

Final Report

Incidental Harassment Authorization

Issued June 28, 2013 – June 27, 2014 to the City of San Diego for  
La Jolla California Children's Pool Construction and Harbor Seal Monitoring

Presented to

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## **Executive Summary**

Hanan & Associates, Inc. (H&A) was contracted by the City of San Diego to help obtain Incidental Harassment Authorization from NOAA/NMFS for pinnipeds in conjunction with demolishing the existing lifeguard station at Children's Pool (CP), La Jolla, California and building a new station on the existing site. The IHA was issued June 28, 2013; included Pacific harbor seals, California sea lions, and northern elephant seals for Level B harassment incidental to demolition and construction activities. Mitigation incorporated monitoring demolition and construction sounds and any incidental harassment of Pacific harbor seals, California sea lions, and northern elephant seals hauling out at his beach. In addition, H&A monitored at six locations for: pinnipeds present, all sounds, and public visiting/seal observing at CP beach, June 3, 2013 through February 12, 2014. Demolition/construction started July 10, 2013 and was halted for seal pupping during December 15, 2013 – June 1, 2014.

H&A made hourly pinniped and people counts while monitoring sound during daylight hours. We counted a total of 61,631 harbor seals and 26,037 people during 115 days of observation. We recorded (n = 2,243) sound levels which gave mean of sounds recorded with no construction 69.2 dB re 20  $\mu$ Pa (range of 55.6 to 93.7 dB re 20  $\mu$ Pa) and mean sound levels with construction of 70.3 dB re 20  $\mu$ Pa (range of 50.7 to 103.1 dB re 20  $\mu$ Pa). We observed a total of 15,673 Level B alerts and flushes of seals (attributed to construction 5,095; public 8,639; other 1,939). There were no observations of Level A takes. There has been no indication of site abandonment and a large number (60+) of pups had already been born at CP as of April 15, 2014, this pupping season.

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## Introduction

The City of San Diego applied for and was granted Level B Incidental Harassment Authorization (IHA) by National Marine Fisheries Service (NMFS) on June 28, 2013 through June 27, 2014, for demolition of the existing and construction of a new lifeguard station immediately above Children's Pool (CP), at 827 ½ Coast Boulevard, La Jolla, California (32° 50'50.02"N 117° 16'42.8"W; Figures 1, 7, and 8).



Figure 1. Old Lifeguard Station from beach level at Children's Pool, La Jolla, CA.

The new station will be a three-story, partially subterranean-1,877 square-foot building with beach access level public restrooms and showers, lifeguard lockers, and sewage pump room; second level containing two work stations, ready/observation room, kitchenette, restroom, and first aid station; and third 'observation' level to include a single occupancy observation space, radio storage closet, and exterior catwalk. Interior stairs will link the floors.

Conditions of the IHA required: monitoring of pinnipeds, sound, people visiting the site, environmental conditions, working hours, a visual/sound barrier, a review of seal hauling behavior following two months of construction (to address the potential of site abandonment), analysis of harbor seal abundance relative to tide cycles, a construction closure during harbor seal pupping season (December 15, 2013 through June 1, 2014), a draft report 90 days following end of construction, a final report following NMFS review of the draft, and additional conditions stated in the 2013 IHA (See Mitigation Measures below).

Because of numerous delays including: nesting migratory birds at the construction site (delay 1.5 months until chicks fledged), an unexpected storm water drainage pipe running through the site, removal of the WAN (Western Alliance for Nature) video camera and moving its cabling to another location on the site (but camera was not set up again for security reasons), and other unforeseen construction delays, the project was not finished before the 2013 pupping season began and construction was interrupted December 15, 2013 to resume June, 2014. These activities were accomplished prior to pupping season: all necessary demolition, moving and retrofitting the storm drain, water-proofing remaining walls, dirt backfilling, rough plumbing, and ground-floor cement pouring. To allow for completion of the new lifeguard station, the City applied for a second IHA to cover the project after the expiration of the first IHA June 27, 2014. The proposed 2014 IHA was published in the Federal Register February 11, 2014 which commenced the 30 day public comment period. This is a report of monitoring and observations June 3, 2013 through February 12, 2014 as requested by NMFS; it does not cover the last month (June, 2014) of the IHA authorized period, when construction is scheduled to resume following harbor seal pupping season.

## Species of Concern

Pacific harbor seals, *Phoca vitulina richardii*, haul out on nearby beaches and rocks below the building site. Seal abundance has increased since 1979 and seals are documented to give birth on these beaches during December through May (Hanan 2004, Hanan & Associates 2011). Several studies have identified seal behavior and estimated seal numbers including daily hauling patterns and seasonal area use (Yochem and Stewart 1998; Hanan 2004, Hanan & Associates 2011). We present our CP observations documenting harbor seals hauled out during June 3, 2013 through February 12, 2014 and associated construction observations, sound recordings, documentation of IHA authorized seal harassment, and documentation of all other observed seal harassment.

California sea lions, *Zalophus californianus*, and northern elephant seals, *Mirounga angustirostris*, are also observed on CP beach and nearby areas (Yochem and Stewart, 1998; Hanan 2004, Hanan & Associates 2011) but in small numbers (less than 5). The City requested that these two species be included in the IHA application for 2014 because these two species are known to haul out occasionally at CP and were documented at CP during 2013 monitoring activities. Neither species was alerted or flushed by construction activities; however we observed one juvenile sea lion flushed when harassed by public disturbance.

## Need for Incidental Harassment

Because of the proposed demolition of the old station and construction of a new station above the CP beach, it was anticipated that these activities would likely incidentally harass harbor seals, elephant seals, and sea lions but not cause serious injury. The harassment was anticipated to be both visual and acoustic; although, the sound levels reaching the pinnipeds was not anticipated to exceed 90 dB re 20  $\mu$ Pa, Level B IHA was sought and issued by NMFS June 28, 2013.



Figure 2. Excavator removing debris from beach level and over visual/acoustic barrier. Note seals at water's edge and visitors behind rope barrier at monitoring location: Mid-Rope. Note monitoring location: Top of Stairs at far left of photo (at end of tan fence screening material and gray wall) as well as location: Bottom of Stairs at corner of small gray wall to left of large rock on beach.

## Mitigation and Monitoring Measures

Required mitigation measures from the 2013 IHA and how addressed:

- a) Demolition and construction activities, shall be prohibited during the Pacific harbor seal pupping season at Children's Pool (December 15<sup>th</sup> to May 15<sup>th</sup>) and for an additional two weeks to accommodate lactation and weaning of late season pups. Thus, demolition and construction shall be prohibited from December 15<sup>th</sup> to June 1<sup>st</sup>.

-Demolition/construction was delayed starting December 15, 2013, not to be resumed until June 3, 2014.



Figure 3. Children’s Pool visitors viewing seals during pupping season construction moratorium. To date CP docents have documented over 60 seal births this pupping season.

- b) The demolition and construction activities shall be scheduled Monday through Friday. To the maximum extent practicable the demolition and construction activities shall be conducted from approximately 8:30a.m. to 3:30 p.m. (i.e. daylight hours), during the daily period of lowest haul-out occurrence; however, demolition and construction activities may be extended from 7:00 a.m. to 7:00 p.m. to help assure that the project is completed during the 2013 demolition and construction window. Harbor seals typically have the highest daily or hourly haul-out period during the afternoon from 3:00 pm to 6:00p.m.

-construction workers usually arrived at CP prior to 07:00 hours with a mean construction start time of 07:36; the latest finish time for construction was 17:00 hours (mean = 14:18); during 2013, all construction activities were conducted on weekdays.

- c) A visual and acoustic barrier will be erected and maintained for the duration of the project to shield demolition and construction activities from beach view. The temporary barrier shall consist of 1.3 to 1.9 centimeter (1/2 to 3/4 inch) plywood constructed 1.8 to 2.4 meters (6 to 8 feet) high depending on the location. The barriers will be placed at the site with input from NMFS Western Regional Office personnel so that they will hide as advantageously as possible the demolition and construction activities that may be seen by pinnipeds.

-Sheets of 4 ft. by 8 ft. by 5/8<sup>th</sup> inch plywood framed with wooden two by fours were used to create the visual/sound barrier. The sheets of plywood were stood upright (8 feet tall) and held up with two wooden two by fours hinged to the top of the frame, so they could be collapsed and be moved depending on equipment location and need for access by equipment (See figures 4 and 12).



Figure 4. Building visual/acoustic barrier as seen from monitoring location: Top of Stairs (at juncture of tan and gray walls) next to construction site. Also note WAN video camera on top of lifeguard station.

- d) Use a NMFS-qualified, trained Protected Species Observer (PSO) to detect, document, and minimize potential impacts from demolition and construction activities. The PSO shall attend the project site 30 minutes prior until 30 minute after demolition and construction activities cease each day throughout the demolition and construction window. The PSO shall be approved by NMFS prior to demolition and construction activities. The PSO shall search for marine mammals using binoculars and/or the naked eye within the Level B (behavioral) harassment zones which may vary upon the type of in-air sound being produced by the demolition and construction activities. The PSO will observe from a station along the breakwater wall as well as the base of the cliff below the demolition and construction area. If inclement weather limits visibility within the area of affect, the PSO will perform visual scans to the extent conditions allow. The PSO will not have to monitor on days or portions of days when there will be little chance of disturbance from demolition and

construction activities (e.g., nothing visual, sound levels at source less than 90 dB re 20 µPa. or all work activities inside the building).

-Three Hanan & Associates, Inc. personnel (Zachary D. Hanan, Jonathan R. Sweeney, Jane E. Lithopoulos) and Dr. Hanan performed all observations by eye and with binoculars. PSO resumes were sent to NMFS and each was approved; additionally, each PSO was specifically trained at CP by Dr. Hanan for this project. A monitoring plan and observation sheets were developed and used for recording sound and observations (see Appendices I, II, III). This plan and observation sheets included hourly collection and count paradigms for: environmental data, recoding locations relative to the buffer zones (Figure 3 and Table 8), sound recording, all marine mammal observations, and public presence documentation.

- e) The PSO shall visually scan the action area for the presence of marine mammals at least 30 minutes prior to the start-up and continuously throughout periods of in-air noise-generating activities. Visual scans shall continue for at least 30 minutes after each noise-generating episode has ceased.

-This mitigation was included in the monitoring plan and adhered to by PSO's (see Appendices I, II, III below regarding daily start and end of construction, as well as, sound recorded by construction equipment type [Table 1]).

- f) The PSO shall use visual digital recordings and photographs to document individuals and behavioral response to the demolition and construction activities. The PSO shall make hourly counts of the number of pinnipeds present and record sound or visual events that result in behavioral responses and changes, whether during demolition and construction activities or from public stimuli. During these events, pictures and videos will be taken when possible to document individuals and behavioral responses. NMFS encourages the City of San Diego to work with the Western Alliance for Nature (WAN) to review and analyze available data from the WAN online surveillance camera ([http://www.wanconservancy.org/seal\\_media2.htm](http://www.wanconservancy.org/seal_media2.htm)) to determine baseline information as well as evaluate the impacts from the demolition and construction activities on pinnipeds at the Children's Pool.

-Please see d) above regarding the monitoring plan, photos, and videos. H&A accessed the WAN camera via computer to document seal hauling behavior (especially at night) to obtain peak daily counts until the camera was removed (approximately August 1, 2013; it was mounted on the roof of the old lifeguard station which was demolished Figure 4 above). The camera had not been redeployed as of February 12, 2014 because there was no location safe from public access.

- g) A PSO shall record the following information when a marine mammal is sighted:
- i) Species group size, age/size/sex, categories (if determinable) behavior when first sighted and after initial sighting, heading (if consistent), distribution, bearing and distance relative to the sound source(s), group cohesiveness, duration of presence, apparent reaction to the demolition and construction activities (e.g., none, avoidance, approach, etc.), direction and speed of travel, duration of presence, and if there are other causes of potential disturbance occurring;
  - ii) Date, time, location, activity of demolition and construction operations, monitoring and mitigation measures implemented (or not implemented), tidal stage, weather conditions, Beaufort sea state, wind speed, visibility and sun glare and
  - iii) The data listed under Condition 6(g) (ii) shall also be recorded at the start and end of each observation watch and during a watch whenever there is a change in one or more variables.

- Please see d) above regarding the monitoring plan and recordings and see Results of Monitoring Activities below.

- h) A PSO shall also record the time of arrival and departure on site, commencement and cessation of in-air noise demolition and commencement activities, and presence of humans on the beach. Whenever possible, the PSO should determine as to whether or not the harassment or pinnipeds is attributable to the demolition and construction activities and/or the presence of the public on the beach and around the Children's Pool area. A PSO shall record the number of people on the beach and surrounding area as well as their location relative to the animals.

-Please see d) above regarding the monitoring plan, which includes each of these mitigations; also please see Observed Harassments below.

- i) Establish buffer zones (i.e., where sound pressure levels [SPLs] are at or above 90 decibels (dB) re 20  $\mu$ Pa for harbor seals and/or at or above 100 dB re 20  $\mu$ Pa for all pinniped species except harbor seals [for in-air noise]) around the demolition and construction activities so that in-air sound associated with the demolition and construction activities no longer exceed levels that are potentially harmful to marine mammals.

-The City installed a rope across CP beach (near the middle of the beach to keep the public a reasonable distance away from the seals) which defined approximately the 90 dB re 20  $\mu$ Pa buffer zone for construction sounds see Figure 8, Middle Rope location, which is approximately 15 meters from the nearest possible construction position). The 100 dB re 20  $\mu$ Pa position was above the beach, behind a fence and therefore impracticable as a buffer zone since none of the pinnipeds could have hauled out in this fenced area of the beach and cliff. We weren't allowed inside the construction area while equipment was operating but were fairly close at monitoring sites: Top of Stairs and Casa, which gave sound levels as close to the source as we were allowed. Buffer zones: We set up three stations Break wall 1, Middle Rope, and Bottom of Stairs, which were estimated to be the distance at which 110 dB re 20  $\mu$ Pa at the source would attenuate to 90 dB re 20  $\mu$ Pa. The three monitoring sites are about 15 meters from nearest possible construction position but the equipment moved about within the construction area so you can measure sound at Top of Stairs and Casa and sound at the three other monitoring sites to get an estimate of sound source and attenuation. The equipment moved around inside the fencing as they worked but it is a small area and our measurements give good ranges of each piece of equipment. One problem with trying to get exact measurements to the equipment and getting a sound measurement is that the public was often very close to us as we took the measurements (often we were standing in a crowd) and sounds from the public contributed to the peak recorded sounds during the approximate two-minute period of sound monitoring. So the measurement were not always actual measurements of equipment sound but can give a plausible range.

- j) In-air noise monitoring and reporting shall be performed during the demolition and construction activities at and near the Children's Pool Lifeguard Station. The PSO shall have access to handheld digital sound level measuring devices. The study will characterize in-air sound levels in the area related to and in the absence of all demolition and construction activities (as a background and baseline for the project), and confirm or identify harassment isopleths for all types of demolition and construction activities conducted. Monitoring shall be conducted three to five days prior to demolition and construction activities and shall include hourly systematic counts of pinnipeds using the beach, Seal Rock, and associated reef areas to provide baseline data regarding recent haul-out behavior and patterns as well as background noise levels near the time and

demolition and construction activities. Monitoring shall continue for 60 days following the end of demolition and construction activities. Following demolition and construction, the City of San Diego will have a program where a PSO that will randomly select a day per week to visit the Children's Pool. The on-site data will be integrated with 10 randomly selected 30 minute monitoring periods using the WAN webcam on the non-observed days via their computers.

-Please refer to the monitoring plan (Appendices I, II, III) and also Hourly Sound Recordings below describing the sound meter and its use. H&A began observations and monitoring on June 3, 2013 in anticipation of construction starting June 10, 2013; however, the presence of nesting migratory birds prevented start of construction until the chicks fledged (July 9, 2013). Again, the WAN camera was discontinued after about August 1, 2013; but H&A did continue monitoring one random day per week for 60 days following the temporary halt of construction December 13, 2013 for seal pupping.

- k) After the first two months of monitoring during demolition and construction activities, the City of San Diego shall take the mean number of observed harbor seals at the Children's Pool in a 24-hour period across the two months and compare it to the mean of the lower 5 percent confidence interval. If the observed mean is lower, the City of San Diego shall shut-down demolition and construction activities sand work with NMFS and other harbor seal experts (e.g., Mr. Mark Lowry, Dr. Sarah Allen, Dr. Pamela Yochem, and/or Dr. Brent Stewart) to develop and implement a revised mitigation plan to further reduce the number of takes and potential impacts. Once a week every week thereafter, the City of San Diego shall take the same mean of observed harbor seals across the previous three tide cycles (a tide cycle is approximately 2 weeks) and compare it to the 95% lower confidence interval for the same time period. If the observed mean is lower, the City of San Diego shall shut-down and take the action described above. If abandonment of the site is likely, monitoring shall be expanded away from the Children's Pool to determine if animals have been temporarily displaced to haul-out sites in the southern California area (e.g. Torrey Pines, Point Loma, etc.).

- After the first two months of monitoring, H&A evaluated mean and peak counts of harbor seals at CP relative to historic and projected abundance estimates (see Figures 5, 13, and 15) and presented the findings to NMFS. Based on those data, it was determined that harbor seal numbers were increasing during the two-month period and therefore site abandonment was not likely.

- regarding weekly mean comparisons to the previous three tide cycles please see Figure 15 which has a running six week mean for CP. This mean is well above the lower 95% confidence interval for the predicted CP mean based on previous CP studies. In fact the running mean is above the previous mean for most of the construction period and even above the upper 95% confidence interval for the latter two thirds of the construction period. All three 2013 curves decline following construction and converge mainly because of reduced sample size including two points in March which were opportunistic single counts by Dr. Hanan, which increased the likelihood of missing daily and weekly peak counts.

## Results of Monitoring Activities

In anticipation of the 2013 IHA issuance and start of demolition/construction activities, H&A monitoring began June 3, 2013. H&A adhered to the monitoring plan as approved by NMFS with hourly counts of seals and people, and sound monitoring at six locations (Figure 8). We counted a total of 61,631 seals during hourly counts, so there was a

significant number seals counted multiple times. We also counted a total of 26,037 people at 3 locations surrounding the seals at CP (on the street side walk way above CP, at the rope on CP beach, and on the Breakwall, see Figure 13) and because of hourly counts, many were also counted multiple times. We recorded environmental conditions hourly with: mean beaufort wind scale of 1.8; mean wind speed 6.1 knots, mean visual distance 17.5 miles, mean air temperature of 65.3 degrees Fahrenheit, mean water temperature 64.5 degrees Fahrenheit, and mean sky cover 57%. Demolition/construction commenced July 10, 2013 and concluded December 13, 2013, with some minor cleanup activities on December 18, 2013. Weekly monitoring concluded (February 12, 2014) two months following the December 15, 2013 construction closure for harbor seal pupping season; it is noteworthy that as of this writing, 60+ births have been documented by CP docents this pupping season.

There were no unanticipated problems with the monitoring plan and our execution of it. We recorded 1,583 lines of spreadsheet data (representing 900 hours [115 days] of observation) including hourly counts, sound monitoring, counts of public visitors, and associated environmental data. We recorded 654 observations of seal alerts and flushes (see Table 2). In addition to Pacific harbor seals, we recorded 11 sightings of cetaceans (approximately 25 common bottlenose dolphins (*Tursiops truncatus*; five sightings offshore assumed to be common bottlenose and one sighting within 100 yards (91.4 meters) of CP, positive identification)); 10 grey whales (3 sightings outside offshore kelp, two sightings inside kelp); one juvenile and 3 adult California sea lions on the CP beach; and 2 juvenile northern elephant seals on the CP beach. There was one sea lion juvenile/pup reported dead (July 19, 2013) two beaches south of CP (approximately 500 meters south); it was examined by staff and Dr. Hanan and determined not to be associated with construction activities as no sea lions had been observed at CP between the start of construction and this juvenile washing ashore. Although there is no place where pinnipeds have access to construction equipment (site is behind chain link fence or above the beaches on a steep bluff), the partially decomposed juvenile was examined for but showed no signs of trauma, and washed back to sea in fairly high surf as we examined it. A juvenile sea lion had been observed at CP during one day, June 6<sup>th</sup> more than a month prior to start of construction and not likely to be the one washed up south of CP six weeks later. H&A did not observe any dead harbor seals at CP; although, it was reported to us by reliable local sources that there was a harbor seal still birth in December and another in January, both washed away with the outgoing tide. During our last day of observation (February 12<sup>th</sup>) we sighted 3 viable pups on CP and 2 near the reef area outside the breakwater wall. Additionally, CP docents report more than 60 pups born in 2013.

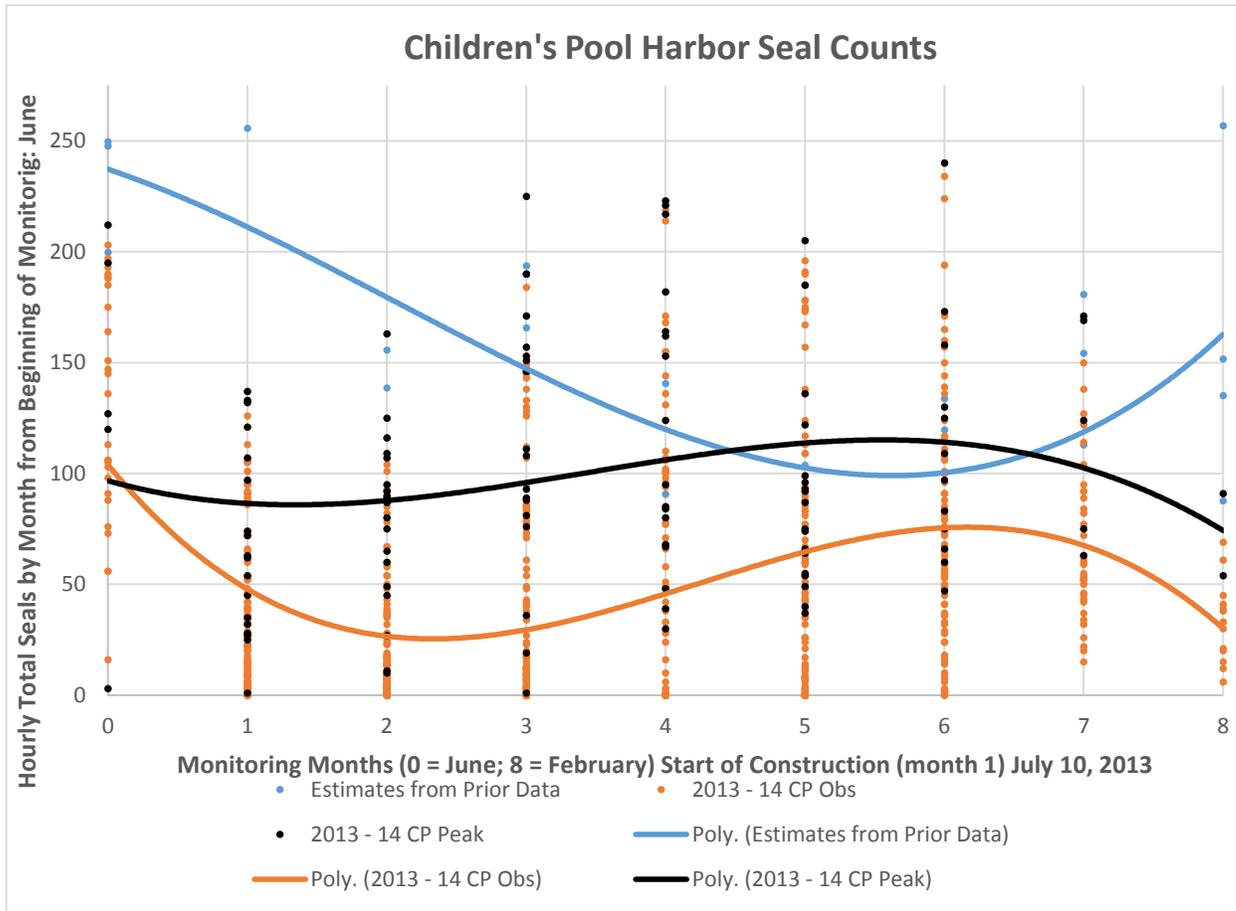


Figure 5. Harbor seal counts at CP June 3, 2013 (month 0) – February 12, 2014 (month 8) construction started in month 1 (July 10, 2013). Trend line for predicted counts from prior data (blue), and hourly counts/trend line for CP peak counts per day (black), and counts/trend line for all CP hourly counts by month (orange).

### Hourly Pinniped Counts

Actual counts and mean trends of seals observed during the period authorized by the 2013 IHA are shown in Figures 13, 14, and 15 fit with 3<sup>rd</sup> degree polynomial trend lines; predicted harbor seals hauling out by day as projected from previous studies at CP with upper and lower 95% confidence intervals included in Figure 15. Also shown on Figure 14 are juvenile harbor seals present which was added into the CP total. The third data set is displayed as the hourly totals by day for CP, Seal Rock, and Casa Beach added together as the Area Total with a trend line (Figure 14). We note that CP Total and Area Total showed declining trends prior to start of construction. We observed that public interactions seemed to be increasing during that time and also noted that there were large numbers of seals hauling out at night and into early morning hours (Figure 6). Because of these observations, H&A started randomly estimating numbers of seals hauled out at various times of the night using the WAN camera; which was set up for night vision (Figure 15, red trend line) and we moved our daily monitoring start time to just before dawn, frequently an hour or more before start of construction. During this time period, our peak count for monitoring was often during the first or second count of the day (Figure 6), before people/visitors started arriving at CP. Once the camera was removed (it

was mounted on the old station that was demolished) our night counts were discontinued, but the dawn count was continued. Because of human disturbance at CP, daily peak counts (Figures 6 and 15) are likely better indicators of seals utilizing the area and the trend lines fit to peak counts better indicators seals present when comparing to other less disturbed seal hauling sites.

## Hourly Sound Recordings

Sound was recorded using an Extech<sup>®</sup> Instruments (model HD600) digital, handheld sound level meter recording in decibels and we recorded the maximum sound within a two-minute interval, fast (125 ms) response time, A-weighting, within a range of 30 - 130 dB as recommended by the manufacturer and distributor. When seals were above or very near the rope at the center of CP beach, we often did not take recordings to avoid our flushing the seals. If members of public had already approached the seals at the rope we proceeded with the recordings at all stations. Additionally, no measurements were taken at Breakwall 1 or 2 when waves were breaking over the seawall. Mean ambient sound for all six monitoring stations (n = 2,243) with no construction was 69.2 dB re 20  $\mu$ Pa with a range of 55.6 to 93.7 dB re 20  $\mu$ Pa. This maximum (93.7 dB) represents screaming children on the sea wall about 5 meters from its base at the cliff nearest the construction site (Breakwall 1, Figures 8, 10, and 11). Mean average sound for all six monitoring stations (n = 2,526) during construction was 70.3 dB re 20  $\mu$ Pa with a range of 50.7 to 103.1 dB re 20  $\mu$ Pa. This maximum recording was taken next to the construction fencing on the bluff above CP (Top of Stairs monitoring site) and was recorded when an excavator with a jackhammer attached was demolishing the old building; it did cause an alert and flush of about 45 seals that were near the water's edge. During this same monitoring sequence, a sound measurement of 92.0 dB re 20  $\mu$ Pa was recorded on the beach at the restraining rope (Middle Rope, Figure 2, 8, 11; Table 2). The seals were not exposed to a sound level above 90.0 dB re 20  $\mu$ Pa because this was a low tide period when the seals were near the water's edge at their furthest distance from the sound source (about 50 meters past Breakwall 1, Figures 8 and 11). H&A recorded children screaming at levels up to 99.9 dB re 20  $\mu$ Pa and adults at 92.1 dB re 20  $\mu$ Pa, both on the sea wall just above the seals (Breakwall 2) with no alerts or flushes. We recorded Marine fighter jets passing over CP with recorded sound levels at 90.4 dB re 20  $\mu$ Pa on the beach (Middle Rope, Figure 2, 3, and 8) also with no alerts or flushes. Please see Table 1 for summary results of recorded sound levels by individual type of equipment closest to the source and at the Level B sound buffer demarcation (rope barrier across CP beach).

Table 1. Maximum recorded and mean sound recordings (dB re 20 µPa) by type of equipment and location. Note we were often taking measurements while we were standing in a crowd of people there to observe the seals and often their voices and children screaming were louder than the construction sounds. Top of Stairs and Casa (Figures 8 and 9) are two locations closest to construction just outside safety fencing. Middle Rope location is about midway across Children’s Pool beach and next to the City installed rope barrier.

Equipment	Location	Top of Stairs + Casa		Middle Rope	
		High	Mean	High	Mean
Backhoe		77.7	73.8	68.7	68.1
Bobcat		91.1	72.9	77.1	65.9
Cement Pump		72.6	70.4	54.7	N/A
Compactor		67.5	66.7	73.9	N/A
Concrete Saw		92.5	75.9	74.3	70
Crane		88.2	75.2	66.2	63.5
Driver/Drill		77.5	73.6	69.6	N/A
Excavator		90.9	75	83.8	65.8
Forklift		83.9	76.7	75.7	N/A
Gas Powered Saw		77.7	69.3	58.7	N/A
Generator Powered Jack Hammer		86.5	77.8	70.7	69.1
Grinder		71.8	67.8	63.6	61.7
Gun Powder nail gun		69.4	66.2	64.7	61.1
Hack Saw		76.9	72.3	71	67.4
Hammer		81.6	70	66.5	58.8
Hand Tools		85.1	67.5	64.4	59.9
Impact Driver		80	72.5	69.6	65.8
Jackhammer on Bobcat		96.6	76.3	87	70.8
Jackhammer on Excavator		103.1	87.3	92	N/A
Mini Excavator		89.3	67.9	79	63.3
Rebar Saw		71	69	64.2	N/A
Shovel		65.4	62.8	61.7	60.5
Survey Equipment		63.2	63.1	58.5	N/A

N/A = one sample

## Observed Harassments

H&A attempted to identify the causes and recorded all **observed** alerts and flushes and partitioned them into four categories in the database: 1. Biological alerts and flushes (*e.g.*, seals and sea lions disturbing seals, birds disturbing seals), 2. Public alerts and flushes (*e.g.*, people approaching close to or disturbing seals, loud voices or sounds, swimmers, cars, motorcycles, trucks not associated with construction, dogs, landscape equipment, kayakers/paddle

boarders in the CP cove, aircraft, lifeguard activity, Sea World rescues, water sampling, portable restroom maintenance, or City workers maintaining the beach area and access stairs), 3. Construction alerts and flushes (*e.g.*, any visual or sound item related to construction), and 4. Could not Be Determined (occasionally all or some of the harbor seals on a hauling site will alert and/or flush into the water for no apparent reason other than a presumed kind of flock reaction for safety towards or into the water). Please see Table 2 for a summary of alerts and flushes. From our data, alerts and flushes probably should not be added to get a total estimate of take because frequently there were alerts with no flush or a flush with no apparent alert. We believe there is a risk of double counting.

The trend line in Figure 6 shows a relationship which we noticed both before and during construction that the number of seals tend to decline as the city starts to awaken and the day progresses; people start arriving at CP for various activities not always related to seal watching: joggers and walkers, traffic passing by, maintenance of facilities and landscaping, trash trucks, lifeguard activities, storm water sampling, seal photographers, and seal aficionados.

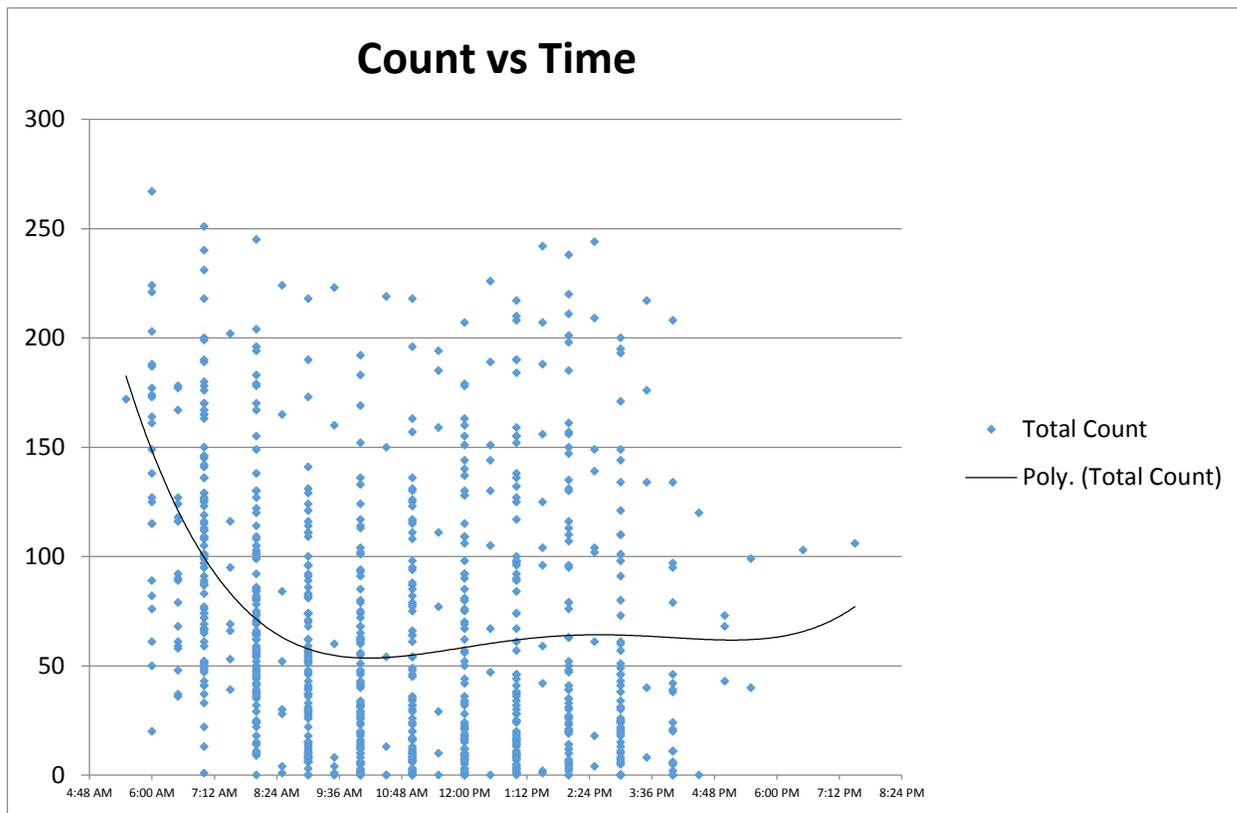


Figure 6. Harbor seal counts by time of day. Note the early morning declining trend line.

## Discussion

As expected, demolition and construction activities did cause alerts and flushes (Table 2) and was about 1/3 of the total alerts and flushes observed at CP. Demolition/construction sound levels were similar to those predicted in the IHA application (Tables 1 and 3). The loudest sound recorded was from an excavator with the jack hammer attached (103 dB re 20  $\mu$ Pa) which had dissipated to 92 dB re 20  $\mu$ Pa at the Middle Rope monitoring location. Sound

measurement at all six locations often included the public and frequently construction sounds could not be separated from other sounds including waves crashing, people screaming, street noise, aircraft, birds, sea lions, and dogs. Harbor seals continue to haul out in large numbers and have their pups at CP despite the disturbances including construction.

## Literature Cited

- Hanan & Associates. 2011. Biological Report: Update Regarding Pinnipeds and the California Least Tern at Children's Pool, La Jolla, California, and Lifeguard Tower Reconstruction. Unpublished report submitted to the City of San Diego. March 2011. 34 pages.
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- Yochem, P. K., and B. S. Stewart, 1998. Behavioral ecology and demography of seal and sea lions at the Seal Rock Marine Mammal Reserve. Hubbs-Sea World Technical Report 98-282.

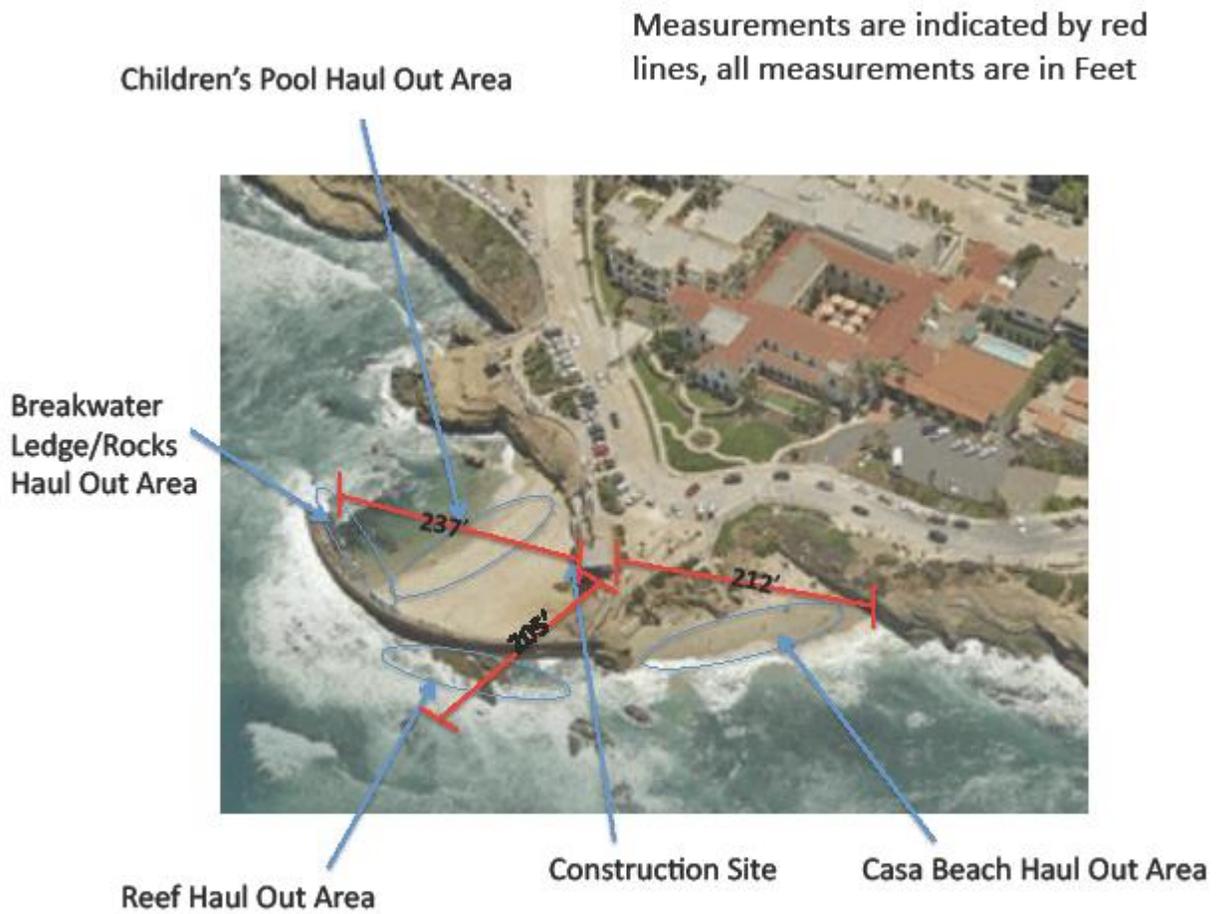


Figure 7. Children's Pool construction site and measurements away from construction site.

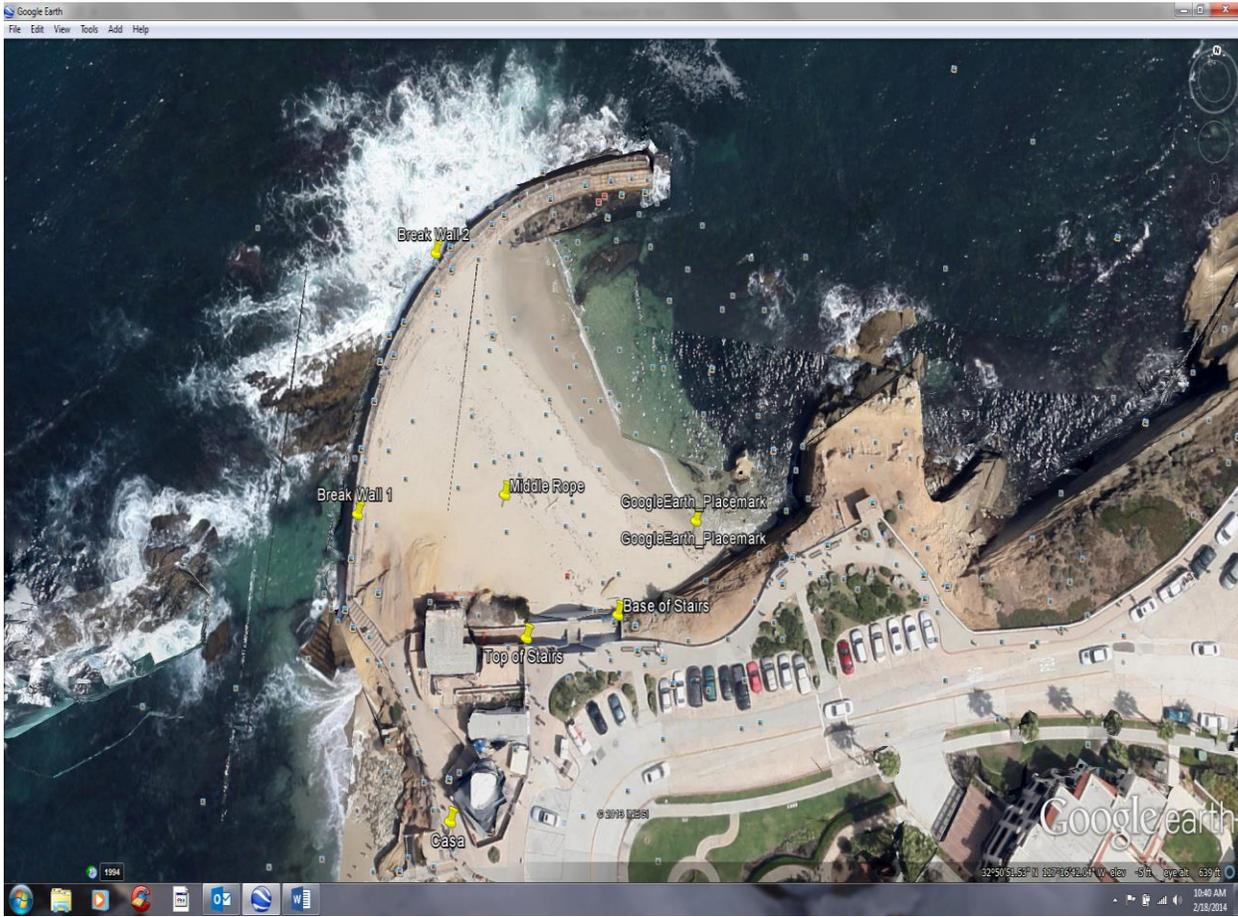


Figure 8. Location of monitoring stations (Top of Stairs, Bottom of Stairs, Middle Rope, Casa, Breakwall 1, and Breakwall 2) at Children’s Pool, La Jolla, CA.



Figure 9. Monitoring location: Casa (above Casa Beach and next to construction site).



Figure 10. Monitoring location Breakwall 1 and sound meter on breakwater railing.



Figure 11. Monitoring location: Breakwall 2. Note Breakwall 1 located this side of second man on wall (tan shirt) and note yellow rope barrier on beach at white sign with four people standing on beach.



Figure 12. Moving visual/acoustic barrier to lower level of construction site after removal of old building.

## Children's Pool, La Jolla California

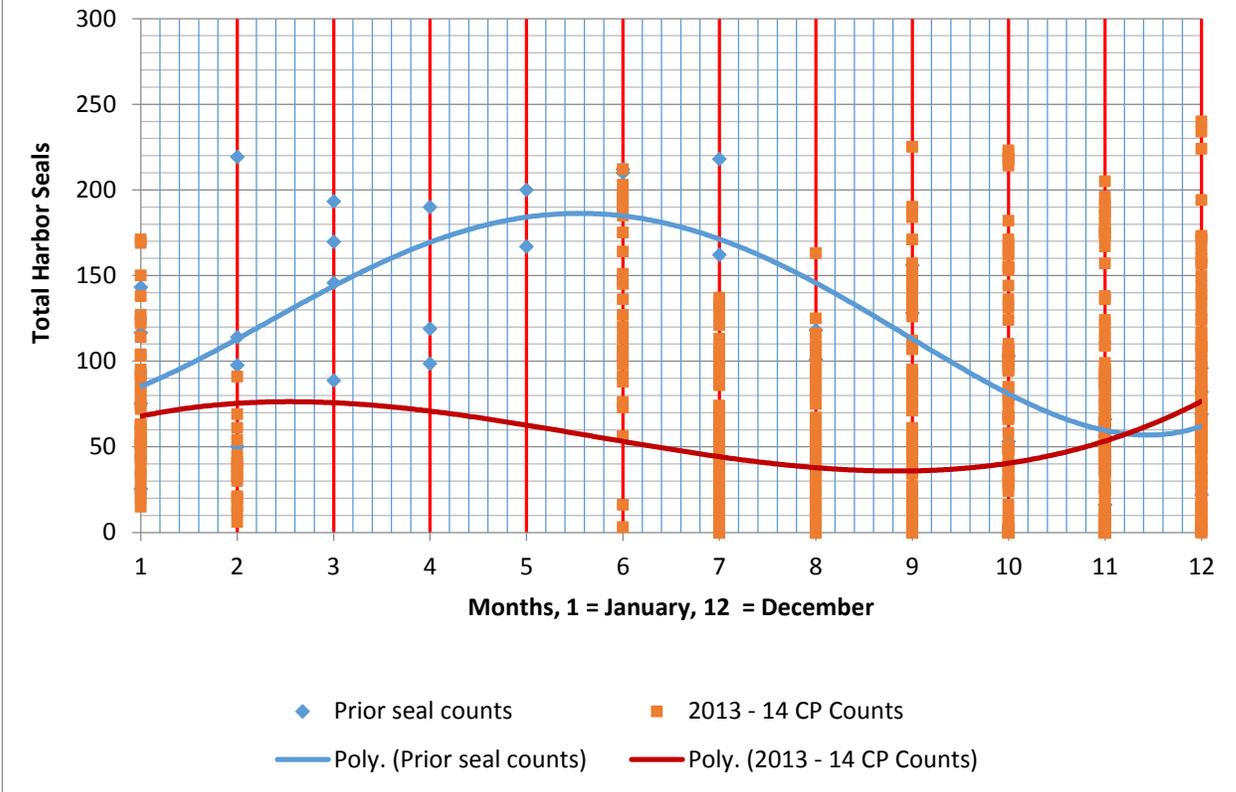


Figure 13. Estimated total seals by month based on counts at the site by Hanan & Associates, Yochem and Stewart, and Children’s Pool docents. Polynomial curve fit to counts by month was used to estimate harbor seals expected to be hauled out by day (blue). CP counts for 2013 – 14 are shown in red with trend line.

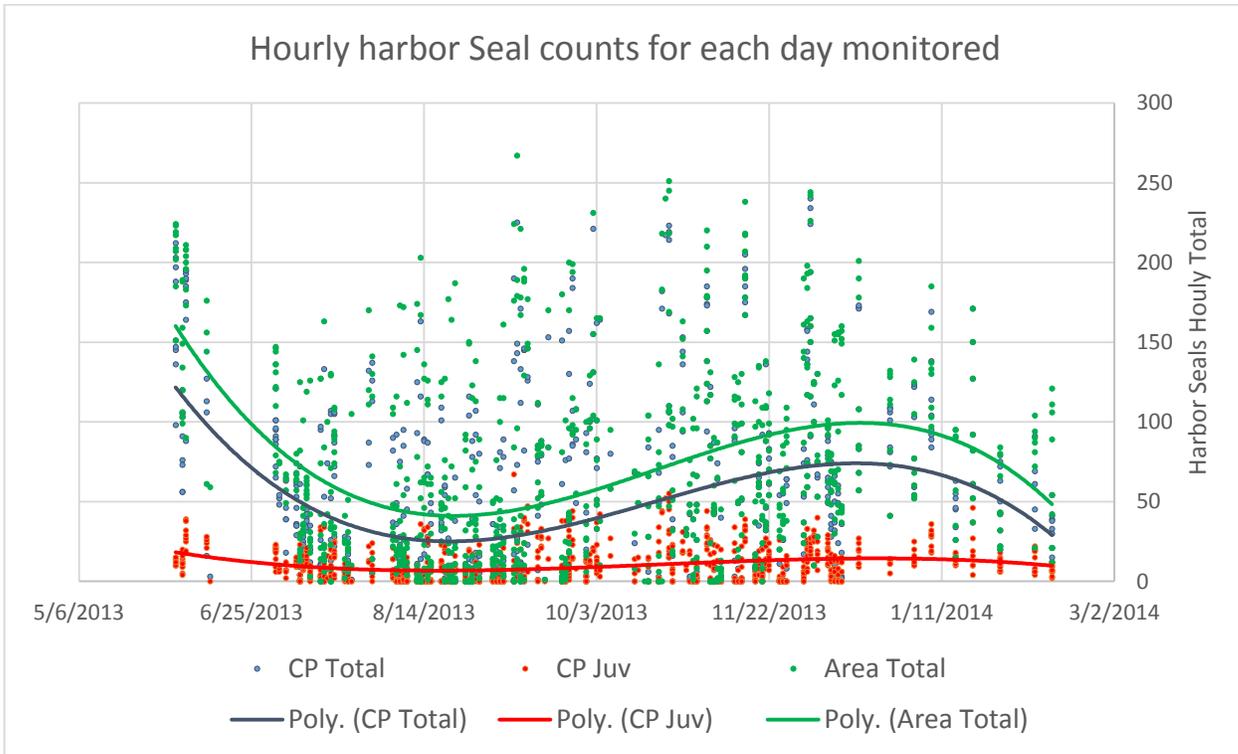


Figure 14. All counts of harbor seals 6/3/2013 – 2/12/2014 and third degree polynomial trend lines. Area Total includes CP Total; CP Juveniles included in both totals.

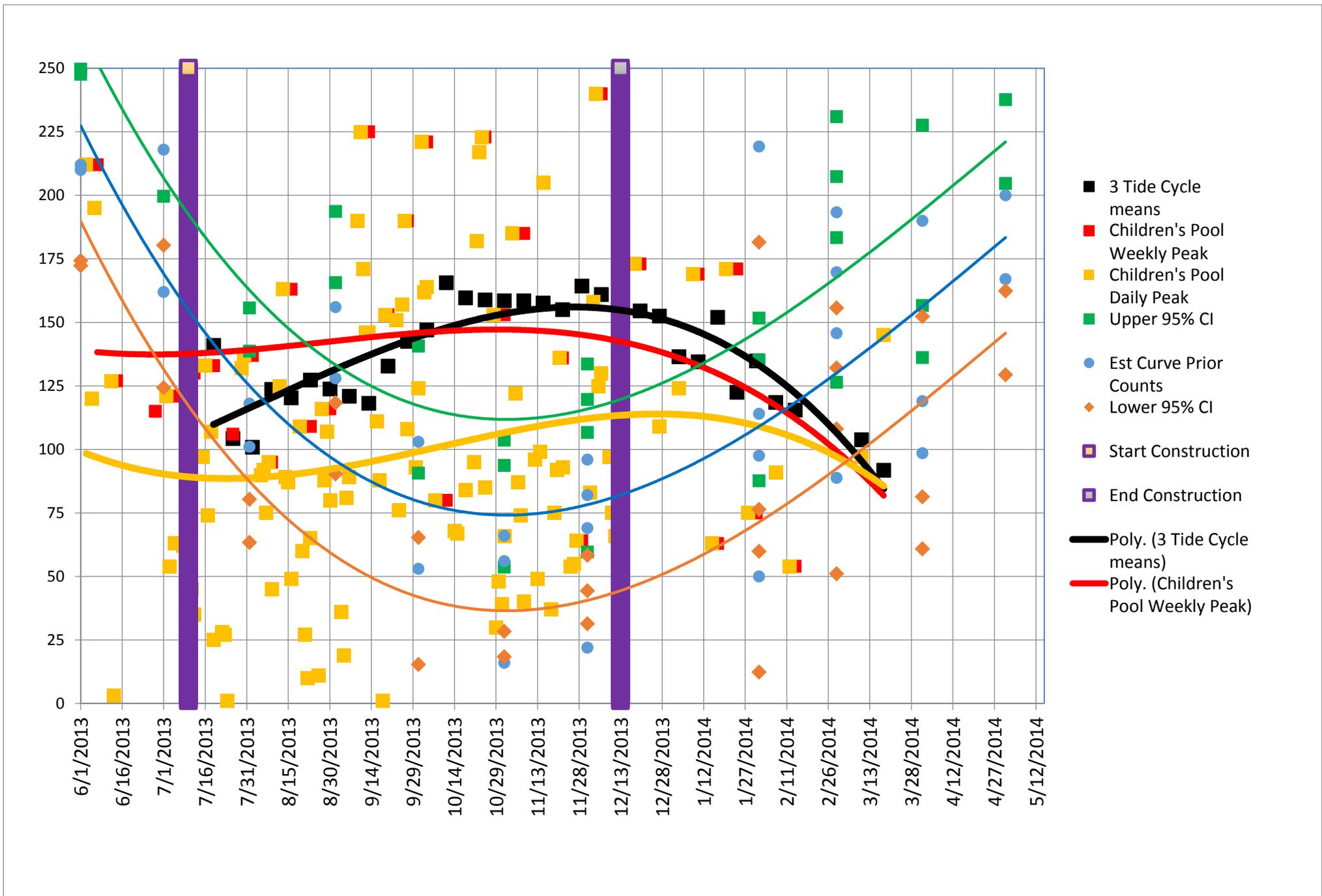


Figure 15. Children's Pool Harbor Seal Daily counts, Weekly Peak Haulout Counts, and running mean of counts during three tide cycles; Predicted haul out curve with upper and lower 95% Confidence Levels and solid vertical lines for Start (7/10) and End (12/13) of construction.

Table 2. Summary of Children’s Pool Alerts (seals raise heads) and Flushes (seals go into water). Count is number of disturbances observed for a category: Biological includes birds and pinnipeds; Construction includes anything related directly to construction at CP; CBD means could not be determined. Reaction is the seal’s response to disturbance (alert or flush). Total Seals is the sum of seals disturbed and mean is average number of seals disturbed by category.

Count	Cause	Reaction	Total Seals	Mean # Seals
19	Biological	Alert	791	42
34	Biological	Flush	467	14
102	Construction	Alert	3724	37
73	Construction	Flush	1371	19
161	Public	Alert	5103	32
210	Public	Flush	3536	17
11	CBD	Alert	262	24
24	CBD	Flush	419	17

Table 3. Summary of sound levels in decibels (dB re 20 µPa) recorded during periods with no construction and during construction at each of the monitoring sites.

	Middle Rope	Base Stairs	Top Stairs	Casa	Breakwall 1	Breakwall 2
<b>No Construction</b>						
Mean	65.4	66.5	67.7	70.2	70.6	73.5
Maximum	85.4	86.3	88.2	88.1	93.7	92.5
Minimum	55.6	56.0	60.1	62.4	61.2	64.6
<b>During Construction</b>						
Mean	65.4	65.4	74.0	72.3	71.0	72.5
Maximum	92.0	84.7	103.1	102	87.8	99.9
Minimum	50.7	51.4	54.6	54.6	57.3	61.2

## Appendix I. Monitoring plan as proposed to the City of San Diego by Hanan & Associates, Inc. for the La Jolla Children's Pool Lifeguard Station demolition and construction:

Monitoring of the Lifeguard Station remodel will be completed by Hanan & Associates, Inc. (H&A) in accordance with Incidental Harassment Authorization (IHA). National Marine Fisheries Service (NMFS) approved Protected Species Observers (PSO) will be provided by H&A during periods in which the in-air noise-generating activities are scheduled to exceed 90 dB. If additional periods are deemed necessary by the contracting/engineering company (Stronghold Engineering), H&A must be made aware 24 hours prior to start of that activity in order to provide an onsite PSO. The PSO will complete an initial scan of the action area 30 minutes prior to construction activity, continuously during the activity, and at least 30 minutes after cessation of the in-air noise-generating activity. When inclement weather limits visibility, the PSO will perform scans to the extent that weather permits. If weather precludes the PSO from performing the counts/sound monitoring on the Sea Wall, locations: C4, S5 and S6, the PSO will perform the counts and sound monitoring as close as possible. If waves are crashing over the sea wall and the safety of the PSO and/or equipment is in question; the PSO will perform the counts and sound measurements from site "IW" or further north along the bluff as needed to accurately perform those required counts.

The PSO will be required to complete visual counts of all marine mammals in four locations on an hourly basis, as well as, audio monitoring in 6 locations during this same hourly schedule (see Monitoring Diagrams for locations, attached). Audio monitoring will be completed using a handheld digital sound level measuring device Extech HD600. The PSO will complete a "Data Sheet" (DS, attached) for each day and during each step of the monitoring process as follows:

Upon arrival at the site, the PSO will complete the Consultant Site Visit Record, as required by the City, and then record the time, Beaufort sea state, weather conditions including cloud cover, wind velocity and direction, horizontal visibility, and number of public visitors present by location at Children's Pool. The air and water temperature and tide height will be obtained from the NOAA website or from lifeguard station signs. When obtained at the site this will be noted on the DS, however; when this data is not available, the information will be obtained from the NOAA website after the cessation of work and documented at a later point. The time of in-air noise-generating construction activity commencement will also be recorded.

Initially the PSO will take audio measurements at site "S1", as close to the middle of the beach and rope line as possible without impacting the seals, where the PSO will monitor the sound level for two minutes and record the "maximum" decibel level monitored on the DS.

The PSO will then proceed to site "S2", east side of beach on rope line, where the PSO will again monitor the sound level for two minutes and record the "maximum" decibel level monitored on the DS.

The PSO will then proceed to site "S3", at the top of the stairs as close to the construction site as safely possible, where the PSO will again monitor the sound level for two minutes and record the "maximum" decibel level monitored on the DS.

Adjacent to site “S3,” at site “C1” the PSO will perform a visual count, utilizing binoculars, of all seals hauled out on “Seal Rock” and record the following on the DS: a) total count, b) a count of juveniles (yearling and pups) and where possible a count of males and females to estimate sex ratio.

The PSO will then proceed to site “C2” where a count of all seals hauled out on the Children’s Pool beach and rocks within the cove. Again the PSO will record the following on the DS: a) total count, b) a count of juveniles (yearling and pups) and where possible a count of males and females. For this count, the PSO will also count and record on the DS: the number of public visitors on the Sea Wall, the beach, and at the top of the stairs.

The PSO will now move to the next position “S4”, overlooking Casa Beach, where the PSO will again monitor the sound level for two minutes and record the “maximum” decibel level monitored on the DS.

Adjacent to site “S4,” at site “C3” the PSO will perform a visual count of all seals hauled out on Casa Beach and record the following on the DS: a) total count, b) a count of juveniles (yearling and pups) and where possible a count of males and females to estimate sex ratio.

The PSO will now move to the next position “S6”, on the Sea Wall near birds nest N5, where the PSO will again monitor the sound level for two minutes and record the “maximum” decibel level monitored on the DS.

The PSO will finish the fourth and final count from site “C4”, where all seals hauled out on the reef area west of the Sea Wall will be counted. Again the PSO will record the following on the DS: a) total count, b) a count of juveniles (yearling and pups) and where possible a count of males and females to estimate sex ratio.

Continually during the activity generating the in-air noise the PSO will observe the seals and note on the DS any behavioral responses as well as the assumed cause of this response, whether it from visual or acoustic cues: a) construction and equipment type or b) type of public or other non-construction stimuli. During these events, and if possible, the PSO will take video and/or photographs to document these responses.

Lastly, as five active sea gull nests were observed about two hundred feet or less away from the construction site during a pre-construction survey, the PSO will monitor any activity within these nests and denote any changes on the DS.

Throughout the day, the PSO will continue to monitor and record any changes in the Beaufort sea state, weather conditions including cloud cover, wind velocity and direction, horizontal visibility, and number of public visitors present by location at Children’s Pool. The time of in-air noise-generating activity completion will also be recorded at the end of the day or activity and the PSO will document the departure time from the site.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by this

Authorization, such as an injury (Level A harassment), serious injury or mortality, the City of San Diego shall immediately cease the specified activities and immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401 and/or by email to [Jolie.Harrison@noaa.gov](mailto:Jolie.Harrison@noaa.gov) and [Howard.Goldstein@noaa.gov](mailto:Howard.Goldstein@noaa.gov) and the West Coast Regional Stranding Coordinator ([Justin.Greenman@noaa.gov](mailto:Justin.Greenman@noaa.gov)). The report must include the following information:

(a) Time, date, and location (latitude/longitude) of the incident; the type of activity involved; description of the circumstances during and leading up to the incident; status of all sound source use in the 24 hours preceding the incident; water depth; environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility); description of marine mammal observations in the 24 hours preceding the incident; species identification or description of the animal(s) involved; the fate of the animal(s); and photographs or video footage of the animal (if equipment is available).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS shall work with the City of San Diego to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The City of San Diego may not resume their activities until notified by NMFS via letter or email, or via telephone. Throughout the project the PSO will continually monitor for any dead stranded cetaceans in the event that this should occur the incident should be reported to NMFS Southwest Fisheries Science Center at 858-546-7162. Upon the detection of any stranded animals by the PSO or other project staff on site, San Diego Sea World's stranded animal hotline will be contacted, at 1-800-54-7325.



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					1:00 PM														
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<b>Departure Time:</b>																		<b>End of Const:</b>	

Appendix III. Daily Observation Sheet for recording all observed harassments of marine mammals at Children's Pool

<b>Date:</b>		<b>Observations</b>			
<b>Time</b>	<b># Animals</b>	<b># PPL@W</b>	<b>#PPL@R</b>	<b>Response Type (alert/flush)</b>	<b>Potential Disturbance</b>
7:00 AM					
7:30 AM					
8:00 AM					
8:30 AM					
9:00 AM					
9:30 AM					
10:00 AM					
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