



MARINE MAMMAL COMMISSION

17 September 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 Alaska Department of Transportation and Public Facilities (AK DOT) 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 reconstruction of the ferry terminal in Gustavus, Alaska. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 9 August 2018 notice (83 Fed. Reg. 39424) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions. The Commission previously provided comments in its [29 August 2016 letter](#) on AK DOT's proposed activities. NMFS issued the final authorization in 2017 for the activities that were to occur in 2018. However, AK DOT has been unable to conduct any of the proposed activities in 2018 and requested that NMFS re-issue the authorization subject to minor modifications to the numbers of piles to be installed and removed. The number of days of activities remain unchanged.

AK DOT plans to reconstruct portions of the Gustavus Ferry Terminal. Operators would install up to 59 12.75- to 30-in steel piles using a vibratory and an impact hammer. They also would remove up to 25 12.75 to 24-in steel piles using a vibratory hammer or by cutting them off at the mudline. AK DOT expects activities to take up to 50 days, weather permitting. It would limit pile-driving and -removal activities to daylight hours only during the timeframe from 1 March–31 May 2019 and 1 September–30 November 2019.

NMFS preliminarily has determined that, at most, the proposed activities temporarily would modify the behavior 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—

- conducting sound source verification measurements during impact and vibratory pile driving and adjusting the Level A and/or B harassment zones, as necessary;

- using a sound attenuation device (e.g., pile caps) during impact driving of steel piles;
- ceasing pile-driving and -removal activities if any marine mammal comes within 10 m of the equipment;
- using standard soft-start, delay, and shut-down procedures;
- using two qualified land-based protected species observers (PSOs) to monitor the Level A¹ and B harassment zones for 30 minutes before, during, and for 30 minutes after the proposed activities;
- using delay and shut-down procedures if a species for which authorization has not been granted (including but not limited to gray whales and Pacific white-sided dolphins) or if a species for which authorization has been granted but the authorized number of takes has been met², approaches or is observed within the Level A or B harassment zone;
- reporting injured and dead marine mammals to the Office of Protected Resources and the Alaska Stranding Coordinator using NMFS's phased approach and suspending activities, if appropriate; and
- submitting a final report.

Appropriate source levels, harassment zones, and take estimates

In 2016 AK DOT originally proposed to use 154.3 dB re 1 μ Pa at 10 m³ as the proxy source level for vibratory pile driving of 30-in steel piles based on measurement of a single pile obtained at the ferry terminal in Kake, Alaska (McGillivray et al. 2015). As the Commission noted in its extensive comments regarding this matter (refer to the Commission's [29 August 2016 letter](#) that should be reviewed in concert with this letter), that measurement is much lower than other measurements obtained from vibratory pile driving of 30-in steel piles at other locations (averages range from 160 to 170 dB re 1 μ Pa at 10 m⁴) and lower than measurements obtained from another pile at Kake. The primary factor affecting the source level is the sediment composition, which at Kake consists of organic mud. However, Starkes and Stutes (2016) stated that geotechnical reports indicated that substrates at Kake and Gustavus differ and that substrates at Gustavus are composed primarily of sand and silty sands (AK DOT 2008). Rather than following the Commission's recommendation to use a mean of 166 dB re 1 μ Pa at 10 m⁵ based on source levels obtained at other locations where the substrates are comprised of sand and silt, NMFS chose to use the mean levels measured at Kake resulting in a source level of 157.7 dB re 1 μ Pa at 10 m (82 Fed. Reg. 17211). Although the Level B harassment zone increased from 1.9 to 3.3 km based on the slightly higher

¹ NMFS indicated that the number of strikes used to estimate the extent of the Level A harassment zone during impact driving should be 300 rather than 600 strikes per pile as noted in Table 1 of the *Federal Register* notice (82 Fed. Reg. 17210).

² The Commission noted that NMFS omitted this standard measure from the final 2017 authorization. NMFS indicated the measure would be included in the final 2018 authorization.

³ MacGillivray et al. (2015) measured vibratory driving of two piles, one with a source level of 154 and another with a source level of 160 dB re 1 μ Pa at 10 m.

⁴ With the overall maximum source level of 174 dB re 1 μ Pa at 10 m. The Commission notes that AK DOT also recently used a modeled source level of 177.6 dB re 1 μ Pa at 10 m for vibratory driving of 30-in piles in its authorization request for Haines Ferry Terminal (82 Fed. Reg. 47709)

⁵ Based on Naval Facilities Engineering Command Southwest (NAVFAC SW 2014, 2015) data from Naval Base Point Loma, which also has primarily a sand and silt substrate (Table 2-10 in Department of the Navy (2012)). Source levels from four 30-in piles ranged from 160 to 172 dB re 1 μ Pa at 10 m, with a mean of 166 dB re 1 μ Pa at 10 m.

source level, the Commission asserts that the Level B harassment zone is still grossly underestimated⁶.

NMFS has since agreed with the Commission's conclusions regarding the appropriateness of the source levels measured at Kake and has not used those source levels since. For AK DOT's authorization at Sand Point, NMFS indicated that conditions at Kake include an organic mud substrate, which would likely absorb sound and decrease source level values for vibratory driving (82 Fed. Reg. 31416). NMFS stated that it believed that those conditions resulted in anomalous source level measurements for vibratory pile driving that would not be expected at locations with other types of substrates and thus did not include the data from Kake in this analysis (82 Fed. Reg. 31416). NMFS ultimately used a proxy source level of 165.6 dB re 1 μ Pa at 10 m based on the average of the mean source levels from Auke Bay and Ketchikan—locations that also had sand and silt substrates (Denes et al. 2016). The Commission notes that the source level NMFS used as a proxy for vibratory driving of 30-in piles at Sand Point is nearly the same as that the Commission recommended it use for Gustavus two years ago. While NMFS has attempted to refute the Commission's comments regarding factors affecting the appropriateness of proxy source levels. This example further supports the Commission's long-term stance that the most important factor affecting pile-driving source levels is sediment composition, not sound speed profiles⁷ and resulting geographic location of measurements.

Although NMFS is aware of the possibility that the measured source levels may be much higher than those used in its analyses, it has opted to retain the analysis from the 2017 final authorization for this authorization. NMFS noted that, if the in-situ measurements demonstrate a need for larger harassment zones and/or additional marine mammal takes, NMFS could make modifications at that time so that work does not have to stop for months while going through a public comment period. It is unclear if that means that NMFS would increase the size of the zones and authorize additional marine mammal takes while circumventing a public comment period *or* require that AK DOT implement delay or shut-down measures when any species for which the number of authorized takes has been met approaches or occurs within the revised Level A and/or B harassment zone. Neither of those approaches is appropriate. The first option undermines the comment period afforded the public under section 101(a)(5)(D) of the MMPA, and the second option extends AK DOT's activities unnecessarily, resulting in more time spent conducting the activities and ultimately affecting marine mammals.

As indicated in the Commission's 2016 letter, the revised Level B harassment zone would extend farther into Icy Strait than originally proposed. AK DOT, and in turn NMFS, based its take estimates⁸ on the lesser probability that a species would occur in Icy Passage than in Icy Strait⁹. Thus, the numbers of marine mammal takes are underestimated as well. The Commission seeks clarity on why NMFS is not willing to (1) fix an issue that has been apparent for a few years, (2) abide by its own rationale for other authorizations by using an appropriate proxy source level, and

⁶ Assuming 166 dB re 1 μ Pa at 10 m at the appropriate proxy source level, the Level B harassment zone would be 11.7 km. The Level A harassment zones also would increase by more than three-fold.

⁷ Sound speed profiles (which are more characteristic of regional temperature and salinity stratifications) influence long-range sound propagation but not close-range source levels that are measured generally within 5 m of the 10-m reference standard.

⁸ Group sizes of the various species observed locally were used to inform the take estimates.

⁹ Where Steller sea lion haul-out sites are present as well (82 Fed. Reg. 17218).

(3) use best available science. Although NMFS used an inappropriate proxy source level for the 2017 authorization, that does not prevent it from following precedents set subsequent to the original authorization and using a more appropriate one for the 2018 authorization. The Commission believes these issues should be rectified prior to, not after, the authorization is issued and again recommends that NMFS (1) use 166 rather than 157.7 dB re 1 μ Pa at 10 m as the source level for vibratory driving of 30-in steel piles at Gustavus and (2) re-estimate the extents of the Level A and B harassment zones accordingly and increase the numbers of marine mammal takes appropriately.

Starkes and Stutes (2016) additionally indicated that using sound source data from Kake would provide a considerably more manageable monitoring program and likely a much smaller take estimate¹⁰. The Commission contends that source levels used to inform incidental take authorizations should be based on best available science, not the manageability of monitoring the respective Level B harassment zones or the magnitude of the estimated numbers of takes. Although NMFS would require AK DOT to have two PSOs monitoring during all vibratory pile-driving activities, two PSOs would not be sufficient to monitor the various ensonified areas and to ensure the numbers of authorized takes are not exceeded. Specifically, two PSOs would not be sufficient to monitor Level A harassment zones that extend up to 629 m and Level B harassment zones that extend up to 3.3 km¹¹. Further, if the second PSO¹² is stationed at either end of the Level B harassment zone, animals could easily approach the opposite end of the zone, nearly 6.6 or 23.4 km away, undetected. The Commission therefore recommends that NMFS require AK DOT to use at least three PSOs to monitor the full extent of the Level B harassment zone during all vibratory pile-driving activities and ensure the numbers of animals taken are extrapolated to the full extent of the Level B harassment zone, if unable to be fully monitored.

Moreover, the Commission informally noted that the proposed number of Level A harassment takes were insufficient for harbor seals, harbor porpoises, and Steller sea lions. The Level A harassment zones are nearly three times greater than the 100-m shut-down zone for harbor seals and more than six times greater for harbor porpoises. The proposed number of authorized takes¹³ would allow for less than one animal to be taken on each of the 50 days of proposed activities. This is particularly problematic for species that travel in groups—average group size of harbor porpoises is three in Alaska (83 Fed. Reg. 5069). Assuming the activities would only occur on a third of the proposed days (approximately 16 days), the Level A harassment takes for harbor porpoises would still be insufficient.

Conversely for Steller sea lions, NMFS did not propose to authorize any Level A harassment takes but would require AK DOT to cease activities if a sea lion is observed within their 25-m shut-down zone. Steller sea lions routinely occur near the dock at Gustavus, most frequently during the

¹⁰ It appears AK DOT was referred previously by NMFS to data from California Department of Transportation (Caltrans; 2012). Data for vibratory driving of 30-in steel piles were not available so a source level of 170 dB re 1 μ Pa at 10 m for 36-in steel piles was used as a proxy, which also is in the range of source levels measured at Point Loma, Auke Bay, and Ketchikan for 30-in steel piles. That higher source level yielded a Level B harassment zone of 21.5 km vs. 1.9 km estimated from the Kake source level.

¹¹ Or 11.7 km, if revised.

¹² Assuming that the first PSO would primarily be tasked with implementing shut-down measures when animals approach the Level A harassment zones.

¹³ NMFS proposed to authorize 38 Level A harassment takes for harbor seals and 26 Level A harassment takes for harbor porpoises.

fishing season. Thus, AK DOT likely will be in a situation in which it will be having to shut down activities frequently. To alleviate unnecessarily extending the timeframe over which activities would occur and thereby increasing impacts on marine mammals, the Commission informally suggested that NMFS reduce the size of the shut-down zone for Steller sea lions and authorize Level A harassment takes. Rather than do so, NMFS plans to require AK DOT to cease activities when five or more Steller sea lions are observed following charter fishing vessels to the dock prior to 4 p.m. In addition, NMFS would require AK DOT to cease activities at 4 p.m. during the charter fishing season. Although those measures may reduce the potential for unauthorized taking by Level A harassment in those situations, they would still extend the timeframe over which would be necessary to conduct the activities because the size of the 25-m shut-down zone would remain unchanged and activities would be prematurely stopped. For these reasons, the Commission recommends that NMFS (1) increase the numbers of Level A harassment takes for harbor seals, harbor porpoises, and Steller sea lions based on their residency patterns, social behavior, and potential to occur within the various Level A harassment zones and (2) reduce the size of the shut-down zone for Steller sea lions.

If NMFS does not follow the Commission's recommendations, the Commission further recommends that NMFS require AK DOT to cease its activities if the authorized takes are met for any species¹⁴ until its authorization is revised after a 30-day public comment period is afforded for review of any revisions to the authorization issued in 2018. The Commission understands that in certain circumstances (e.g., unexpected impacts from El Niño conditions) the numbers of authorized takes may not be sufficient (80 Fed. Reg. 61376). However, those types of unforeseeable circumstances should not be treated equally to those which arise from NMFS failing to authorize adequate numbers of takes.

General improvements for pile-driving authorizations

In its 2016 letter, the Commission recommended that NMFS make some general improvements regarding proxy source levels and various requirements for hydroacoustic monitoring reports. Those improvements included—

- compiling all of the in-situ pile-driving and -removal data into a central database;
- requiring that action proponents specify the sediment composition, water depth (in terms of hydrophone placement and bathymetry), duration over which the pressure was averaged for root-mean-square sound pressure level (SPL_{rms}) metrics, and median values in all future hydroacoustic monitoring reports; and
- ensuring consistency regarding integration timeframes used for SPL_{rms} measurements (e.g., 1-second averages, maximum over 10 seconds, or maximum over 30 seconds) in all future hydroacoustic monitoring reports.

In more recent letters¹⁵, the Commission has additionally recommended that NMFS—

¹⁴ Including any necessary extrapolations.

¹⁵ For example, see the Commission's [16 April 2018](#), [10 July 2017](#), and [3 January 2017](#) letters.

- require action proponents to use median rather than mean proxy source levels from all relevant sources when in-situ data are unavailable;
- require action proponents to use a 100- rather than 50-msec pulse duration when pulse durations are not provided and NMFS's user spreadsheet and SPL_{rms} -based source levels are used to determine extents to the various Level A harassment cumulative sound exposure level (SEL_{cum}) thresholds for impact pile driving;
- specify whether source levels based on SPL_{rms} or single-strike SELs (SEL_{s-s}) are more appropriate for action proponents to use when both are available and require each action proponent to use that metric consistently to determine the ranges to the various Level A harassment SEL_{cum} thresholds;
- ensure hydrophones are able to collect measurements in the appropriate frequency range (from 10 Hz to at least 20 kHz) and for the relevant objectives (low- and high-sensitivity hydrophones are necessary for collecting pile-driving and ambient measurements, respectively) and are placed in the near field and sufficiently in the far field (and away from shipping lanes);
- ensure ambient conditions are recorded appropriately (e.g., in three continuous 10-minute intervals);
- ensure the pulse duration is the duration that contains 90% of pulse energy, the appropriate thresholds are used and distances reported accordingly, the appropriate filter (band-pass) is used, source levels are calculated using linear averaging¹⁶ vs. arithmetic means, and SEL_{cum} are calculated using a linear summation of acoustic intensity; and
- ensure power spectral data are provided and the data reported are based on the appropriate metrics (i.e., peak SPL, SPL_{rms} , SEL_{s-s} , SEL_{cum}) and appropriate statistics (i.e., median, mean, minimum, and maximum) for the hydroacoustic monitoring plan and in all future hydroacoustic monitoring reports.

NMFS indicated over a year ago that it was developing guidance on pile-driving assessments and compiling the source level data into a central database (82 Fed. Reg. 17211 and 23537). NMFS also indicated it would require many of the items the Commission has stipulated in either hydroacoustic monitoring plans or the reports themselves (83 Fed. Reg. 19703). In the meantime, action proponents should be provided applicable guidance to assist them in drafting their proposed applications and hydroacoustic monitoring plans. This is especially important for activities that involve pile driving and removal, as those activities are the most numerous for which NMFS issues incidental take authorizations. Thus, the Commission recommends that NMFS (1) incorporate the Commission's various recommendations into its pile-driving assessment guidance, (2) finalize that guidance in the near term, including compiling source level data into a central database, and (3) make such guidance available on NMFS's incidental take authorization website.

Hydroacoustic monitoring plan availability

AK DOT would be required to abide by the guidance provided in NMFS (2012) in developing its hydroacoustic monitoring plan, and NMFS must approve the plan. Since AK DOT has yet to provide NMFS its hydroacoustic monitoring plan, its appropriateness cannot be assessed.

¹⁶ Sound pressures or sound exposures are averaged linearly and then converted to decibels, since decibels are not intended to be averaged.

However, the Commission notes that NMFS's 2012 guidance is sorely outdated—it doesn't include the relevant thresholds or metrics, let alone some of the other details stipulated herein. Further, the previously specified shortcomings were based on proposed hydroacoustic monitoring plans that had been reviewed by NMFS and were not identified before the plans were made available for public comment.

All documentation required as part of the incidental take authorization process should be made available for public review and comment, including the proposed marine mammal and hydroacoustic monitoring plans. Those plans underpin the proposed mitigation and monitoring requirements under section 101(a)(5)(D) of the MMPA. Absent those plans, neither the Commission nor the public can comment on their appropriateness or sufficiency¹⁷. The Commission supports action proponents conducting hydroacoustic monitoring but only if the measurements and resulting analyses are conducted appropriately. Based on NMFS's review of previous plans, it is apparent that additional scrutiny is necessary. The Commission recommends that NMFS require action proponents to provide proposed hydroacoustic monitoring plans when authorization applications are submitted and make those plans available for public comment. If such plans are not provided in a timely manner, at the very least, NMFS should provide them to the Commission for review sufficiently in advance of issuing the final authorization.

Abbreviated *Federal Register* notices and one-year authorization renewals

Given that much of the information relevant to AK DOT's proposed authorization had been included in previous documents, NMFS published the required information via an abbreviated *Federal Register* notice referencing those earlier documents¹⁸. The Commission has opposed NMFS's ongoing proposal to allow renewals of incidental harassment authorizations¹⁹ without an opportunity for additional public review and comment. The Commission believes that NMFS's proposed renewal process is inconsistent with the requirements of section 101(a)(5)(D), which limit such authorizations to "periods of not more than 1 year" and, unless subject to public notice and comment opportunities concurrent with consideration of a renewal, would undercut the MMPA's requirements for public involvement. The abbreviated process used in this instance preserves the full opportunity for public review and comment. As such, it is preferable to NMFS's proposed renewal process and does not appear to be unduly burdensome on either the applicant or NMFS. Therefore, the Commission recommends that NMFS, in lieu of adopting its proposed renewal process for extending authorizations beyond their original one-year period of validity without providing a new opportunity for public review and comment, use abbreviated *Federal Register* notices and reference existing documents to streamline the incidental harassment authorization process. If NMFS adopts the proposed renewal process notwithstanding the Commission's recommendation, the Commission further recommends that NMFS provide the Commission and the public with a legal analysis supporting its conclusion that the process is consistent with the requirements under section 101(a)(5)(D) of the MMPA.

¹⁷ Based on the type and number of piles to be measured. Measurements should be conducted of multiple piles of each type that serve as the basis for the Level A and B harassment zones.

¹⁸ Primarily the *Federal Register* notice for the final 2017 authorization issuance.

¹⁹ See 83 Fed. Reg. 39428 for details of that process.

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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

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