



INCIDENTAL HARASSMENT AUTHORIZATION

Chevron is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(D)) to harass marine mammals incidental to the Richmond Refinery Long Wharf Maintenance and Efficiency Project (LWMEP) in San Francisco Bay, California, when adhering to the following terms and conditions.

1. This Incidental Harassment Authorization (IHA) is valid from June 1, 2019, through May 31, 2020.
2. This IHA is valid only for pile driving and extraction activities associated with Chevron's LWMEP project in San Francisco Bay.
3. General Conditions
 - (a) A copy of this IHA must be in the possession of Chevron, its designees, and work crew personnel operating under the authority of this IHA.
 - (b) The species authorized for taking are the gray whale (*Eschrichtius robustus*), bottlenose dolphin (*Tursiops truncatus*), harbor porpoise (*Phocoena phocoena*), California sea lion (*Zalophus californianus*), northern fur seal (*Callorhinus ursinus*), harbor seal (*Phoca vitulina*), and northern elephant seal (*Mirounga angustirostris*).
 - (c) The taking, by Level A and Level B harassment, is limited to the species listed in condition 3(b). See Table 1 (attached) for number of takes authorized.
 - (d) With the exception of harbor seal and harbor porpoise, the taking by injury (Level A harassment), serious injury, or death of any of the species listed in condition 3(b) of the Authorization or any taking of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA.
 - (e) Chevron must conduct briefings between construction supervisors and crews, marine mammal monitoring team, and acoustic monitoring team prior to the start of all pile driving activities, and when new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.



4. Mitigation Measures

The holder of this Authorization is required to implement the following mitigation measures:

- (a) Time Restrictions — For all in-water pile driving activities, Chevron must operate only during daylight hours (7:00 a.m. to 7:00 p.m.)
- (b) Attenuation Devices — Chevron must implement the use of bubble curtains during impact driving of 60-inch steel piles and 24-inch square concrete piles and operate it in a manner consistent with the following performance standards:
 - i. The bubble curtain must distribute air bubbles around 100 percent of the piling perimeter for the full depth of the water column.
 - ii. The lowest bubble ring must be in contact with the mudline for the full circumference of the ring, and the weights attached to the bottom ring must ensure 100 percent mudline contact. No parts of the ring or other objects shall prevent full mudline contact.
 - iii. Air flow to the bubblers must be balanced around the circumference of the pile.
- (c) Establishment of Shutdown Zone — For all pile driving and extraction activities Chevron must implement and monitor shutdown zones. See Table 2 (attached) for minimum radial distances required for shutdown zones.
- (d) Establishment of Monitoring Zones for Level A and Level B — Chevron must establish and monitor Level A harassment zones during impact driving for harbor seal extending to 450 meters and for harbor porpoise extending to 990 meters. Chevron must also establish and monitor Level B harassment zones as depicted in Table 3 (Attached).
- (e) Soft Start — Chevron must use soft start techniques when impact pile driving. Chevron must provide an initial set of strikes at reduced energy, followed by a thirty-second waiting period, then two subsequent reduced energy strike sets. Soft start must be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of thirty minutes or longer.
- (f) Pre-Activity Monitoring — Pre-activity monitoring must take place from 30 minutes prior to initiation of pile driving activity and post-activity

monitoring must continue through 30 minutes post-completion of pile driving activity. Pile driving may commence at the end of the 30-minute pre-activity monitoring period, provided observers have determined that the shutdown zone is clear of marine mammals, which includes delaying start of pile driving activities if a marine mammal is sighted in the zone, as described below.

- (g) If a marine mammal approaches or enters the shutdown zone during activities or pre-activity monitoring, all pile driving activities at that location must be halted or delayed, respectively. If pile driving is halted or delayed due to the presence of a marine mammal, the activity may not resume or commence until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone or 15 minutes have passed without re-detection of the animal. Pile driving activities include the time to install or remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than thirty minutes.
- (h) 10-Meter Shutdown Zone — During the in-water operation of heavy machinery (*e.g.*, barge movements), a 10-m shutdown zone for all marine mammals must be implemented. If a marine mammal comes within 10 m, operations must cease and vessels must reduce speed to the minimum level required to maintain steerage and safe working conditions.
- (i) Non-authorized Take Prohibited — If a species for which authorization has not been granted or a species for which authorization has been granted but the authorized takes are met, is observed approaching or within the monitoring zone, pile driving and removal activities must shut down immediately using delay and shut-down procedures. Activities must not resume until the animal has been confirmed to have left the area or an observation time period of 15 minutes without re-sighting has elapsed.

5. Monitoring Measures

The holder of this Authorization is required to conduct visual marine mammal monitoring during pile driving activities.

- (a) Visual Marine Mammal Observation — The following visual monitoring measures must be implemented.
 - (i) Baseline biological monitoring must occur within one (1) week before the project's start date.
 - (ii) Monitoring distances, in accordance with the identified shutdown zones, Level A and Level B zones, must be determined by using a range finder, scope, hand-held global positioning system (GPS)

device or landmarks with known distances from the monitoring positions.

- (iii) Monitoring locations must be established at locations offering best views of the monitoring zone. One protected species observer (PSO) must be stationed at the north end of the wharf monitoring the entire observable area with a special focus on the section between Castro Rocks and the wharf.
- (iv) At least two PSOs must be actively scanning the monitoring zone during all pile driving activities.
- (v) Observers must record all incidents of marine mammal occurrence, regardless of distance from activity, and must document any behavioral reactions in concert with distance from piles being driven or removed.
- (vi) Monitoring must be continuous unless the contractor takes a break longer than 2 hours from active pile and sheet pile driving, in which case monitoring must be required 30 minutes prior to restarting pile installation.
- (vii) For in-water pile driving, under conditions of fog or poor visibility that might obscure the presence of a marine mammal within the shutdown zone or Level A zone, the pile in progress must be completed and then pile driving suspended until visibility conditions improve.
- (viii) Monitoring of pile driving must be conducted by qualified PSOs, who must have no other assigned tasks during monitoring periods. Chevron must adhere to the following conditions when selecting observers:
 - (1) Independent PSOs must be used (*i.e.*, not construction personnel);
 - (2) At least one PSO must have prior experience working as a marine mammal observer during construction activities;
 - (3) Other PSOs may substitute education (degree in biological science or related field) or training for experience; and
 - (4) Chevron must submit PSO CVs for approval by NMFS.
- (ix) Chevron must ensure that observers have the following additional qualifications:

- (1) Ability to conduct field observations and collect data according to assigned protocols;
- (2) Experience or training in the field identification of marine mammals, including the identification of behaviors;
- (3) Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- (4) 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, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior; and
- (5) 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.

(b) Hydroacoustic Monitoring

- (i) Sound Source Verification (SSV) testing must be conducted as stipulated in the Hydroacoustic Monitoring Plan.
- (ii) Acoustic monitoring must be conducted on the following.
 - (1) Acoustic monitoring for at least two (2) timber piles (vibratory);
 - (2) Acoustic monitoring for at least four (4) 24-inch square concrete piles (impact);
 - (3) Acoustic monitoring for at least two (2) 20-inch steel piles (vibratory);
 - (4) Acoustic monitoring for at least two (2) 36-inch steel piles (vibratory);
 - (5) Acoustic monitoring for at least two (2) 60-inch steel piles (impact); and

- (6) Acoustic monitoring of two (2) 12-inch composite piles (vibratory).
- (iii) Testing must be conducted by an acoustical firm with prior experience conducting SSV testing.
- (iv) Final results must be sent to NMFS and may be used to establish shutdown and monitoring isopleths.
- (v) Any alterations to the shutdown or monitoring zones based on testing data must be approved by NMFS.

6. Reporting

- (a) A draft marine mammal monitoring report must be submitted to NMFS within 90 days after the completion of pile driving and removal activities or a minimum of 60 days prior to any subsequent IHAs. A final report must be prepared and submitted to NMFS within 30 days following receipt of comments on the draft report from NMFS.
- (b) The report must include an overall description of work completed, a narrative regarding marine mammal sightings, and associated marine mammal observation data sheets. Specifically, the report must include:
 - (i) Dates and times (begin and end) of all marine mammal monitoring.
 - (ii) Construction activities occurring during each daily observation period, including how many and what type of piles were removed or driven and by what method (i.e., impact, vibratory, drilling).
 - (iii) Weather parameters and water conditions during each monitoring period (e.g., wind speed, percent cover, visibility, sea state).
 - (iv) The number of marine mammals observed, by species, relative to the pile location and if pile removal or installation was occurring at time of sighting.
 - (v) Age and sex class, if possible, of all marine mammals observed.
 - (vi) PSO locations during marine mammal monitoring.
 - (vii) Distances and bearings of each marine mammal observed to the pile being removed or driven for each sighting (if pile removal or installation was occurring at time of sighting).

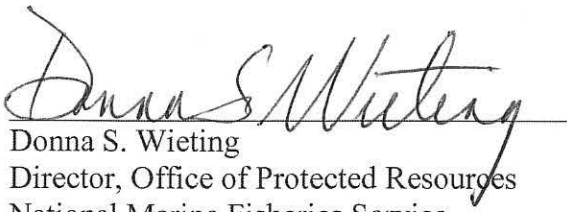
- (viii) Description of any marine mammal behavior patterns during observation, including direction of travel.
 - (ix) Number of individuals of each species (differentiated by month as appropriate) detected within the monitoring zone, and estimates of number of marine mammals taken, by species.
 - (x) Detailed information about any implementation of any mitigation triggered (e.g., shutdowns and delays), a description of specific actions that ensued, and resulting behavior of the animal, if any.
 - (xi) Description of attempts to distinguish between the number of individual animals taken and the number of incidences of take, such as ability to track groups or individuals.
 - (xii) Level B harassment exposures recorded by PSOs must be extrapolated based upon the number of observed takes and the percentage of the Level B harassment zone that was not visible.
- (c) In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA (if issued), such as an injury, serious injury or mortality, Chevron would immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS (301-427-8701), and the West Coast Regional Stranding Coordinator (562-980-3230). The report must include the following:
- (i) Description of the incident;
 - (ii) Environmental conditions (*e.g.*, Beaufort sea state, visibility);
 - (iii) Description of all marine mammal observations in the 24 hours preceding the incident;
 - (iv) Species identification or description of the animal(s) involved;
 - (v) Fate of the animal(s); and
 - (vi) Photographs or video footage of the animal(s) (if equipment is available).
 - (vii) Activities would not resume until NMFS is able to review the circumstances of the prohibited take. NMFS would work with Chevron to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Chevron

would not be able to resume their activities until notified by NMFS via letter, email, or telephone.

- (d) In the event that Chevron discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.*, in less than a moderate state of decomposition as described in the next paragraph), Chevron would immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the West Coast Regional Stranding Coordinator. The report would include the same information identified in section above. Activities would be able to continue while NMFS reviews the circumstances of the incident. NMFS would work with Chevron to determine whether modifications in the activities are appropriate.
 - (e) In the event that Chevron discovers an injured or dead marine mammal and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (*e.g.*, previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Chevron would report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the West Coast Regional Stranding Coordinator within 24 hours of the discovery. Chevron would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network.
7. This Authorization may be modified, suspended or withdrawn if the holder fails to abide by the conditions prescribed herein, or if NMFS determines the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals.
8. Renewals - On a case-by-case basis, NMFS may issue a one-year IHA renewal with an expedited public comment period (15 days) when 1) another year of identical or nearly identical activities is planned or 2) the activities would not be completed by the time the IHA expires and a second IHA would allow for completion of the activities beyond that allowed for under this IHA, provided all of the following conditions are met:
- (a) A request for renewal is received no later than 60 days prior to expiration of the current IHA.
 - (b) The request for renewal must include the following:
 - i. An explanation that the activities to be conducted beyond the initial dates either are identical to the previously analyzed activities or include changes so minor (*e.g.*, reduction in pile size) that the

changes do not affect the previous analyses, take estimates, or mitigation and monitoring requirements.

- ii. A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.
- (c) Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures remain the same and appropriate, and the original findings remain valid.


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National Marine Fisheries Service

Date

Table 1: Species/Stocks and Numbers of Marine Mammals Authorized to be Taken Under this IHA.

Species	Authorized Level A Takes	Authorized Level B Takes	Total
Harbor seal	513	6,572	7,085
California sea lion	--	479	479
Harbor porpoise	4	509	513
Northern elephant seal	--	23	23
Gray whale	--	2	2
Northern fur seal	--	10	10
Bottlenose Dolphin	--	30	30

Table 2: Radial Distance to Shutdown Zones.

Project Element Requiring Pile Installation	Shutdown Zones meters				
	Low- Frequency Cetaceans	Mid- Frequency Cetaceans	High- Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
Attenuated Impact Driving (with bubble curtain)					
60-inch steel pipe	840	30	50	30	35
24-inch square concrete	20	10	50	15	10
Impact Pile Proofing (no bubble curtain)					
36-inch steel pipe pile	100	10	80	30	10
Vibratory Driving/Extraction					
12-inch Composite Barrier Pile	20	10	50	15	10
36-inch steel pipe pile	20	10	50	15	10
20-inch steel pipe pile	10	10	50	10	10
Wood and concrete pile extraction	10	10	50	10	10

Table 3: Radial Distances to Monitoring Zones.

Pile Type	Distance to Threshold 160/120 dB RMS (Level B) in meters
Attenuated Impact Driving (with bubble curtain)	
60-inch steel pipe (1 per day)	740
24-inch square concrete (1-2 per day)	45
Impact Pile Proofing (no bubble curtain)	
36-inch steel pipe pile (2 total)	1,000
Vibratory Driving/Extraction	
12-Inch Composite Barrier Piles (5 per day)	15,850
36-inch steel pipe pile (4 per day)	21,545
20-inch steel pipe pile (4 per day)	7,360
Wood and concrete pile extraction (12 per day)	1,360