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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XE687

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to a Tidal Marsh Restoration Project

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 NMFS has issued an incidental harassment authorization (IHA) to the California Department of Fish and Wildlife – Central Region (CADFW) to incidentally harass, by Level B harassment only, marine mammals during construction activities associated with the tidal marsh restoration project within the Minhoto-Hester Marsh in Elkhorn Slough (Monterey, CA).

DATES: This Authorization is in effect for one year beginning August 1, 2017.

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

SUPPLEMENTARY INFORMATION:

Availability

An electronic copy of the CADFW's application and supporting documents, as well as a list of the references cited in this document, may be obtained online at:

www.nmfs.noaa.gov/pr/permits/incidental/construction.htm. In case of problems accessing these documents, please call the contact listed above.

National Environmental Policy Act

In accordance with the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 *et seq*.), NMFS prepared a Supplemental Environmental Assessment (SEA) titled "*Final Supplemental Environmental Assessment for the Minhoto-Hester Marsh Restoration Project, Elkhorn Slough, Monterey County, California*." A Finding of No Significant Impact (FONSI) was signed on November 15, 2016. NMFS considered comments submitted in response to our **Federal Register** notice of the proposed IHA (81 FR 67297; September 30, 2016) and CADFW's application as part of the process. All documents are available at the aforementioned website.

Background

Sections 101(a)(5)(D) of the MMPA (16 U.S.C. 1361 *et seq*.) direct the Secretary of Commerce to allow, upon request 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 was provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds 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. 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."

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the U.S. can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Section 101(a)(5)(D) establishes a 45-day time limit for NMFS 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, NMFS must either issue or deny the authorization. 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 Requests

On June 2, 2016, we received an application from the CADFW for authorization to take marine mammals incidental to construction activities associated with a 47-acre tidal marsh restoration project within the Minhoto-Hester Marsh in Elkhorn Slough (Monterey, CA) (Phase 1). The overall Elkhorn Slough Tidal Marsh Restoration Project will restore a total of 147 acres, however, future phases are not part of this application as they are currently unfunded and present some additional technical challenges. Another IHA request will be made prior to implementation of any proposed future phases. The CADFW submitted revised versions of the application on

July 13, 2016, August 2, 2016, August 29, 2016, and a final application on September 6, 2016 which we deemed adequate and complete.

The activity will begin August 1, 2017 and last approximately 11 months with built in buffers for adverse weather and other conditions when work is not possible. Pacific harbor seal (*Phoca vitulina richardii*) and southern sea otters (*Enhydra lutris nereis*) are expected to be present during the work. Southern sea otters are managed by the U.S. Fish and Wildlife Service and will not be considered further in this IHA. Construction activities are expected to produce noise and visual disturbance that have the potential to result in behavioral harassment of harbor seals.

Description of the Specified Activities

A detailed description of the project is provided in the **Federal Register** notice for the proposed IHA (81 FR 67297; September 30, 2016). Since that time, no changes have been made to the planned construction activities. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for the description of the specific activity.

The CADFW proposes to restore approximately 47 acres of tidal marsh within the Minhoto-Hester Marsh in Elkhorn Slough (Monterey, CA) and additional tidal marsh, upland ecotone, native grasslands restoration within a buffer area (Phase 1). The CADFW intends to restore tidal marsh to reduce tidal erosion, improve water quality, provide sea-level rise resilience, increase carbon sequestration, and improve ecosystem function that have been altered by past land use practices. Under the planned action, 132 days of construction activities and four days of vibratory pile driving (total 136 days of project activities) related to the tidal marsh restoration will occur over an 11-month period.

Comments and Responses

A notice of NMFS's proposal to issue an IHA to CADFW was published in the Federal Register on September 30, 2016 (81 FR 67297). That notice described, in detail, CADFW's activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals. During the 30-day public comment period, NMFS received comments from the Marine Mammal Commission. The Marine Mammal Commission recommended that NMFS issue the IHA, and concurred with the planned mitigation, monitoring, and reporting measures.

Description of Marine Mammals in the Area of the Specified Activity

The marine mammal species under NMFS jurisdiction occurring in the project area is the Pacific harbor seal (see Table 1).

Table 1. Harbor Seal Status Information.

Species	Stock	ES)/MMPA status; Strategic (Y/N)[1]	Stock abundance (CV, N_{min}, most recent abundance survey)[2]	PBR[3]	Annual M/SI[4]	Relative occurrence in Elkhorn Slough; season of occurrence
Family Phocidae (earless seals)						
Harbor seal	California	-; N	30,968 (n/a; 27,348; 2012)	1,641	42.8	Common; year-round

[1]Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR (see footnote 3) or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

[2]CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable. For certain stocks of pinnipeds, abundance estimates are based upon observations of animals (often pups) ashore multiplied by some correction factor derived from knowledge of the species (or similar species) life history to arrive at a best abundance estimate; therefore, there is no associated CV. In these cases, the minimum abundance may represent actual counts of all animals ashore. The most recent abundance survey that is reflected in the abundance estimate is presented; there may be more recent surveys that have not yet been incorporated into the estimate.

[3]Potential biological removal, defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population size (OSP).

[4]These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, subsistence hunting, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value. All values presented here are from the final 2015 Pacific SAR. (*http://www.nmfs.noaa.gov/pr/sars/region.htm*)

A detailed description of the harbor seal likely to be affected by the restoration project, including a brief introduction to the species and relevant stock as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the **Federal Register** notice for the proposed IHA (81 FR 67297; September 30, 2016); since that time, we are not aware of any changes in the status of this species and stock; therefore, detailed descriptions are not provided here. Please refer to that **Federal Register** notice for these descriptions. Please also refer to NMFS' website (*http://www.fisheries.noaa.gov/pr/species/mammals/seals/harbor-seal.html*) for the generalized harbor seal account and see NMFS' Stock Assessment Reports (SAR), available at www.nmfs.noaa.gov/pr/sars, for more detailed accounts of the harbor seal stocks' status and abundance. The harbor seal is assessed in the Pacific SAR (Carretta *et al.*, 2016).

Potential Effects of the Specified Activity on Marine Mammals

The effects of noise and visual disturbance from construction activities for the project have the potential to result in behavioral harassment of marine mammals in the vicinity of the action area. The **Federal Register** notice for the proposed IHA (81 FR 67297; September 30, 2016) included a discussion of the effects of anthropogenic noise on marine mammals; therefore, that information is not repeated here.

In summary, harbor seals that use the four haul out sites, just beyond the footprint of the construction, area and in other nearby areas may potentially experience behavioral disruption rising to the level of harassment (Level B) from construction activities, which may include visual

disturbance due to the presence and activity of heavy equipment and construction workers, airborne noise from the equipment, and from underwater noise during the brief period of sheet pile installation. Disturbed seals are likely to experience any or all of these stimuli, and take may occur due to any of these in isolation or in combination with the others.

Anticipated Potential Effects on Marine Mammal Habitat

The main impact to marine mammal habitat associated with the CADFW's restoration project is the temporary exclusion from the accustomed haul out areas. During the restoration, the inability of seals to use suitable habitat within the footprint of the construction area will temporarily remove less than two percent of the potential haul out areas in the Slough (see Figure 4-4 of the application). Although the action will permanently alter habitat within the footprint of the construction area, harbor seals haul out in many locations throughout the estuary, and the activities are not expected to have any habitat-related effects that could cause significant or long-term consequences for individual harbor seals or their population. Potential effects to marine mammal habitat are discussed in detail in the **Federal Register** notice for the proposed IHA (81 FR 67297; September 30, 2016), therefore that information is not repeated here; please refer to that **Federal Register** notice for that information.

Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must 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). CADFW shall implement the following mitigation measures:

Timing Restrictions

Construction work shall occur only during daylight hours when visual monitoring of marine mammals can be implemented. No in-water work will be conducted at night.

Construction Activities

After sheet piles are installed, it will be unlikely that harbor seals will be able to access the construction area and will temporarily be displaced from using the four haul outs within the footprint of the construction area. Should seals attempt to enter the construction area, they will need to traverse a minimum 7ft high berm into an area without water. If a seal enters the construction area after installation of barriers, CADFW shall use a government official to flush any such seals from the area for purposes of protection/welfare of the animals (as allowed through section 109(h) of the MMPA). The NMFS' West Coast Regional Office and The Marine Mammal Center (Rescue and Response) will be available should this occur. In addition, to reduce the risk of potentially startling marine mammals with a sudden intensive sound, the contractor shall begin construction activities gradually each day by moving around the project area and starting heavy equipment one at a time.

Pupping Season

While CADFW does not anticipate any pupping within the project area, should a pup less than one week old (neonate) come within 20 m of where heavy machinery is working, construction activities in that area will be delayed until the pup has left the area. In the event that

a pup less than one week old remains within those 20 m, NMFS will be consulted to determine the appropriate course of action.

Vibratory Pile Driving

An exclusion zone of 15 m shall be established during the 4 days of pile driving to prevent the unlikely potential for physical injury of harbor seals due to close approach to construction equipment. Pile extraction or driving shall not commence (or re-commence following a shutdown) until marine mammals are not sighted within the exclusion zone for a 15-minute period. If a marine mammal enters the exclusion zone during sheet pile work, work shall stop until the animal leaves the exclusion zone or is not observed for a minimum of 15 minutes.

Based on our evaluation of the mitigation measures, as well as any other potential measures that may be relevant to the specified activity, we have determined that the mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth "requirements pertaining to the monitoring and reporting of such taking". The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for incidental take authorizations 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 in the action area.

Any monitoring requirement we prescribe should improve our understanding of one or more of the following:

- Occurrence of marine mammal species in the action area (*e.g.*, presence, abundance, distribution, density).
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) Action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) Affected species (*e.g.*, life history, dive patterns); (3) Co-occurrence of marine mammal species with the action; or (4) Biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas).
- Individual responses to acute stressors, or impacts of chronic exposures (behavioral or physiological).
- How anticipated responses to stressors impact either: (1) Long-term fitness and survival of an individual; or (2) Population, species, or stock.
- Effects on marine mammal habitat and resultant impacts to marine mammals.
- Mitigation and monitoring effectiveness.

Monitoring - Visual Marine Mammal Observations

Qualified Protected Species Observers (PSO) (a NMFS approved biologist) shall be used to detect, document, and minimize impacts to marine mammals. Monitoring shall be conducted before, during, and after construction activities. In addition, PSOs shall record all incidents of marine mammal occurrence, regardless of distance from activity, and document any behavioral reactions in concert with distance from construction activities.

Important qualifications for PSOs for visual monitoring include:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of harbor seals on land or in the water with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;
- Advanced education in biological science or related field (undergraduate degree or higher 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 construction activities were conducted; dates and times when construction activities were suspended, if necessary; and marine mammal behavior; and
- 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.

PSOs shall be placed at the best vantage point(s) (*e.g.*, Yampah Island, see Figure 2 of the monitoring plan in the application) practicable to monitor for marine mammals. PSOs shall also conduct mandatory biological resources awareness training for construction personnel. The awareness training shall be provided to brief construction personnel on marine mammals (inclusive of identification as needed, *e.g.*, neonates) and the need to avoid and minimize impacts

to marine mammals. If new construction personnel are added to the project, the contractor shall ensure that the personnel receive the mandatory training before starting work. The PSO shall have the authority to stop construction if marine mammals appear distressed (evasive maneuvers, rapid breathing, inability to flush) or in danger of injury.

CADFW developed a monitoring plan based on discussions between the CADFW and NMFS. CADFW shall collect sighting data and behavioral responses to construction activities for marine mammal species observed in the region of activity during the period of activity. All PSOs shall be trained in marine mammal identification and behaviors and are required to have no other construction-related tasks while conducting monitoring.

The monitoring plan involves PSOs surveying and conducting visual counts beginning prior to construction activities (beginning at least 30 minutes prior to construction activities), hourly monitoring during construction activities, and post-activity monitoring (continuing for at least 30 minutes after construction activities have ended). PSOs shall conduct monitoring from a vantage point in the marsh (*e.g.*, Yampah Island) such that all seal haul outs (see Figure 2 of the monitoring plan in the application) are in full view. During construction activities, monitoring shall assess behavior and potential behavioral responses to noise and visual disturbance due to the activities. To document disturbance and possible incidental take during construction activities, the monitoring protocols shall be implemented at *all times* when work is occurring either 1) in-water, 2) north of a line starting at 36° 48’38.91 N 121° 45’08.03 W and ending 36° 48’38.91 N 121° 45’27.11 W (see Figure 1 of the monitoring plan in the application), or 3) within 30.5 m (100 ft) of tidal waters. When work is occurring in other areas, monitoring shall occur for the first three days of construction and anytime there is a significant change in

activities or location of construction activities within the project area. If disturbance is noted at any time, then monitoring shall continue until there are three successive days of no disturbance. If there is a gap in construction activities of more than one week, the monitoring protocols shall again be implemented for the first three days that construction resumes.

Counts shall be performed for harbor seals hauled out and observed in the water. Total counts, sex, and age (adult, juvenile, pup) shall be recorded. Behavioral monitoring shall be conducted for the duration of the construction activities to document any behavioral responses to visual (or other) disturbance, according to the disturbance scale shown in Table 2 below. When responses are observed, the degree of response (*i.e.*, alert and flush, movement of more than one m, or change in direction of movement) and the assumed cause (whether related to construction activities or not) will be noted. Only responses at Level 2 and 3 are considered to be take under the MMPA.

Table 2. Seal response to disturbance.

Level	Type of response	Definition
1	Alert	Seal head orientation or brief movement in response to disturbance, which may include turning head towards the disturbance, craning head and neck while holding the body rigid in a u-shaped position, changing from a lying to a sitting position, or brief movement of less than twice the animal's body length. Alerts will be recorded, but not counted as a 'take'.
2	Movement	Movements away from the source of disturbance, ranging from short withdrawals at least twice the animal's body length to longer retreats, or if already moving a change of direction of greater than 90 degrees. **These movements will be recorded and counted as a 'take'.**
3	Flush	**All retreats (flushes) to the water. Flushing into the water will be recorded and counted as a 'take'.**

Additional parameters shall be recorded including: atmospheric conditions, cloud cover, visibility conditions, air and water temperature, tide height, and any other disturbance (visual or noise) that may be noted. We require that PSOs use approved data forms. Among other pieces of information, CADFW shall record detailed information about any implementation of shutdowns,

including the distance of animals to construction activities and description of specific actions that ensued and resulting behavior of the animal, if any. In addition, CADFW shall attempt to distinguish between the number of individual animals taken and the number of incidents of take. Additional requirements of PSOs include:

(1) The PSO shall be selected prior to construction activities;

(2) The PSO shall attend the project site prior to, during, and after construction activities cease each day that the construction activities occur (as outlined in the monitoring plan);

(3) The PSO shall search for marine mammals on the seal haul outs, other suitable haul out habitat, and within the waters of this area from the observation site. PSOs shall use binoculars and the naked eye to search continuously for marine mammals;

(4) The PSO shall be present during construction activities to observe for the presence of marine mammals in the vicinity of the specified activity (as outlined in the monitoring plan). All such activity will occur during daylight hours. If inclement weather limits visibility within the area of effect, the PSO will perform visual scans to the extent conditions allow. For pile driving activities, if the 15 m area around the pile driving is obscured by fog or poor lighting conditions, pile driving shall not be initiated until that area is visible;

(5) If marine mammals are sighted by the PSO, the PSO shall record the number of marine mammals and the duration of their presence while the construction activity is occurring. The PSO shall also note whether the marine mammals appeared to respond to the noise/visual disturbance and, if so, the nature of that response. The PSO shall record the following information; date and time of initial sighting, tidal stage, weather conditions, species, behavior

(*e.g.*, foraging, mating, etc.), group cohesiveness, direction and speed of travel, etc., number, tagged animals, whether the animal(s) are in the water or hauled out, group composition, distance between construction activities and marine mammal(s), number of animals impacted, location, construction activities occurring at time of sighting (earth moving equipment, construction personnel walking/talking, pile driving etc.), and monitoring and mitigation measures implemented or not implemented). The observations shall be reported to NMFS; and

(6) A final report shall be submitted summarizing all effects from construction activities and marine mammal monitoring during the time of the authorization.

A written log of dates and times of monitoring activity shall be kept. The log shall report the following information:

- Time of PSO arrival on site;
- Time of the commencement of construction activities;
- Distances to all marine mammals relative to the disturbance;
- Observations, notes on marine mammal behavior during construction activities, as described above, and on the number and distribution observed in the project vicinity;
- For observations of all other marine mammals (if observed) the time and duration of each animal's presence in the project vicinity; the number of animals observed; the behavior of each animal, including any response to construction activities;
- Time of the cessation of construction activities; and
- Time of PSO departure from site.

Individuals implementing the monitoring protocol shall assess its effectiveness using an adaptive approach. PSOs shall use their best professional judgment throughout implementation

and seek improvements to these methods when deemed appropriate. Any modifications to protocol shall be coordinated between NMFS and the CADFW.

Reporting

A draft report shall be submitted to NMFS within 90 days of the completion of marine mammal monitoring, or sixty days prior to the issuance of any subsequent IHA for this project (if required), whichever comes first. The report shall include marine mammal observations pre-activity, during-activity, and post-activity of construction, and will also provide descriptions of any behavioral responses by marine mammals due to disturbance from construction activities and a complete description of total take estimate based on the number of marine mammals observed during the course of construction. A final report shall be submitted within thirty days following resolution of comments on the draft report.

Estimated Take by Incidental Harassment

Except with respect to certain activities not pertinent here, section 3(18) of 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)."

All anticipated takes will be by Level B harassment resulting from construction activities involving temporary changes in behavior. It is unlikely that injurious or lethal takes will occur even in the absence of the planned mitigation and monitoring measures. Further, the mitigation

and monitoring measures are expected to minimize the possibility of take by Level A harassment, such that it is considered discountable.

Given the many uncertainties in predicting the quantity and types of impacts of sound or visual disturbance on marine mammals, it is common practice to estimate how many animals are likely to be present within a particular distance of a given activity, or exposed to a particular level of sound or visual disturbance. In practice, depending on the amount of information available to characterize daily and seasonal movement and distribution of affected marine mammals, it can be difficult to distinguish between the number of individuals harassed and the instances of harassment and, when duration of the activity is considered, it can result in a take estimate that overestimates the number of individuals harassed. In particular, for stationary activities, it is more likely that some smaller number of individuals may accrue a number of incidences of harassment per individual than for each incidence to accrue to a new individual, especially if those individuals display some degree of residency or site fidelity and the impetus to use the site (*e.g.*, because of foraging opportunities) is stronger than the deterrence presented by the harassing activity.

In order to estimate the potential incidents of take that may occur incidental to the specified activity, we must first estimate the area subject to the disturbance that may be produced by the construction activities and then consider in combination information about harbor seals present and the number of days animals will be disturbed during the project. We then provide information to estimate potential incidents of take from disturbance as related to construction activities.

Introduction to Acoustic Criteria

We use generic sound exposure thresholds to determine when an activity that produces sound might result in impacts to a marine mammal such that a take by harassment might occur. To date, no studies have been conducted that explicitly examine impacts to marine mammals from pile driving sounds or from which empirical sound thresholds have been established. The generic thresholds described below (Table 3) are used to estimate when harassment may occur (*i.e.*, when an animal is exposed to levels equal to or exceeding the relevant criterion) in specific contexts. However, useful contextual information that may inform our assessment of effects is typically lacking and we consider these thresholds as step functions.

Table 3. Current Acoustic Exposure Criteria for Pinnipeds.

Criterion	Definition	Threshold
Level B harassment (underwater)	Behavioral disruption	120 dB (non-impulse, continuous source, *i.e.*, vibratory pile driving) (rms)
Level B harassment (airborne)	Behavioral disruption	90 dB (harbor seals)

Sound Produced from Construction Activities

Any underwater noise produced during pile driving in Minhoto-Hester Marsh will attenuate according to the shoreline topography. In a narrow and relatively shallow slough, bends and topographic changes in the bottom will act to reflect sound and attenuate sound levels. Seals within the project area, from the sound source (vibratory pile driving) to the north bank of the main channel of Elkhorn Slough (approximately 525 - 600 m; see Figure 6-4 in the application), may be impacted by noise and were used as the area to define Level B take estimates. Seals may be exposed to underwater noise that could cause behavioral harassment (*i.e.*, above NMFS' 120-dB (rms re 1 μPa) behavioral harassment criterion) only within a small area (see Figure 6-4 of

the application). This small section of channel defines the extent of the potential Level B harassment zone for underwater noise.

Restoration activities will produce airborne noise that could potentially harass harbor seals that are hauled out near the activities. For example, airborne noise produced from earth moving equipment (*i.e.*, backhoes, front end loaders) for construction, may produce sound levels at 80 - 90 dB at 15.24 m (Federal Highway Administration, 2015). However, disturbance resulting from use of heavy equipment or other aspects of the work could occur due to visual stimuli or airborne noise, and the likely range within which seals may be disturbed will be larger than the range to the 90-dB airborne noise disturbance criterion. Therefore, we do not evaluate takes specifically due to exposure to airborne noise and do not discuss airborne noise further in this document.

Description of Take Calculation

The following sections are descriptions of how take was determined for impacts to harbor seals from noise and visual disturbance related to construction activities.

Incidental take is calculated for each species by estimating the likelihood of a marine mammal being present within the project area during construction activities. Expected marine mammal presence is determined by past observations and general abundance during the construction window. For this project, the take requests were estimated using local marine mammal data sets, and information from state and federal agencies.

The calculation for marine mammal exposures is estimated by:

Exposure estimate = N (number of animals in the area) * 132 days of construction activities or 4 days of pile driving activity

All estimates by the applicant and accepted by NMFS, are considered conservative. Construction activities will occur in sections, and some sections (*e.g.*, M1) are further away from seal haul outs (approximately 420 m and greater). Noise from construction activities in more southern sections of the footprint of the construction area may cause fewer disturbances to seals. Not all seals that previously used the haul outs within the footprint of the construction area will use the haul outs just outside the project. The channel is small and the available habitat will likely not be able to support all 100 seals of the Minhoto-Hester Marsh Complex. Some seals may seek alternative haul out habitat in other parts of Elkhorn Slough. Pile driving will only occur for a short duration (four days) and will not be continuous during the day (daylight hours only). Using this approach, a summary of estimated takes of harbor seals incidental the project activities are provided in Table 4. Estimates include Level B harassment as a result of exposure to noise and visual disturbance during construction activities.

The best scientific information available was considered for use in the harbor seal take assessment calculations. It is difficult to estimate the number of harbor seals that could be affected by construction activities because the animals are mainly either in the project area or venture near the project area to haul out during the day when the tide is low. Once the tidal channel is blocked and four haul out sites (Small Island, M2 North, M3 North and M3 East) are inaccessible, some seals will be able to use the alternative four hauls outs (M5 Northeast, M5 Southeast, Yampah Northwest and Yampah Southwest). Seals that use these alternative four haul outs may be potentially impacted from noise and visual disturbance from construction activities of the tidal marsh restoration, but seals that normally use areas in the interior tidal channel may use haul outs that are outside the expected area of influence of the construction activity.

Various types of construction equipment (in addition to pile drivers) will be utilized for project activities such as dozers, loaders, and backhoes that may generate sound that can cause both noise and visual disturbance to harbor seals. Although the exact distance of all noise disturbances from construction activities is unknown, it is anticipated that the disturbance area for airborne noise will be small as earth moving equipment (*i.e.*, backhoes, front end loaders) produce sound levels at 80 - 90 dB at 15.24 m and vibratory driving of sheet piles at 90 dBA at 30 m (dBA can be defined as dB with A-weighting designed to match the average frequency response of human hearing and enables comparison of the intensity of noise with different frequency characteristics). The closest haul outs that will be available to seals are 43 - 131 m outside the footprint of the construction area. If seals are in the water near the project or on available haul outs there is a chance that seals could be exposed to noise and/or visual disturbance from the construction activities. Construction activities may impact seals using haul outs M5 Northeast, M5 Southeast, Yampah Northwest and Yampah Southwest.

We assume that an average of 50 harbor seals will potentially occupy the alternate haul outs based on the size of the haul out habitat that is available. Four haul outs (out of eight) will be temporarily inaccessible during the construction; therefore, half of the seals (approximately 50 out of the 100 seals) of the Minhoto-Hester Marsh Complex will likely use the alternate four haul outs and experience disturbance from construction activities. It is presumed that the other half of the seals (50 seals) of the Minhoto-Hester March Complex will utilize other suitable haul out habitat within Elkhorn Slough and are not considered available to be "taken" during construction activities (Monique Fountain, Elkhorn Slough National Estuarine Research Reserve, pers. comm. 2016). We multiply this estimate of the number of harbor seals potentially available

to be taken by the total number of days (132 days) the applicant expects construction activities to occur. Therefore, NMFS authorizes 132 instances of takes for 50 harbor seals (total of 6,600 instances) by Level B harassment incidental to construction activities (airborne noise and visual disturbance) over the course of the action if all of the estimated harbor seals present are taken by incidental harassment each day (Table 4). Note: NMFS does not assume that the 50 seals will be the same individuals taken during each of the 132 days of construction; rather some seals in the area may be taken more times than others if they stay in the area and do not utilize other parts of the Slough.

While the pile driving activities are planned to take place during slack tide to the extent possible (when harbor seals are less likely to be present), and only for a short duration, there may still be animals exposed to disturbance from pile driving even if the number of individual harbor seals expected to be encountered is very low. There are approximately 100 harbor seals that utilize Minhoto-Hester Marsh Complex that may be disturbed during pile driving activities. Additionally, there is some potential that an additional 100 harbor seals that occur in the adjacent Parson's Slough Complex and Yampah Marsh and 50 harbor seals that may be present in the main channel of Elkhorn Slough could also be disturbed. NMFS authorizes four instances of take for 250 harbor seals (total of 1,000 instances) by Level B harassment incidental to pile driving activities over the course of the action if all of the estimated harbor seals present are taken by incidental harassment each day. This is an estimate based on the average number of harbor seals that potentially occupy the project area (and surrounding areas) (250 seals) multiplied by the total number of days (four days) the applicant expects pile driving activities to occur (Table 4). Note: NMFS does not assume that the 250 seals will be the same individuals taken during each

of the four days of construction; rather some seals in the area may be taken more times than others if they stay in the area and do not utilize other parts of the Slough. This is a very conservative estimate, as not all the seals are likely in or near the project area at the same time, some of which are due to environmental variables such as tide level and the time of day. In the Minhoto-Hester Marsh Complex, a maximum daily average of 40 seals were present in the project area (on Small Island, M2 North, M3 North, and M3 East haul out sites) and 41 seals outside the project area (on M5 Northeast, M5 Southeast, Yampah Northwest and Yampah Southwest haul out sites) during the 2013 surveys, which is slightly less than the 100 seals that may be taken. In addition, noise attenuates quickly due to shallow water, tidal influence and sinewy channels of Elkhorn Slough. NMFS considers this to be an conservative estimate by the applicant for the following reasons: (1) it will be unlikely that all 250 seals will be in the vicinity of the project area daily as there are other areas of the Slough that they likely use to haul out (see Figure 4-4 of the application); (2) as mentioned above, the haul out sites within the footprint of the construction area will be inaccessible to harbor seals and NMFS do not expect harbor seals to be affected by pile driving activities during the days/times when pile driving and high tide events co-occur; (3) harbor seals begin to leave the project area at night when they are likely foraging in Monterey Bay and will not be exposed to sound generated during pile driving that may take place during early evening hours; and, (4) based on previous survey effort conducted for the adjacent Parson's Slough project, some harbor seals moved out of the disturbance area when construction activities were initiated and moved west (downstream) towards Seal Bend or other areas of suitable habitat along the main channel of Elkhorn Slough (see Figure 4-4 of the application).

Table 4. Summary of the authorized incidental take by Level B harassment of harbor seals from pile driving and construction activities.

Species	Estimated Number of Seals Taken per Day of Activity	Take Authorization (Number of Exposures from Construction Activities - 132 days)	Abundance	Approximate Percentage of Estimated Stock (Takes Authorized/ Population)	Population Trend
Pacific harbor seal	50 seals	6,600	30,968 – California stock	19.37%	Increased in California 1981 to 2004
Species		**Take Authorization (Number of Exposures from Pile Driving - 4 days)**	**Abundance**		**Population Trend**
Pacific harbor seal	250 seals	1,000	30,968 – California stock	3.2%	Increased in California 1981 to 2004
TOTAL	**300 seals**	**7,600**		24.54%	

No takes by Level A harassment, serious injury, or mortality are expected from the disturbance associated with the construction activities. It is unlikely adult seals will flush into the water injuring or abandoning any pups. No pupping is expected within the footprint of the construction area as most pups are found along the main channel of Elkhorn Slough. Pacific harbor seals have been hauling out in the project area and within the greater Elkhorn Slough throughout the year for many years (including during pupping season and while females are pregnant) while being exposed to anthropogenic sound sources such as recreational vessel traffic, UPRR, and other stimuli from human presence. The number of harbor seals disturbed will likely also fluctuate depending on time day and tidal stage. Fewer harbor seals will be present in the early morning and approaching evening hours as seals leave the haul out site to feed and they are also not present when the tide is high and the haul out is inundated.

The following assumptions are made when estimating potential incidences of take:

- All marine mammal individuals potentially available are assumed to be present within the relevant area, and thus incidentally taken;
- An individual can only be taken once during a 24-h period;
- There were will be 136 total days of activity for project (four days of pile driving and 132 construction activities); and
- Exposures to sound levels at or above the relevant thresholds equate to take, as defined by the MMPA.

Analyses and Determinations

Negligible Impact Analysis

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." A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of Level B harassment takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through behavioral harassment, we consider other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as the number and nature of estimated Level A harassment takes, the number of estimated mortalities, and effects on habitat.

Construction activities associated with this project have the potential to disturb or displace marine mammals. No serious injury or mortality is expected at all, and with mitigation

we expect to avoid any potential for Level A harassment as a result of the Minhoto-Hester Marsh construction activities, and none are authorized by NMFS. The specified activities may result in take, in the form of Level B harassment (behavioral disturbance) only, from visual disturbance and/or noise from construction activities. The project area is within a portion of the local habitat for harbor seals of the greater Elkhorn Slough and seals are present year-round. Behavioral disturbances that could result from anthropogenic sound or visual disturbance associated with these activities are expected to affect only a small amount of the total population (*i.e.*, likely maximum of 250 seals), although those effects could be recurring over the life of the project if the same individuals remain in the project vicinity. Harbor seals may avoid the area or halt any behaviors (*e.g.*, resting) when exposed to anthropogenic noise or visual disturbance. Due to the abundance of suitable haul out habitat available in the greater Elkhorn Slough, the short-term displacement of resting harbor seals is not expected to affect the overall fitness of any individual animal.

Effects on individuals that are taken by Level B harassment, on the basis of reports in the literature as well as monitoring from other similar activities, will likely be limited to reactions such as displacement from the area or disturbance during resting. The construction activities analyzed here are similar to, or less impactful than for Parson's Slough (and other projects) which have taken place with no reported injuries or mortality to marine mammals, and no known long-term adverse consequences from behavioral harassment. Repeated exposures of individuals to levels of noise or visual disturbance that may cause Level B harassment are unlikely to result in hearing impairment or to significantly disrupt foraging behavior. Many animals perform vital functions, such as feeding, resting, traveling, and socializing, on a diel cycle (*i.e.*, 24 hour cycle).

Behavioral reactions (such as disruption of critical life functions, displacement, or avoidance of important habitat) are more likely to be significant if they last more than one diel cycle or recur on subsequent days (Southall *et al*., 2007). However, Pacific harbor seals have been hauling out at Elkhorn Slough during the year for many years (including during pupping season and while females are pregnant) while being exposed to anthropogenic sound and visual sources such as vessel traffic, UPRR trains, and human voices from kayaking. Harbor seals have repeatedly hauled out to rest (inside and outside the project area) or pup (outside of the project area) despite these potential stimuli. The activities are not expected to result in the alteration of reproductive or feeding behaviors. No births have been documented in the project area and it is not likely that neonates will be in the project area as females prefer to keep their pups along the main channel of Elkhorn Slough, which is outside the area expected to be impacted by project activities. Seals are primarily foraging outside of Elkhorn Slough and at night in Monterey Bay, outside the project area, and during times when construction activities are not occurring.

Pacific harbor seals, as the potentially affected marine mammal species under NMFS jurisdiction in the action area, are not listed as threatened or endangered under the ESA and NMFS SARs for this stock have shown that the population is increasing and is considered stable (Carretta *et al*., 2016). Even repeated Level B harassment of some small subset of the overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus will not result in any adverse impact to the stock as a whole. The restoration of the marsh habitat will have no adverse effect on marine mammal habitat, but possibly a long-term beneficial effect on harbor seals by improving ecological function of the

slough, inclusive of higher species diversity, increased species abundance, larger fish, and improved habitat.

In summary, this negligible impact analysis is founded on the following factors: (1) the possibility of injury, serious injury, or mortality may reasonably be considered discountable; (2) the anticipated incidents of Level B harassment consist of, at worst, temporary modifications in behavior; (3) primary foraging and reproductive habitat are outside of the project area and the construction activities are not expected to result in the alteration of habitat important to these behaviors or substantially impact the behaviors themselves (4) there is alternative haul out habitat just outside the footprint of the construction area, along the main channel of Elkhorn Slough, and in Parson's Slough that will be available for seals while some of the haul outs are inaccessible; (5) restoration of the marsh habitat will have no adverse effect on marine mammal habitat, but possibly a long-term beneficial effect (6) and the presumed efficacy of the mitigation measures in reducing the effects of the specified activity to the level of least practicable impact. In addition, these stocks are not listed under the ESA or considered depleted under the MMPA. In combination, we believe that these factors, as well as the available body of evidence from other similar activities, demonstrate that the potential effects of the specified activities will have only short-term effects on individuals. The specified activities are not expected to impact rates of recruitment or survival and will therefore not result in population-level impacts.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, we preliminarily find that the total marine mammal take

from the construction activities will have a negligible impact on the affected marine mammal species or stocks.

Small Numbers Analyses

The number of incidents of take authorized for harbor seals is considered small relative to the relevant stock and populations (see Table 4) even if each estimated taking occurred to a new individual. This is an extremely unlikely scenario as, for pinnipeds in estuarine/inland waters, there is likely to be some overlap in individuals present day-to-day. As noted above, we assume that a maximum of 250 seals will be impacted during the course of this specified activity. While we cannot say that the same 250 individual seals would be affected, we believe that there is a minimal exchange of individuals over time and that the number of individuals would not be appreciably larger than this. We preliminarily find that small numbers of marine mammals will be taken relative to the populations of the affected species or stocks.

Impact on Availability of Affected Species for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by these actions. Therefore, we have determined that the total taking of harbor seals will not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

No ESA-listed marine mammal species under NMFS' jurisdiction are expected to be affected by these activities. Therefore, NMFS has determined that a section 7 consultation under the ESA is not required.

National Environmental Policy Act

NMFS prepared an SEA and analyzed the potential impacts to marine mammals that will result from the project. After reviewing the project, NMFS determined the Minhoto-Hester Marsh restoration fell within the scope and effects of activities analyzed in the NOAA Restoration Center, Southwest Region Community-Based Restoration Program's (CRP) August 2010 Targeted SEA (TSEA) for the Parson's Slough Project (the adjoining salt marsh to the Minhoto-Hester Marsh and also within Elkhorn Slough), as well as the February 6, 2002 Programmatic EA (PEA) for the CRP Implementation Plan and the June 23, 2006 Supplemental PEA the CRP Implementation Plan (SPEA). The impacts to ESA listed species and marine mammals under the MMPA were analyzed in the TSEA, PEA, and SPEA; however, updated as is relevant for this SEA. The SEA level of review was conducted in accordance with the implementation procedures described in the SPEA (specifically for Sediment Removal and Materials Placement in the tidal wetlands environment) and appropriately focused on consideration of effects to species listed under the ESA and protected under the MMPA (*e.g.*, noise, displacement, habitat quality/quantity). Beyond consideration of site-specific effects to these species, our review of the action did not reveal any substantial changes in the action or new potentially significant adverse effects to other elements of the human environment which would require additional review in the SEA. NMFS considered comments submitted in response to our **Federal Register** notice of the proposed IHA and the CADFW application as part of the process. The FONSI was signed on November 15, 2016.

Authorization

As a result of these determinations, NMFS has issued an IHA to CADFW for the harassment of small numbers of harbor seals incidental to the Minhoto-Hester Marsh restoration

project in Elkhorn Slough, Monterey, California, effective for one year beginning August 1, 2017, provided the previously mentioned mitigation, monitoring and reporting requirements are incorporated.

Dated: March 31, 2017.

Donna S. Wieting,

Director, Office of Protected Resources,

National Marine Fisheries Services.

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