, California. 244 pages.
- Caltrans. 2015. Technical guidance for assessment and mitigation of the hydroacoustic effects of pile driving on fish. State of California Department of Transportation, Sacramento, California. 532 pages.
- MacGillivray, A., E. Ziegler, and J. Laughlin. 2007. Underwater acoustic measurements from Washington State Ferries 2006 Mukilteo ferry terminal test pile project. JASCO Research, Ltd, Victoria, British Columbia. 27 pages.

²⁷ Including any changes to the proposed activities or assumptions made and results from the draft monitoring report.

²⁸ See the Commission's [30 April 2018 letter](#) detailing this matter.