SCATTERGOOD GENERATING STATION

Marine Mammal Protection Act
Small Take Permit Application

August 2001

Prepared for:

CITY OF LOS ANGELES
DEPARTMENT OF WATER AND POWER
LOS ANGELES, CALIFORNIA

Prepared by:

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Marine Mammal Protection Act
Application for Small Take Permit
Scattergood Generating Station
Los Angeles, California

23 August 2001

James Lecky
Asst. Regional Administrator
for Protected Resources
National Marine Fisheries Service
501 W. Ocean Blvd, Ste. 4200
Long Beach, CA 90802-4213

Re: Request for Small Take Permit - Scattergood Generating Station
Small Take Exemption Permit Application

The Los Angeles Department of Water and Power, owner of the Scattergood Generating Station, hereby submits the enclosed application, pursuant to Section 101(a)(5)(A) of the Marine Mammal Protection Act. The application requests a small take exemption permit for the incidental taking of small numbers of pinnipeds (harbor seals, California sea lions, and northern elephant seals) as a result of plant operations.

Scattergood Generating Station generates 830 megawatts of electrical power for the city of Los Angeles. Units 1 & 2 have been on-line since 1958-1959, and Unit 3 came on-line in 1974. As described in the application, the plant draws ocean water through an offshore intake structure to provide non-contact, once-through cooling for the plant's condensers and other necessary components. The intake structure is located approximately 1,600 ft offshore in approximately 30 feet of water. The cooling water is pumped back to the ocean through an offshore discharge structure. Small numbers of Pacific harbor seals and California sea lions have been found in the station's intake forebay as an apparent result of their entering the intake structure and then being drawn through the intake tunnel.

The intake and discharge structures associated with the cooling water system of the Scattergood Generating Station were specifically designed and located to minimize their environmental effects, particularly with respect to thermal discharge and fish entrapment. Since 1989, the Los Angeles Department of Water and Power has observed and reported the entrainment of pinnipeds at the plant to the National Marine Fisheries Service (NMFS), Southwest Region.

A total of 40 pinnipeds have been entrained at the plant since 1989, a rate of about three animals per year. Incidental takes at the Scattergood Generating Station have had negligible effects on pinniped stocks or the ability of the pinniped populations to reach and maintain their optimum sustainable levels, contributing only a very small fraction to the total number of reported non-natural mortalities that occur annually. Nonetheless, the Los Angeles Department of Water and Power, in consultation with the NMFS Southwest Region, has concluded that it is advisable to submit this application for an exemption from the Marine Mammal Protection Act of 1995 for small takes.

In parallel with the submittal of the exemption permit application, the Los Angeles Department of Water and Power continues to evaluate effective, implementable means to minimize pinniped entrainment. Marine mammal rescue cages, in use since the mid-1970s, allow the safe capture and release of live animals from inside the plant.

The Los Angeles Department of Water and Power respectfully requests that NMFS issue the exemption for the maximum period allowed by law.

If you have any questions on this matter, please do not hesitate to contact me at (213) 367-0279.

Sincerely,

Susan Damron
Manager of Water Quality Group

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Small Take Permit Application

23 August 2001

Prepared for:
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SMALL TAKE EXEMPTION PERMIT

APPLICATION

1. A DETAILED DESCRIPTION OF THE SPECIFIC ACTIVITY OR CLASS OF ACTIVITIES THAT CAN BE EXPECTED TO RESULT IN INCIDENTAL TAKINGS OF MARINE MAMMALS.

Incidental live and lethal takings of seals and sea lions have occurred and are expected to continue as a result of the operation of the Scattergood Generating Station circulating water system (CWS). Scattergood Generating Station, located on the southern California coast in the city of Los Angeles, consists of three gas-fueled steam-electric generating units with a design capacity of 830 megawatts (Mw) (Figure 1). The station is operated by the Los Angeles Department of Water and Power. Units 1 and 2, on-line since 1958-1959, have a rated capacity of 185 Mw each. Unit 3, on-line since 1974, has a capacity of 460 Mw.

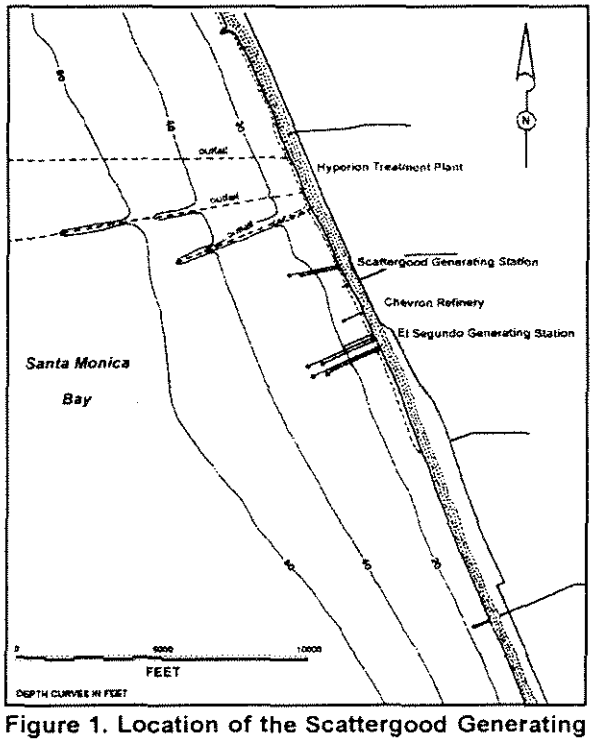

Figure 1. Location of the Scattergood Generating Station.

The live and lethal takes occur when pinnipeds enter the submerged cooling water intake structure, located approximately 488 m (1,600 ft) from shore at a depth of about 9 m (30 ft). Some proportion of those pinnipeds entering the intake structure become entrained in the CWS as the cooling water is drawn through the intake tunnel to the plant.

Design and History of Scattergood Generating Station's Cooling Water System.

Scattergood Generating Station uses eight circulating water pumps in its once-through CWS. Units 1 and 2 each use two pumps rated at 39,000 gallons per minute (gpm). Unit 3 uses four pumps rated at 47,000 gpm. Maximum combined flow for all units is approximately 495 million gallons per day (mgd). The monthly average flow through the plant is 322 mgd (CRWQCB 1995). Seawater is pumped to the two condensers via the CWS, where it condenses the steam exhausted from the main turbines which are used to generate the plant's electrical output.

The cooling water intake structure, which is shared by all units, is located 488 m (1,600 ft) offshore in approximately 9 m (30 ft) of water (Figure 2). The intake structure was constructed with a velocity cap in 1958. However, the velocity cap developed structural problems and was replaced with the present velocity cap in 1974. The intake structure consists of a 5.3-m (17.4-ft) diameter vertical riser with a 9.9-m (32.5-ft) diameter velocity cap suspended 1.5 m (4.9 ft) above the riser. The outside diameter of the riser is the same as the velocity cap. The elevation of the intake riser lip is -5.3 m (17.4 ft) Mean Lower Low Water (MLLW). This configuration allows the relatively large flow of seawater to be drawn into the conduit at a relatively low velocity; design approach velocity at the rim of the cap is 0.46 meters per second (m/s). Low intake velocity and horizontal intake current provided by the velocity cap minimize the entrainment of marine organisms.

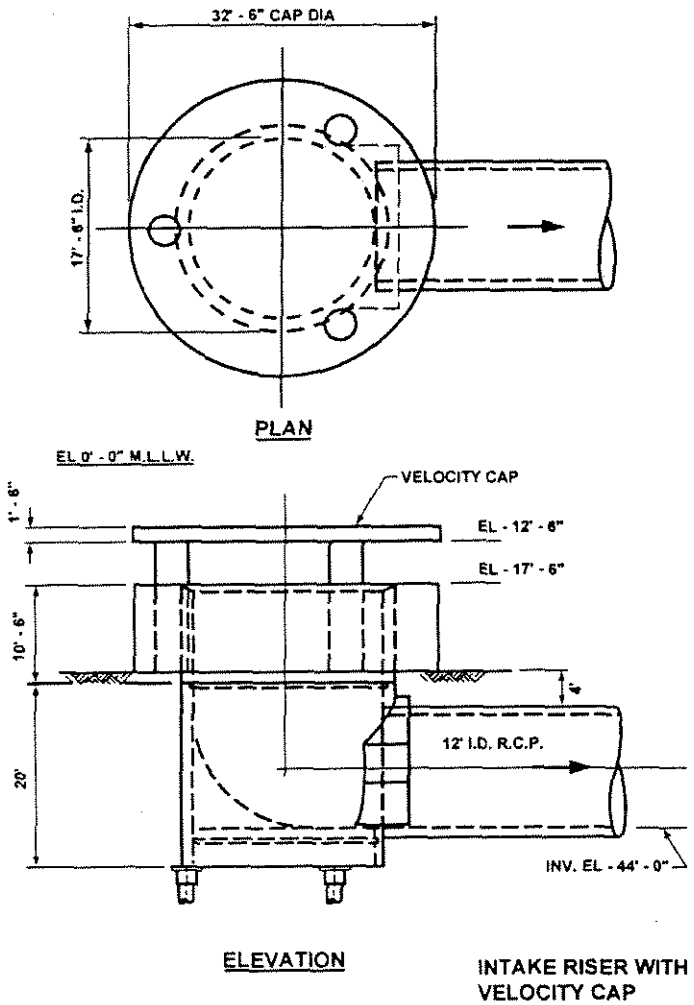

Figure 2. Layout of velocity cap (top) and profile of the intake structure (bottom), Scattergood Generating Station.

The rock riprap protecting the intake structure was modified in 1980. The original riprap consisted of large boulders spaced in a random pattern that allowed sand surrounding the intake structure to be displaced by ocean currents and tidal surges. This configuration did not provide sufficient protection to the intake structure. The new riprap was designed as a well-graded rock mixture to reduce sand loss, provide a flexible mat, and to reduce the interstitial spaces. It was thought that this configuration would eliminate large spaces for fish to reside, thereby reducing the number of fish utilizing this habitat in the immediate area of the intake.

Cooling water is conveyed from the intake structure through an underground horizontal conduit 3.66 m (12.0 ft) in diameter approximately 640 m (2,100 ft) to a vertical-walled screen and pump chamber. The screen and pump chamber is 152 m (499 ft) inland from shore. Maximum velocity in the intake conduit is 2.07 m/s. After passing through their respective condensers, flows are combined in a single 3.66-m (12.0-ft) diameter underground discharge conduit, which runs parallel to the intake conduit, and conveyed approximately 366 m (1,200 ft) offshore. Warmed cooling water is discharge to Santa Monica Bay, approximately 122 m (400 ft) shoreward of the

intake at a depth of about 4.6 m (15.1 ft) through a vertical riser with an inside diameter (ID) of 5.33 m (17.5 ft), located in approximately 8.2 m (27 ft) of water.

The intake tunnel terminates at the plant in a large, open-air forebay. The cooling water is then directed from the forebay through the screen and pump chamber to the condensers. The forebay area contains bar racks and vertical traveling screens which prevent debris, fish, and invertebrates from entering the CWS. Eight sets of vertical bar racks, consisting of 3/8-in by 4-in steel bars spaced five inches on center, prevent large debris from contacting the traveling screens. Design velocity through the bar racks is 0.46 m/s. Small debris, fish, and macroinvertebrates are prevented from entering the cooling water system by conventional 3/8-in mesh vertical traveling screens. Units 1 and 2 share four traveling screens, while Unit 3 has its own set of four traveling screens. Design velocity through the screens is 0.53 m/s. The screens operate automatically when obstructed by debris or are rotated once each eight-hour work shift for debris removal. Debris, fish, and invertebrates are removed from the screens by high-pressure sprays and conveyed to trash baskets for disposal.

Incidental takings by the cooling system intake.

Because of the underwater, offshore location of the intake structure, pinnipeds have not been directly observed entering the velocity cap. Since horizontal intake velocity is relatively low (0.46 m/s or less), it is reasonable to assume the following sequence of events leads to the entrainment of a live mammal in the CWS (it is possible that pinniped carcasses are entrained in the CWS). The mammal swims in between the intake and vertical riser velocity cap in search of or in pursuit of prey, or out of natural curiosity. Once under the velocity cap, the increasing current velocity and transition from horizontal flow through the velocity cap to vertical flow downward through the riser shaft causes the mammal to be drawn into the riser. Vertical currents are not normally encountered in the pinnipeds environment. This, combined with a sudden lack of light and confinement in the CWS, disorients the animal and prevents an effective escape response, especially for young, immature pinnipeds. As a result, the pinniped is unable to exit, and 1) drowns or is fatally injured in transit from the intake structure to the forebay, 2) survives transit to the forebay and succumbs in the forebay due to exhaustion, illness, or disease, or 3) survives transit to the forebay and is removed by a specialized cage designed for rescuing pinnipeds, and released alive and healthy to the ocean.

2. THE DATE AND DURATION OF SUCH ACTIVITY AND THE SPECIFIC GEOGRAPHICAL REGION WHERE IT WILL OCCUR.

At least one circulating water pump is usually in operation at the Scattergood Generating Station. Between July 1981 and December 1995, there were only five periods when no cooling water was being cycled through the plant (LADWP 1996, unpubl. data). These periods ranged in duration from 1 to 10 days, and resulted in a total of 28 days with no cooling water flow through the generating station. Operation of the Scattergood Generating Station in this manner is expected to continue for the foreseeable future.

The location of the Scattergood Generating Station intake structure, where the takes occur, is illustrated in Figure 1. The intake structure is located approximately 488 m from shore off the Dockweiler State Beach, Los Angeles, California.

Pinniped (seal and sea lion) takes at the Scattergood Generating Station were first reported in 1989. (Table 1). Of the 40 reported pinniped entrainments between July 1989 and October 2000, most (21) occurred during fall months (August, September, and October) (Appendix A). Eight takes occurred in 1995, seven in 1994, and six in 1996. There were four years when no animals were entrained.

Table 1. Number and condition of pinnipeds entrained at Scattergood Generating Station from 1977 to 2000.

	Harbor seals		California sea lions	
Year	Released unharmed	Found dead	Released unharmed	Found dead
1989	-	-	1	1
1990	1	-	-	5
1991	-	-	-	-
1992	-	-	1	2
1993	-	-	-	-
1994	-	-	2	5
1995	-	-	-	8
1996	-	-	-	6
1997	-	-	-	-
1998	-	-	-	4
1999	-	-	-	-
2000	-	-	-	4
Total	1	-	4	35

Thirty-nine California sea lions and one Pacific harbor seal have been entrained since 1989. Of the 39 California sea lions, four were released alive. One California sea lion was initially observed alive in the forebay but died shortly thereafter. The one Pacific harbor seal entrained in the CWS was released alive. In total, 88% of pinniped entrainments in the CWS involved a carcass, while 12% involved live animals.

Based on this history of seal and sea lion takes in the study area, it is reasonable to assume that seal/sea lion takes will continue throughout the plant's operating life. The frequency of takes has declined since 1996; however, as pinniped populations continue to increase, the entrainment rate at the generating station may increase.

3. THE SPECIES AND NUMBERS OF MARINE MAMMALS LIKELY TO BE FOUND WITHIN THE ACTIVITY AREA.

The marine mammal species most likely to be affected by the operation of the Scattergood Generating Station are the California sea lion (*Zalophus californianus*), Pacific harbor seal (*Phoca vitulina*), and northern elephant seal (*Mirounga angustirostris*). Populations of these three species off the southern California coast have continued to increase since the passage of the Marine Mammal Protection Act (MMPA) in 1972. Exceptions include decreases in productivity during El Niño years (e.g. 1983, 1992, and 1998).

California sea lions and harbor seals are usually observed by biologists offshore of the Scattergood Generating Station during annual NPDES monitoring surveys (Lockheed and IRC 1979; IRC 1981a; MBC 1990-1996, 1997a, 1998-1999). California sea lions are often observed hauled-out on oil terminal mooring buoys approximately one nautical mile offshore Dockweiler State Beach. Northern elephant seals have never been entrained at the generating station, but are known to occur in the study area.

Recent population estimates derived for the three pinniped species likely to occur in the study area are from Forney et al. (2000).

California sea lion

A California sea lion (U.S. stock) population estimate was determined during July 1999. Estimates were determined by counting all pups during the breeding season (because this is the only

age class that is ashore in its entirety), and the number of births is estimated from the pup count. Population size is estimated from the number of births and the proportion of pups in the population. The pup count in 1999 (42,388 individuals) was adjusted for an estimated 15% pre-census mortality resulting in an estimated 48,746 live births in the population. The percentage of newborn pups in the population (22.8 to 23.9%) was estimated from a life table derived for the northern fur seal (*Callorhinus ursinus*) (Boveng 1988, Lowry et al. 1992), which was modified to account for the growth rate of this California sea lion population (5.0 to 6.2% per year). Multiplying the number of pups born by the inverse of these fractions (4.39 to 4.19) results in population estimates ranging from 204,000 to 214,000, respectively (Forney et al. 2000). The population has been growing recently, though incidental fishery mortality is increasing.

Harbor seal

A harbor seal (California stock) population estimate was determined during 1995. A population estimate was attempted in 1999, but was unsuccessful due to inclement weather and camera failure. Population size was estimated by counting the number of seals ashore during the peak haul-out period (the May/June molt) and by multiplying this count by the inverse of the estimated fraction of seals on land. Based on the most recent harbor seal counts (23,302 individuals in May/June 1995), the harbor seal population in California in 1995 was estimated at 30,293. The population appears to be growing and fishery mortality is declining.

Northern elephant seal

A complete population count of northen elephant seals is not possible because all age classes are not ashore at the same time. Northern elephant seal population (California breeding stock) was estimated in 1996. Population size was estimated by counting the number of pups produced that year and multiplying by the inverse of the expected ratio of pups to total animals. In 1996, the estimated California stock of northern elephant seal was approximately 84,000 individuals.

4. A DESCRIPTION OF THE STATUS, DISTRIBUTION, AND SEASONAL DISTRIBUTION (WHEN APPLICABLE) OF THE AFFECTED SPECIES OR STOCKS OF MARINE MAMMALS LIKELY TO BE AFFECTED BY SUCH ACTIVITIES.

All species of pinnipeds likely to be affected by the operation of the Scattergood Generating Station are protected under the MMPA. None of the pinnipeds are currently listed (state or federal) as threatened or endangered under the Endangered Species Act (CDFG 2000). None of the pinnipeds are listed as depleted under the MMPA, and no populations of these animals are considered a strategic stock under the MMPA. A stock is listed as "strategic" when estimated incidental fisheries mortality exceeds the potential biological removal (PBR). The PBR value is the maximum number of marine mammals, not including natural mortalities, that may be removed from a marine mammal stock while still allowing the stock to maintain or reach its optimum sustainable population. PBR values were recently reported by the NMFS (Forney et al. 2000).

California sea lion

The California sea lion (*Zalophus californianus*) is composed of three subspecies: *Z. c. wollebaeki* (on the Galapagos Islands), *Z. c. japonicus* (in Japan, but now thought to be extinct), and *Z. c. californianus* (from southern Mexico to southwestern Canada). Following discussions of the California sea lion will refer to *Z. c. californianus*.

The subspecies *Z. c. californianus* is divided furthermore into three stocks depending on location of the breeding areas (Forney et al. 2000). The United States stock begins at the U.S./Mexico border and extends northward into Canada. The Western Baja California stock ranges from the U.S./Mexico border southward to the southern tip of the Baja California Peninsula. The third

stock, the Gulf of California stock, inhabits the Gulf of California and extends southward and across to the mainland of southern Mexico. Though U.S. rookeries are distant from the major rookeries of western Baja California, males from the Western Baja California rookeries may be found in U.S. waters.

In southern California, known rookeries are located at San Miguel, San Nicholas, Santa Barbara, and San Clemente islands (Reeves et al. 1992). Smaller numbers of California sea lions haul out seasonally at Santa Rosa, Anacapa, and Santa Catalina islands. Adult male California sea lions leave rookeries in August and September and migrate north during autumn and winter, returning to rookeries in spring (Reeves et al. 1992). Males from Baja California arrive at the Channel Islands in December and January. Males from southern California travel as far north as British Columbia, Canada. Seasonal movements of females are unknown.

Harbor seal

Two harbor seal (*Phoca vitulina*) subspecies exist in the Pacific: *P. v. stejnegeri* in the western North Pacific, and *P. v. richardsi* in the eastern North Pacific. *P. v. richardsi* ranges from Baja California, Mexico to the Pribilof Islands in Alaska. Three stocks of this subspecies are recognized: the California stock, the Oregon/Washington outer coastal stock, and a stock utilizing inland waters of Washington. In California, there are 400 to 500 harbor seal haulouts on the mainland and on offshore islands.

In the eastern Pacific, harbor seals breed from San Quintin, Baja California, to Nome, Alaska. Pupping is progressively earlier from Washington and Oregon southward to Baja California, where it takes place in February and March. Harbor seals display fidelity to haul-out grounds from year to year, but they are capable of long-distance movements. Some short movements are likely associated with seasonal availability of prey and breeding. However, in some areas, harbor seals are present throughout the year.

Northern elephant seal

Northern elephant seals (*Mirounga angustirostris*) breed and give birth in California (California breeding stock) and in Baja California (Mexican breeding stock), primarily on offshore islands between December and March. Further discussion focuses on the California breeding stock.

In southern California, northern elephant seal colonies are established on Santa Barbara, San Nicholas, San Miguel, and Santa Rosa islands. A few elephant seals give birth on San Clemente Island. Males feed near the Aleutian Islands and in the Gulf of Alaska, while females feed further south (below 45°N). Adult elephant seals return to land to molt between March and August, with males usually returning later than females. While movement among rookeries occurs, most elephant seals return to their natal rookeries when they begin to breed. Weaned pups leave San Nicholas and San Miguel islands in late winter and spring. Most pups move northward, while a few remain near their birth sites or move south during their first year.

5. THE TYPE OF INCIDENTAL TAKING AUTHORIZATION THAT IS BEING REQUESTED (I.E. TAKES BY HARASSMENT ONLY; TAKES BY HARASSMENT, INJURY AND/OR DEATH) AND THE METHOD OF INCIDENTAL TAKING.

The type of incidental taking being requested in this application are incidental takings by harassment, injury, and or/death caused by entrapment of pinnipeds in the Scattergood Generating Station circulating water system intake as described in Section 1.

Harassment occurs when pinnipeds enter the intake tunnel (as described in Section 1), and are recovered from plant personnel by use of marine mammal cages. Animals in the cages are subsequently released unharmed to the ocean. One California sea lion carcass removed in 1994 had

a 1-in. cut and a 1/4-in. hole on its side, and one sea lion carcass removed in 1998 was observed with head trauma. Cause of these conditions is unknown. About 88% of the 40 pinnipeds entrained at the Scattergood Generating Station were removed dead. Cause of death of these animals is unknown.

6. BY AGE, SEX, AND REPRODUCTIVE CONDITION (IF POSSIBLE), THE NUMBER OF MARINE MAMMALS (BY SPECIES) THAT MAY BE TAKEN BY EACH TYPE OF TAKING IDENTIFIED IN PARAGRAPH (A) (5) (SECTION 5) OF THIS SECTION, AND THE NUMBER OF TIMES SUCH TAKINGS BY EACH TYPE OF TAKING ARE LIKELY TO OCCUR.

Incidental live and lethal takings of seals and sea lions are anticipated to occur as a result of the continued operation of the Scattergood Generating Station circulating water system. The anticipated number of takes of California sea lions and harbor seals may increase as a result of the continued population increase in southern California waters. Northern elephant seals have not been taken by the generating station.

California sea lion

A recorded total of 40 California sea lions has been entrained by the generating station since 1989, an average of three California sea lions per year. Take rates have ranged from zero per year (1991, 1993, 1997, and 1999) to eight per year in 1995 (Table 1). Sex was discerned on only four individuals; two were males and two were females. Lengths were measured on all but four individuals; California sea lions ranged from 30 in. to 66 in. (averaging 47 in.). Thirty-three sea lions were weighed on a scale or their weights were estimated. Weights ranged from 25 pounds to 200 pounds, and sea lions averaged 77 pounds Based on length-weight data, one individual was likely a pup, and the rest were juveniles and adults.

Harbor seal

In twelve years, only one harbor seal was entrained by the Scattergood Generating Station CWS in December 1990. The male individual was taken to Sea World and subsequently released. Based on physical data (the individual was 48 in. long and weighed 99 pounds), the harbor seal was an adult.

Northern elephant seal

No known entrainments of northern elephant seals have occurred at the Scattergood Generating Station to date. Continued population increases of this species in southern California waters could increase the likelihood of elephant seal entrainments in the cooling water system of the generating station in the future.

7. THE ANTICIPATED IMPACT OF THE ACTIVITY UPON THE SPECIES OR STOCK OF MARINE MAMMAL.

Pinniped species taken at the Scattergood Generating Station include California sea lion and harbor seal. Northern elephant seal could potentially become entrained in the cooling water system, but to date, none have been entrained. The continued operation of the Scattergood Generating Station is likely to have a negligible effect on the population or stocks of these species.

The Marine Mammal Protection Act (as amended in 1994) requires the National Marine Fisheries Service (NMFS) to produce stock assessment reports for all marine mammal stocks in waters within the U.S. Exclusive Economic Zone. NMFS is also required to estimate the potential biological removal (PBR) for each stock of each species. The PBR value is the maximum number of marine mammals, not including natural mortalities, that may be removed from a marine mammal

stock while still allowing the stock to maintain or reach its optimum sustainable population. When the number of mammals removed from the stock exceeds the PBR, the stock is listed as "strategic", and additional conservation strategies are employed. PBR estimates were recently reported by NMFS (Forney et al. 2000).

The PBR for California sea lion (U.S. stock) is 6,591 sea lions per year. Total annual take from sources other than the Scattergood Generating Station include 1,131 fishery-related mortalities and 141 other human-related deaths, a total of 1,272 takes. Maximum annual mortality at the Scattergood Generating Station was eight individuals in 1995. This represents about 0.6% of the total takes and 0.1% of the current PBR. Continued takes of this species from this source will not significantly affect the status of the U.S. stock of California sea lions.

The PBR for harbor seal (California stock) is 1,678 harbor seals per year. Fishery-related mortalities were not estimated in recent years due to insufficient data. Available data on human-related takes (non-fishery) from 1995 to 1998 includes 41 harbor seal takes, 39 of them lethal. The one harbor seal entrained at the Scattergood Generating Station in 1990 represents 0.06% of the PBR.

The PBR for northern elephant seal (California breeding stock) is 2,142 animals per year. Although no recorded takes of this species have occurred at the Scattergood Generating Station, continued population increases of this species in southern California waters could increase the likelihood of elephant seal entrainments in the cooling water system of the generating station in the future. Annual fishery-related takes are estimated between 33 and 100 individuals per year (1.5% to 4.7% of the PBR, respectively), while there were 9 non-fishery-related takes (8 lethal) from 1995 through 1998. Therefore, any incidental take from the generating station, combined with these incidental takes, would be considered insignificant.

8. THE ANTICIPATED IMPACT OF THE ACTIVITY ON THE AVAILABILITY OF THE SPECIES OR STOCKS OF MARINE MAMMALS FOR SUBSISTENCE USES.

The operation of the Scattergood Generating Station cooling water system will not have an impact on the availability of marine mammals for subsistence uses, as there is no take of marine mammals for subsistence purposes in California.

9. THE ANTICIPATED IMPACT OF THE ACTIVITY UPON THE HABITAT OF THE MARINE MAMMAL POPULATIONS, AND THE LIKELIHOOD OF RESTORATION OF THE AFFECTED HABITAT.

The continued operation of the Scattergood Generating Station and its cooling water system has had, and is anticipated to have, a negligible impact on the habitat of seals and sea lions. The cooling water system of the generating station has operated under the authorization of, and in accordance with provisions of, the National Pollutant Discharge Elimination System (NPDES) permit issued by the California Regional Water Quality Control Board.

Other than the continued operation of the cooling water system, there are no Scattergood Generating Station activities planned for the offshore area. Therefore, potential seal/sea lion habitat effects are limited to those associated with the physical presence of the intake and discharge structures and the effects of the continued operation of the cooling water system.

Continuing studies conducted since 1978 indicate the generating station is not appreciably impacting the fish and macroinvertebrate populations offshore the Scattergood Generating Station, as populations therein remain healthy, abundant, and diverse (Lockheed and IRC 1979; IRC 1981a; MBC 1990-1996, 1997a, 1998-1999). The intake and discharge structures provide habitat for numerous fouling and macroinvertebrate species and fish species, including important prey items of seals and sea lions.

When the plant is on-line, warmed effluent from the Scattergood Generating Station is usually detected in the vicinity of the discharge during sampling (Lockheed and IRC 1979; IRC 1981a; MBC 1990-1996, 1997a, 1998-1999). However, warm waters rarely extend to water quality stations further than a few hundred feet from the discharge. The discharge of warm water has not modified the habitat of seals or sea lions, other than the potential trophic opportunity provided by the intake structure.

The operation of the Scattergood Generating Station requires the presence of an intake structure for the conveyance of ocean water for cooling purposes. The intake structure is located offshore from the generating station in approximately 9 m of water, and rises approximately 5 m into the water column. This structure provides an entry point for seals/sea lions to the cooling water system of the generating station. The live pinnipeds that become entrained are not able to swim back out due to disorientation, increased flow velocity in the riser shaft, the confinement of the structure, the lack of ambient light in the intake, or a combination of these factors.

In summary, the only discernible effect the intake structure has had on pinniped habitat is the incidental takes of California sea lions and harbor seals. With respect to restoration of habitat, the intake and discharge structures will be capped, removed, and appropriately disposed of as part of the decommissioning of the generating station so that fish, pinnipeds, and recreational divers cannot enter the CWS.

10. THE ANTICIPATED IMPACT OF THE LOSS OR MODIFICATION OF THE HABITAT ON THE MARINE MAMMAL POPULATIONS INVOLVED.

The continued operation of the Scattergood Generating Station and its cooling water system has had, and is anticipated to have, an insignificant impact on the habitat of seals and sea lions.

There have been no demonstrated significant changes in the physico-chemical conditions in the vicinity of the discharge structure (Lockheed and IRC 1979; IRC 1981a; MBC 1990-1996, 1997a, 1998-1999). It is unlikely there have been any changes in the availability of prey items of pinnipeds or that seal/sea lion behavior has been modified due to operation of the plant. Growth of fouling organisms on the intake structure is controlled, as the intake is cleaned periodically by qualified divers in accordance with generating station procedures.

As discussed previously, the continued presence of the intake structure does not noticeably modify the habitat of pinnipeds. The intake and discharge structures provide habitat for fish and macroinvertebrates that otherwise might not normally be found near these areas, and these animals are important prey items for seals and sea lions. The intake structure serves as a point of entry to the CWS where pinniped mortality has occurred. Pinnipeds, at least adults, do not appear to be involuntarily swept into the intakes. Intake velocities of less than 0.5 m/s (1.6 ft/s) at the velocity cap are less than the 8 to 16 ft/s measured swimming speed of adult pinnipeds.

11. THE AVAILABILITY AND FEASIBILITY (ECONOMIC AND TECHNOLOGICAL) OF EQUIPMENT, METHODS, AND MANNER OF CONDUCTING SUCH ACTIVITY OR OTHER MEANS OF EFFECTING THE LEAST PRACTICABLE ADVERSE IMPACT UPON THE AFFECTED SPECIES OR STOCKS, THEIR HABITAT, AND ON THEIR AVAILABILITY FOR SUBSISTENCE USES, PAYING PARTICULAR ATTENTION TO ROOKERIES, MATING GROUNDS, AND OTHER AREAS OF SIMILAR SIGNIFICANCE.

Options to prevent entrainment of marine life (primarily fish) have been explored in the past by the industry, and research of available technologies remains ongoing. Complete exclusion of pinnipeds from the cooling water system of the Scattergood Generating Station would require either physical barriers or some method(s) to discourage their presence in the vicinity of the intake structures. As a consequence of plant operation, the generating station is not directly impacting seal/sea lion habitat, nor are there subsistence fisheries in southern California. With no significant

projected impacts from the generating station to pinniped populations, or to sensitive habitat, the primary purpose of any proposed actions would be the prevention of seal/sea lion takes, including live and lethal takes, by the entrapment of these animals in the intake tunnels of the Scattergood Generating Station.

In the mid-1970s, specialized cages were designed and deployed at coastal generating stations to facilitate the safe removal of live pinnipeds from in-plant forebay areas. The cages were redesigned in the late 1980s, and remain in operation today. When in-plant inspections reveal the presence of a pinniped in the CWS, a floating marine mammal cage is safely lowered into the forebay area. In time, the mammal begins to tire and seeks a haul-out site. Since no haul-out structures other than the cage exist in the forebay, the mammal eventually enters the cage, and its weight deploys a treadle that closes a gate, preventing the mammal from exiting. At this time, the cage is lifted out of the forebay by crane, and observations and data are recorded on available data sheets concerning the pinniped. An example of the data sheet is presented in Appendix B. Examples of data recorded include date and time of capture, species of mammal, length and weight, sex, visible abnormalities, and estimated health. Data sheets are filled out and submitted to NMFS, even in cases of deceased animals. Pinnipeds that are visibly unhealthy or injured are transferred to personnel trained in the health and rehabilitation of marine mammals at a designated facility off-site.

Numerous other options, including lights, sound, and marine mammal exclusion bars, have been considered by LADWP, and most were considered unfeasible. These options were considered primarily with respect to entrainment of ichthyoplankton and impingement of fish. Installation of flashing lights at the discharge was rejected due to engineering and maintenance feasibility, and the potential to attract more fish to the area. Sound barriers to scare marine mammals away from the intake area were also considered. Again, engineering feasibility in such a dynamic environment and test results led to the rejection of this option. Originally, the intake entrance was kept open, as it was assumed there was the potential for any barrier placed across the entrance to become fouled and inhibit the inward flow of seawater. The improved design of the marine mammal rescue devices, incorporated in the late 1980s, has enhanced rescue operations at several plants in southern California.

The initial 316(b) demonstration for the generating station concluded the intake currently in use represented the best technology available (IRC 1981b), therefore the applicability of alternative technologies was not addressed. A review of fish impingement from 1981 through 1995 concluded that the cooling water intake system of the Scattergood Generating Station reflects the best technology available (MBC 1997b).

12. WHERE THE PROPOSED ACTIVITY WOULD TAKE PLACE IN OR NEAR A TRADITIONAL ARCTIC SUBSISTENCE HUNTING AREA AND/OR AFFECT THE AVAILABILITY OF A SPECIES OR STOCK OF MAMMAL FOR ARCTIC SUBSISTENCE USES, THE APPLICANT MUST SUBMIT EITHER A PLAN OF COOPERATION OR INFORMATION THAT IDENTIFIES WHAT MEASURES HAVE BEEN TAKEN AND/OR WILL BE TAKEN TO MINIMIZE ANY ADVERSE EFFECTS ON THE AVAILABILITY OF MARINE MAMMALS FOR SUBSISTENCE USES.

The activity does not take place in or near a traditional Arctic subsistence hunting area and does not affect the availability of a species or stock of mammal for Arctic subsistence uses.

13. THE SUGGESTED MEANS OF ACCOMPLISHING THE NECESSARY MONITORING AND REPORTING THAT WILL RESULT IN INCREASED KNOWLEDGE OF THE SPECIES, THE LEVEL OF TAKING OR IMPACTS ON POPULATIONS OF MARINE MAMMALS THAT ARE EXPECTED TO BE PRESENT WHILE CONDUCTING ACTIVITIES AND SUGGESTED MEANS OF MINIMIZING BURDENS BY COORDINATING SUCH REPORTING REQUIREMENTS WITH OTHER SCHEMES ALREADY APPLICABLE TO PERSONS CONDUCTING THE ACTIVITY. MONITORING PLANS SHOULD INCLUDE A DESCRIPTION OF THE SURVEY TECHNIQUES THAT WOULD BE USED TO DETERMINE THE MOVEMENT AND ACTIVITY OF MARINE MAMMALS NEAR THE ACTIVITY SITE(S) INCLUDING MIGRATION AND OTHER HABITAT USES, SUCH AS FEEDING.

Currently, daily inspections of the forebay are performed by plant operators. When a live pinniped is observed, a marine mammal cage is lowered into the forebay so the mammal can be rescued quickly. Pinniped carcasses are reported to NMFS and disposed of at an appropriate site. Live pinniped are inspected for external injuries. Non-injured animals are normally released at nearby beach sites, while injured or unhealthy animals are released to a qualified rescue organization.

As required by the NPDES permit of the Scattergood Generating Station, annual receiving water monitoring studies (including but not limited to annual offshore water quality and benthic surveys) are conducted offshore the generating station. During field activities associated with these programs, presence, abundance and location of marine mammals, such as seals, sea lions, whales, and dolphins, is noted. This information is made available in annual NPDES monitoring reports (Lockheed and IRC 1979; IRC 1981a; MBC 1990-1996, 1997a, 1998-1999).

14. SUGGESTED MEANS OF LEARNING OF, ENCOURAGING, AND COORDINATING RESEARCH OPPORTUNITIES, PLANS, AND ACTIVITIES RELATING TO REDUCING SUCH INCIDENTAL TAKING AND EVALUATING ITS EFFECTS.

The Los Angeles Department of Water and Power continues to explore options related to the reduction of effects on marine life, including marine mammals. The Los Angeles Department of Water and Power expects to attend periodic meetings between the various generating facilities and NMFS to pool knowledge and efforts to reduce entrainment of marine mammals.

LITERATURE CITED

Boveng, P. 1988. Status of the northern elephant seal population on the U.S. West Coast. Admin. Rep. LJ-88-05. Southwest Fisheries Science Center, National Marine Fisheries Service, P.O. Box 271, La Jolla, CA. 35 p.

California Department of Fish and Game. 2000. State and federally listed endangered and threatened animals of California. April 2000. 12 p.

California Regional Water Quality Control Board - Los Angeles Region. 1995. Waste discharge requirements - Scattergood Generating Station (NPDES Permit. No. CA0000370, CI No. 1886).

CDFG. See California Department of Fish and Game.

CRWQCB. See California Regional Water Quality Control Board - Los Angeles Region.

Forney, K.A., J. Barlow, M.M. Muto, M. Lowry, J. Baker, G. Cameron, J. Mobley, C. Stinchcomb, and J.V. Caretta. 2000. (DRAFT) U.S. Pacific Marine Mammal Stock Assessments: 2000. U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Fisheries Science Center, La Jolla, California. Draft - January 2000.

Intersea Research Corporation. 1981a. 1980 receiving water monitoring report. National pollutant discharge elimination system. Monitoring and reporting program for the Scattergood and El Segundo generating stations. *Prepared for Los Angeles Department of Water & Power and* Souther California Edison Company. April 1981. Intersea Research Corporation. 117 p. plus appendices.

Intersea Research Corporation. 1981b. Scattergood Generating Station cooling water intake study: 316(b) demonstration program. Prepared for the Los Angeles Department of Water and Power, Los Angeles, California. 540 p. plus appendices.

IRC. See Intersea Research Corporation.

LCMR and IRC. See Lockheed Center for Marine Research and Intersea Research Corporation.

Lockheed Center for Marine Research and Intersea Research Corporation. 1979. 1978 Receiving water monitoring report. *National pollutant discharge elimination system. Monitoring and* reporting program for the Scattergood and El Segundo generating stations. Prepared for Los Angeles Department of Water & Power and Southern California Edison Company. April 1979. Lockheed Center for Marine Research and Intersea Research Corporation. 129 p. plus appendices.

Lowry, M.S., P. Boveng, R.J. DeLong, C.W. Oliver, B.S. Stewart, H. DeAnda, and J. Barlow. 1992. Status of the California sea lion (*Zalophus californianus californianus*) population in 1992. Admin. Rep. LJ-92-32. Southwest Fisheries Science Center, National Marine Fisheries Service, , La Jolla, CA 92038. 34 p.

MBC See Marine Biological Consultants, Inc. or MBC Applied Environmental Sciences.

MBC Applied Environmental Sciences. 1990. *National Pollutant Discharge Elimination System*, 1990 receiving water monitoring report, Scattergood and El Segundo Generating Stations, Los Angeles County, California. 1990 survey. Prepared for Los Angeles Department of Water and Power, Los Angeles, CA, and Southern California Edison Company, Rosemead, CA. 39 p. plus appendices.

MBC Applied Environmental Sciences. 1991. National Pollutant Discharge Elimination System, 1991 receiving water monitoring report, Scattergood and El Segundo Generating Stations, Los Angeles County, California. Prepared for Los Angeles Department of Water and Power, Los Angeles, CA, and Southern California Edison Company, Rosemead, CA. 91-RD-27. 44 p. plus appendices.

MBC Applied Environmental Sciences. 1992. National Pollutant Discharge Elimination System, 1992 receiving water monitoring report, Scattergood and El Segundo Generating Stations, Los Angeles County, California. Prepared for Los Angeles Department of Water and Power, Los Angeles, CA, and Southern California Edison Company, Rosemead, CA. 92-RD-012. 44 p. plus appendices.

MBC Applied Environmental Sciences. 1993a. National Pollutant Discharge Elimination System, 1993 receiving water monitoring report, Scattergood and El Segundo Generating Stations, Los Angeles County, California. Prepared for Los Angeles Department of Water and Power,

Los Angeles, CA, and Southern California Edison Company, Rosemead, CA. 93-RD-008. 47 p. plus appendices.

MBC Applied Environmental Sciences. 1993b. Santa Monica Bay Characterization Study. Prepared for Santa Monica Bay Restoration Project Monterey Park, CA. 316 p. plus appendices.

MBC Applied Environmental Sciences. 1994. National Pollutant Discharge Elimination System, 1994 receiving water monitoring report, Scattergood and El Segundo Generating Stations, Los Angeles County, California. Prepared for Los Angeles Department of Water and Power, Los Angeles, CA, and Southern California Edison Company, Rosemead, CA. 94-RD-007. 45 p. plus appendices.

MBC Applied Environmental Sciences. 1995. National Pollutant Discharge Elimination System 1995 receiving water monitoring report, Los Angeles Region. Prepared for Los Angeles Dept. of Water and Power and Southern California Edison Company. 96-RD-001. 110 p. plus appendices.

MBC Applied Environmental Sciences. 1996. National Pollutant Discharge Elimination System 1996 receiving water monitoring report, Los Angeles Region. Prepared for Los Angeles Dept. of Water and Power and Southern California Edison Company. 97-RD-001. 134 p. plus appendices.

MBC Applied Environmental Sciences. 1997a. National Pollutant Discharge Elimination System, 1997 receiving water monitoring report, Scattergood and El Segundo Generating Stations, Los Angeles County, California. Prepared for Los Angeles Department of Water and Power, Los Angeles, CA, and Southern California Edison Company, Rosemead, CA. 97-EA-03. 48 p. plus appendices.

MBC Applied Environmental Sciences. 1997b. 316(b) document for Scattergood, Haynes, and Harbor Generating Stations. Prepared for Los Angeles Department of Water and Power. 115 p. plus appendices.

MBC Applied Environmental Sciences. 1998a. National Pollutant Discharge Elimination System, 1998 receiving water monitoring report, Scattergood and El Segundo Generating Stations, Los Angeles County, California. Prepared for Los Angeles Department of Water and Power, Los Angeles, CA, and Southern California Edison Company, Rosemead, CA. and El Segundo Power L.L.C. 98-EA-02. 47 p. plus appendices.

MBC Applied Environmental Sciences. 1998b. National Pollutant Discharge Elimination System, 1998 receiving water monitoring report, Reliant Energy Mandalay Generating Station, Ventura County, California. Prepared for Southern California Edison Company and Reliant Energy. 98-EA-06. 33 p. plus appendices.

MBC Applied Environmental Sciences. 1999. National Pollutant Discharge Elimination System, 1999 receiving water monitoring report, Scattergood and El Segundo Generating Stations, Los Angeles County, California. Prepared for Los Angeles Department of Water and Power, Los Angeles, CA, Southern California Edison Company, Rosemead, CA, and El Segundo Power L.L.C.. 99-EA-02. 50 p. plus appendices.

Reeves, R.R., B.S. Stewart, and S. Leatherwood. 1992. The Sierra Club handbook of seals and sirenians. Sierra Club Books, San Francisco, CA. 359 p.

APPENDIX A

History of marine mammal takes
Scattergood Generating Station, 1989 - 2000

Appendix A. History of marine mammal takes at Scattergood Generating Station, 1989 to 2000.

			Initial Condition				Action						
Observ. Date	Removal Date	Species	Alive	Fresh dead	Mod. Decomp.	Adv. Decomp.	Buried	Refuse	Other (comments)	Sex	Length	Weight (lb.)	Comments
7/18/1989	7/24/1989	Calif. sea lion	X						X	F			Released to the ocean at Dockweiller Beach by Plant Personnel and County Life Guards
8/17/1989	8/18/1989	Calif. sea lion			X			X			60"	80	Carcass found in forebay, moderate decomp., sent to refuse
5/24/1990	5/24/1990	Calif. sea lion		X				X			30"	60	Carcass found in forebay, fresh dead, sent to refuse
6/20/1990	6/20/1990	Calif. sea lion				X		X			60"	150	Carcass found in forebay, very advanced decomp., sent to refuse
8/2/1990	8/2/1990	Calif. sea lion		X				X			48"		Carcass found in forebay, fresh dead, sent to refuse
8/13/1990	8/13/1990	Calif. sea lion			X			X			56"		Carcass found in forebay, moderate decomp., sent to refuse
10/9/1990	10/9/1990	Calif. sea lion		X				X			47"		Carcass found in forebay, fresh dead, sent to refuse
12/3/1990	12/3/1990	Pac. harbor seal	X						X	M	48"	99	Entrained alive, taken to Sea World and released, no rehab. required
12/17/1990	12/18/1990	Calif. sea lion			X			X			52"	80	Carcass found in forebay, moderate decomp., sent to refuse
2/27/1992	2/27/1992	Calif. sea lion	X						X		66"	110	Entrained alive, released in ocean-El Segundo, no injuries or sickness observed
3/8/1992	3/8/1992	Calif. sea lion			X			X		M	36"	40	Carcass found in forebay, moderate decomp., sent to refuse
4/18/1992	4/18/1992	Calif. sea lion		X				X			36"	80	Carcass found in forebay, fresh dead, sent to refuse
7/14/1994	7/14/1994	Calif. sea lion		X				X			48"	30	Carcass found in forebay, fresh dead, sent to refuse
7/20/1994	7/20/1994	Calif. sea lion		X				X			60"	75	Carcass found in forebay, fresh dead, sent to refuse
9/19/1994	9/19/1994	Calif. sea lion		X			X		X		54"	66	Carcass found in forebay, fresh dead, buried,1/4" hole with 1" cut on side of carcass
9/19/1994	9/20/1994	Calif. sea lion	X						X		60"	200	Entrained alive, released to Los Angeles County Animal Control
9/26/1994	9/26/1994	Calif. sea lion				X	X		X	M	36"	125	Carcass found in forebay, advanced decomp., buried (Los Angeles City of Sanitation)
12/9/1994	12/9/1994	Calif. sea lion	X						X		36"	60	Entrained alive, released to West Los Angeles Animal Care and Control Center
12/30/1994	12/30/1994	Calif. sea lion			X		X		X		54"	80	Carcass found in forebay, moderate decomp., buried (Los Angeles City of Sanitation)
2/15/1995	2/15/1995	Calif. sea lion		X				X			40"	80	Carcass found in forebay, fresh dead, sent to refuse
3/30/1995	3/30/1995	Calif. sea lion		X				X			48"	65	Carcass found in forebay, fresh dead, sent to refuse
5/1/1995	5/1/1995	Calif. sea lion		X				X			42"	75	Carcass found in forebay, fresh dead, sent to refuse
6/22/1995	6/22/1995	Calif. sea lion		X				X			30"	25	Carcass found in forebay, fresh dead, sent to refuse
8/9/1995	8/9/1995	Calif. sea lion		X				X			42"	60	Carcass found in forebay, fresh dead, sent to refuse
8/16/1995	8/16/1995	Calif. sea lion		X				X			42"	100	Carcass found in forebay, fresh dead, sent to refuse
9/5/1995	9/5/1995	Calif. sea lion		X				X			56"	100	Carcass found in forebay, fresh dead, sent to refuse
10/2/1995	10/2/1995	Calif. sea lion		X				X			48"	75	Carcass found in forebay, fresh dead, sent to refuse
5/6/1996	5/6/1996	Calif. sea lion		X				X					Carcass found in forebay, fresh dead, sent to refuse
5/25/1996	5/28/1996	Calif. sea lion		X				X			48"	90	Carcass found in forebay, fresh dead, sent to refuse
8/15/1996	8/15/1996	Calif. sea lion		X				X			40"	30+	Carcass found in forebay, fresh dead, sent to refuse
8/26/1996	8/26/1996	Calif. sea lion		X				X			36"	30	Carcass found in forebay, fresh dead, sent to refuse
10/3/1996	10/3/1996	Calif. sea lion		X				X			55"	60	Carcass found in forebay, fresh dead, sent to refuse
12/20/1996	12/20/1996	Calif. sea lion		X				X				50	Carcass found in forebay, fresh dead, sent to refuse

Appendix A. (Cont.).

Observ. Date	Removal Date	Species	Initial Condition: Alive	Initial Condition: Fresh dead	Initial Condition: Mod. Decomp.	Initial Condition: Adv. Decomp.	Action: Buried	Action: Refuse	Action: Other (comments)	Sex	Length	Weight (lb.)	Comments
6/4/1998	6/4/1998	Calif. sea lion		X			X		X	F	40"	30	Carcass found in forebay, fresh dead, buried (L.A. City Recyclable Coll.), animal very thin
8/10/1998	8/12/1998	Calif. sea lion			X			X			45"	45	Carcass found in forebay, moderate decomp.,sent to refuse, head trauma (smashed head)
9/15/1998	9/17/1998	Calif. sea lion			X			X					Carcass found in forebay, moderate decomp., sent to refuse
10/23/1998	10/23/1998	Calif. sea lion		X				X			48"	60	Carcass found in forebay, fresh dead, sent to refuse
8/31/2000	8/31/2000	Calif. sea lion		X				X			42"	80	Carcass found in forebay, fresh dead, sent to refuse
9/21/2000	9/21/2000	Calif. sea lion		X				X			50"	130	Carcass found in forebay, fresh dead, sent to refuse
10/6/2000	10/6/2000	Calif. sea lion		X				X			55"	100	Carcass found in forebay, fresh dead, sent to refuse
10/20/2000	10/23/2000	Calif. sea lion	X					X			42"		

APPENDIX B

Marine Mammal Stranding Report

MARINE MAMMAL STRANDING REPORT

SID# _____ (NMFS USE)

FIELD NO.: _____ NMFS REGISTRATION NO.: _____

COMMON NAME: _____ GENUS: _____ SPECIES: _____

EXAMINER

Name: _____ Agency: _____ Phone: _____

Address: _____

LOCATION

State: _____ County: _____

City: _____

Locality Details: _____

*Latitude: _____ N

*Longitude: _____ W

TYPE OF OCCURRENCE

Mass Stranding: ☐ Yes ☐ No # Animals _____

Human Interaction: ☐ Yes ☐ No ☐ ?

Check one:
- ☐ 1. Boat Collision
- ☐ 2. Shot
- ☐ 3. Fishery Interaction
- ☐ 4. Other _____

How determined: _____

Other Causes (if known): _____

DATE OF INITIAL OBSERVATION:

Yr. _____ Mo. _____ Day _____

CONDITION: Check one:
- ☐ 1. Alive
- ☐ 2. Fresh dead
- ☐ 3. Moderate decomp.
- ☐ 4. Advanced decomp.
- ☐ 5. Mummified
- ☐ ?. Unknown

DATE OF EXAMINATION:

Yr. _____ Mo. _____ Day _____

CONDITION: Check one:
- ☐ 1. Alive
- ☐ 2. Fresh dead
- ☐ 3. Moderate decomp.
- ☐ 4. Advanced decomp.
- ☐ 5. Mummified
- ☐ ?. Unknown

LIVE ANIMAL — Condition and Disposition:

Check one or more:
- ☐ 1. Released at site
- ☐ 2. Sick
- ☐ 3. Injured
- ☐ 4. Died
- ☐ 5. Euthanized
- ☐ 6. Rehabilitated and released
- ☐ ?. Unknown

Transported to: _____

☐ Died ☐ Released Date: _____

TAGS APPLIED?: ☐ Yes ☐ No

TAGS PRESENT?: ☐ Yes ☐ No

	Dorsal	Left	Right
Tag No.(s):			
Color (s):			
Type:			
Placement		Front/Rear	Front/Rear

CARCASS — Disposition:

Check one:
- ☐ 1. Left at site
- ☐ 2. Buried
- ☐ 3. Towed
- ☐ 4. Sci. collection: (see below)
- ☐ 5. Edu. collection: (see below)
- ☐ 6. Other _____
- ☐ ?. Unknown

NECROPSIED? ☐ Yes ☐ No

MORPHOLOGICAL DATA:

Sex — Check one:
- ☐ 1. Male
- ☐ 2. Female
- ☐ ?. Unknown

Straight Length: _____ ☐ cm ☐ in ☐ est

*Weight _____ ☐ kg ☐ lb ☐ est

PHOTOS TAKEN? ☐ Yes ☐ No

REMARKS: _____

DISPOSITION OF TISSUE/SKELETAL MATERIAL: _____

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