

pile-driving is occurring at multiple locations at the same time. The observers will begin monitoring at least 30 minutes prior to startup of the pile driving. Observers will likely conduct the monitoring from small boats, as observations from a higher vantage point (such as the SF-OBV) may not be practical. Pile driving will not begin until the safety zone is clear of marine mammals. However, as described in the Mitigation section, once pile driving of a segment begins, operations will continue uninterrupted until the segment has reached its predetermined depth. Monitoring will continue through the pile-driving period and will end approximately 30 minutes after pile-driving has been completed.

Biological observations will be made using binoculars during daylight hours. In addition to monitoring from boats, monitoring of the YBI haul-out may be conducted during open-water pile driving activity, in coordination with the Richmond Bridge Harbor Seal survey team. At least one control site (harbor seal haul-out sites and the waters surrounding such sites not impacted by the East Span Project's pile driving activities, i.e. Mowry Slough) will be designated and monitored for comparison. Monitoring will be conducted twice a week at both YBI and the control site. Data on all observations will be recorded and will include items such as species, numbers, behavior, details of any observed disturbances, time of observation, location, and weather. The reactions of marine mammals will be recorded based on the following classifications (consistent with the Richmond Bridge Harbor Seal survey methodology): (1) no response, (2) head alert (looks toward the source of disturbance), (3) approach water (but not leave), and (4) flush (leaves haul-out site). The number of marine mammals under each disturbance reaction will be recorded, as well as the time when seal re-haul after a flush.

Baseline monitoring will be conducted for a period of 14 days prior to the beginning of in-Bay work for the Skyway contract. Baseline monitoring will be conducted in the general project area (before pile driving begins) and at the YBI haul-out site. The 14-day monitoring period is expected to be an appropriate time frame to assess baseline conditions in the project area and to account for the potential variability in environmental factors that may influence the presence and activity of marine mammals. The information collected from baseline monitoring will be compared with results from monitoring during pile-driving activities.

Aerial surveys will be conducted during the baseline monitoring to help determine if the boat observers are missing any marine mammals within a simulated safety zone. A fixed-wing airplane equipped with a high-resolution camera will take five photos of the safety zone (about 1 km² or 0.3 mi²) and the surrounding area (about 4 km² or 1.5 mi²) from each of three aircraft elevations (610 m/2000 ft, 305 m/1000 ft and 152 m/500 ft).

It is anticipated that installation of small, temporary piles for the temporary structures at each of the piers and for the temporary trestles near the Oakland Touchdown area will not affect marine mammals in the area, since a vibratory hammer will be used with energy levels less than 100 kJ. To verify this assumption, marine mammal monitoring will be conducted when driving the temporary in-Bay piles at Pier E16E, during the start of the Skyway contract. Based on the results of these initial observations, CALTRANS will consult with NMFS to confirm that further monitoring when driving temporary piles will not be needed or to develop an appropriate program for further monitoring temporary piles.

Acoustical Observations

Both airborne and underwater environmental noise levels will be measured as part of the East Span Project.

The purpose of the underwater sound monitoring is to establish the safety zone of 190 dB re 1 micro-Pa RMS (impulse) for pinnipeds and the safety zone of 180 dB re 1 micro-Pa RMS (impulse) for gray whales. Monitoring will be conducted during the driving of the last half (deepest pile segment) for any given in-Bay pile. One pile in every other pair of pier groups will be monitored. One reference location will be established at a distance of 100 m (328 ft) from the pile driving. Sound measurements will be taken at the reference location at two depths (a depth near the mid-water column and a depth near the bottom of the water column but at least 1 m (3 ft) above the bottom) during the driving of the last half (deepest pile segment) for any given pile. Two additional in-water spot measurements will be conducted at appropriate depths (near mid water column), generally 500 m (1,640 ft) in two directions either west, east, south or north of the pile-driving site will be conducted at the same two depths as the reference location measurements. In cases where such measurements cannot be obtained due to obstruction by land mass, structures or navigational hazards, measurements will be conducted at

alternate spot measurement locations. Measurements will be made at other locations either nearer or farther as necessary to establish the approximate distance for the safety zones. Each measuring system shall consist of a hydrophone with an appropriate signal conditioning connected to a sound level meter and an instrument grade digital audiotape recorder (DAT). Overall SPLs shall be measured and reported in the field in dB re 1 micro-Pa RMS (impulse). An infrared range finder will be used to determine distance from the monitoring location to the pile. The recorded data will be analyzed to determine the amplitude, time history and frequency content of the impulse.

Airborne sound levels will be measured at times and locations that are coincidental to the underwater measurement sites. Each system will consist of a type 1 integrating sound level meter connected to a DAT. In addition, airborne sound will also be measured at the YBI haul-out site. Real time amplitude measurement of airborne sound levels will be reported. Linear Peak and RMS impulse SPLs will be reported. Microphones will be fitted with windscreens and calibration will be verified before and after each measurement session. The recorded data will be analyzed to determine the amplitude, time history and frequency content of the impulse.

Reporting

NMFS' Southwest Regional Administrator will be notified prior to the initiation of the East Span Project, and coordination with NMFS will occur on a weekly basis, or more often as necessary. NMFS will be informed of the initial SPL measurements taken at the 500-m (1,640-ft) contour and the final safety-zone radius established. Monitoring reports will be faxed to NMFS on a monthly basis during open-water pile driving activity. The monthly report will include a summary of the previous month's monitoring activities and an estimate of the number of seals and sea lions that may have been disturbed as a result of pile driving activities.

Because the East Span Project is expected to continue beyond the date of expiration of this IHA (under a new IHA or under regulations pursuant to section 101(a)(5)(A) of the MMPA), CALTRANS will provide NMFS' Southwest Regional Administrator with a draft final report before 90 days after expiration of this IHA. This report should detail the monitoring protocol, summarize the data recorded during monitoring, and estimate the number of marine mammals that may have been harassed