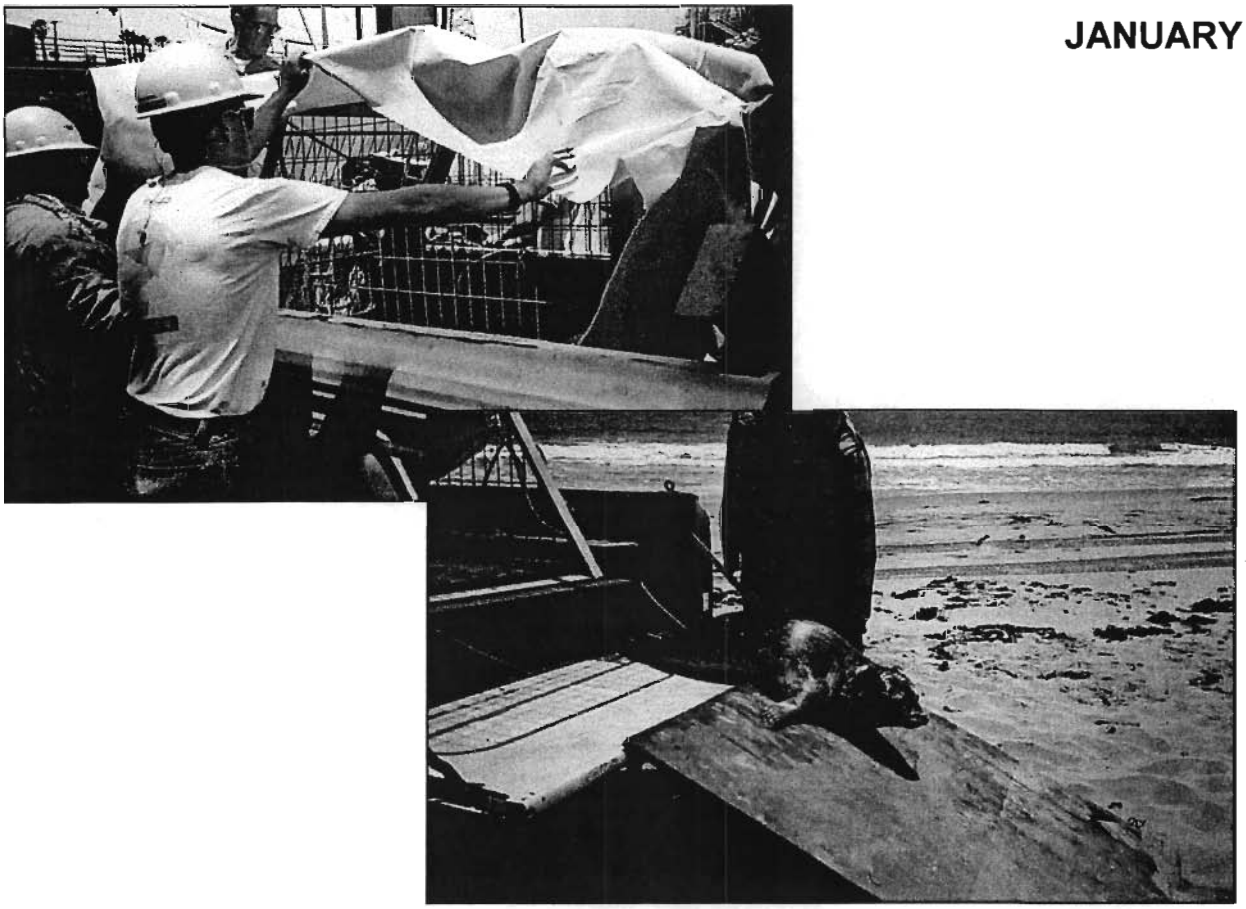
JC

RELIANT ENERGY ORMOND BEACH GENERATING STATION

Marine Mammal Protection Act
Small Take Permit Application

JANUARY 2001



Prepared for:

RELIANT ENERGY
OXNARD, CALIFORNIA

Prepared by:

MBC *APPLIED ENVIRONMENTAL SCIENCES*
COSTA MESA, CALIFORNIA

Marine Mammal Protection Act
Application for Small Take Permit
Reliant Energy Ormond Beach generating station
Oxnard, California

28 February 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 - Reliant Energy Ormond Beach generating station
Small Take Exemption Permit Application

Dear Mr. Lecky:

Reliant Energy, owner of the Reliant Energy Ormond Beach 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 lethal taking of small numbers of pinnipeds (harbor seals, California sea lions, and northern elephant seals) as a result of plant operations.

Reliant Energy Ormond Beach generating station generates 1,500 megawatts of electrical power for the people of southern California. Formerly known as the Ormond Beach generating station, Southern California Edison (SCE) sold the plant to Houston Industries, now known as Reliant Energy, and transfer of ownership was completed in May 1998. As described in the application, the plant draws ocean water through an offshore intake structure to provide cooling for the plant's condensers and other necessary components. The intake structure is located approximately 2,070 ft offshore the plant in 35 feet of water. The cooling water is pumped back to the ocean through an offshore discharge structure. Small numbers of Pacific harbor seals, California sea lions, and one elephant seal 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 Reliant Energy Ormond Beach generating station were specifically designed and located to minimize their environmental effects, particularly with respect to thermal discharge and fish entrapment. Since 1977, SCE and Reliant Energy have observed and reported the entrainment of pinnipeds at the plant to the National Marine Fisheries Service (NMFS), Southwest Region.

A total of 75 pinnipeds have been entrained at the plant since 1977, a rate of about three animals per year. Incidental takes at the Reliant Energy Ormond Beach generating station have had negligible effects on pinniped stocks and the ability of the pinniped populations to reach and maintain their optimum sustainable levels, and are only a very small fraction of the total number of reported non-natural mortalities that occur annually. Nonetheless, Reliant Energy, 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 February, 1995, for small takes.

In parallel with the submittal of the exemption permit application, Reliant Energy continues to evaluate effective, implementable means to minimize pinniped entrainment. Marine mammal exclusion bars, currently installed on the intake structure, act as visual cues to deter animals from entering the intake structure. Marine mammal rescue cages, in use since the mid-1970s, allow the safe release of live animals from inside the plant.

Reliant Energy 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 (805) 986-7247.

Sincerely,

Reliant Energy Ormond Beach generating station

Carlos Scipioni
Engineer

RELIANT ENERGY ORMOND BEACH GENERATING STATION

Marine Mammal Protection Act
Small Take Permit Application

28 February 2001

Prepared for:
Reliant Energy
6635 South Edison Drive
Oxnard, CA 93033

Prepared by:
MBC Applied Environmental Sciences
3000 Redhill Avenue
Costa Mesa, California 92626

TABLE OF CONTENTS

APPLICATION 1

1. A DETAILED DESCRIPTION OF THE SPECIFIC ACTIVITY OR CLASS OF ACTIVITIES THAT CAN BE EXPECTED TO RESULT IN INCIDENTAL TAKINGS OF MARINE MAMMALS 1
   Design and history of Reliant Energy Ormond Beach generating station's cooling water system 1
   Incidental takings by the cooling system intake 4

2. THE DATE(S) AND DURATION OF SUCH ACTIVITY AND THE SPECIFIC GEOGRAPHICAL REGION WHERE IT WILL OCCUR 4

3. THE SPECIES AND NUMBERS OF MARINE MAMMALS LIKELY TO BE FOUND WITHIN THE ACTIVITY AREA 4
   California sea lion 5
   Harbor seal 5
   Northern elephant seal 7

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 7
   California sea lion 8
   Harbor seal 8
   Northern elephant seal 8

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 9

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 ARE LIKELY TO OCCUR 9
   California sea lion 9
   Harbor seal 9
   Northern elephant seal 9

7. THE ANTICIPATED IMPACT OF THE ACTIVITY UPON THE SPECIES OR STOCK OF MARINE MAMMAL 9

8. THE ANTICIPATED IMPACT OF THE ACTIVITY ON THE AVAILABILITY OF THE SPECIES OR STOCKS OF MARINE MAMMALS FOR SUBSISTENCE USES 10

9. THE ANTICIPATED IMPACT OF THE ACTIVITY UPON THE HABITAT OF THE MARINE MAMMAL POPULATIONS, AND THE LIKELIHOOD OF RESTORATION OF THE AFFECTED HABITAT 10

10. THE ANTICIPATED IMPACT OF THE LOSS OR MODIFICATION OF THE HABITAT OF THE MARINE MAMMAL POPULATIONS INVOLVED 11

11. THE AVAILABILITY AND FEASIBILITY (ECONOMIC AND TECHNOLOGICAL) OF EQUIPMENT, METHODS, AND MANNER OF CONDUCTING SUCH ACTIVITY OR OTHER MEANS OF EFFECTING THE LEAST PRACTICAL ADVERSE IMPACT UPON THE AFFECTED SPECIES OR STOCKS, THEIR HABITAT, AND ON THEIR AVAILABILITY FOR SUBSISTENCE USES, PAYING PARTICULAR ATTENTION TO ROOKERIES, MATING GROUND, AND OTHER AREAS OF SIMILAR SIGNIFICANCE 12

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 13

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 13

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

LITERATURE CITED 14

ATTACHMENT
Marine Mammal Stranding Report.

LIST OF FIGURES

Figure 1. Location of Reliant Energy Ormond Beach generating station 2
Figure 2. Layout of velocity cap (top) and profile at the offshore intake structure (bottom). Reliant Energy Ormond Beach generating station 3

LIST OF TABLES

Table 1. Number and condition of pinnipeds entrained at the Reliant Energy Ormond Beach generating station, 1977 to 2000 5
Table 2. History of marine mammal takes at Reliant Energy Ormond Beach generating station, 1977 to 2000 6

MARINE MAMMAL PROTECTION ACT
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 Reliant Energy Ormond Beach generating station circulating water system (CWS). Formerly called the Ormond Beach generating station, the generating station was sold to Houston Industries, now known as Reliant Energy, in April 1998. The generating station is currently operated by Southern California Edison Company (SCE) personnel. The Reliant Energy Ormond Beach generating station is located on the southern California coast in the city of Oxnard, approximately 3.7 km southeast of the entrance to Port Hueneme (Figure 1). Reliant Energy Ormond Beach generating station consists of two gas-fueled steam-electric generating units, each rated at 750 megawatts (Mw) for a total capacity of 1,500 Mw.

The live and lethal takes occur when pinnipeds enter the submerged cooling water intake structure, located approximately 631 m (2,070 ft) offshore the generating station in 10.7 m (35 ft) of water. Some proportion of those pinnipeds entering the intake structures become entrained in the CWS as the cooling water is drawn through the intake conduit to the plant. Continuous cooling water flow is necessary for generation of electricity and for the safety of the plant.

Design and History of Reliant Energy Ormond Beach generating station's Cooling Water System.

Ocean water for cooling purposes is supplied to the Reliant Energy Ormond Beach generating station via a single cooling water system. The flow is directed to a screening facility within the plant. Four circulating water pumps with a total capacity of 476,000 gallons per minute (gpm) (approximately 685 million gallons per day [mgd]). The four circulating water pumps supply 454,000 gpm to the main condensers to condense exhaust steam from the turbines and 22,000 gpm to auxiliary heat exchangers for bearing cooling and other plant equipment cooling functions.

The single intake that supplies cooling water to all units is located 631 m (2,070 ft) offshore the generating station at a bottom depth of 10.7 m (35 ft) (Figure 2). The intake structure consists of a 4.3-m inside diameter (ID) inlet conduit and a 34-ft by 27-ft velocity cap, suspended 4 ft above a 24.7-ft ID vertical riser. The elevation of the intake riser lip is -20 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. Average velocity at the intake is 0.8 meters per second (m/s).

At the onshore intake screenwell, the 4.3-m diameter horizontal intake conduit gradually expands to four 3.4-m (11.2-ft) wide screen channels. Each screen and pump combination is isolated by walls, precluding crossover flow at the traveling screens. The cooling water is then directed through trash bars and vertical traveling screens which prevent debris, fish, and invertebrates from entering the CWS. The trash bars consist of vertical steel bars with 4.5" openings. Beyond the trash racks, the water is conveyed through four travelling screens with 5/8" mesh for removal of small debris, fish, and macroinvertebrates. Design velocity through the screens is 0.6 m/s. Debris, fish, and invertebrates are removed from the screens by high-pressure sprays and conveyed to trash baskets for disposal.

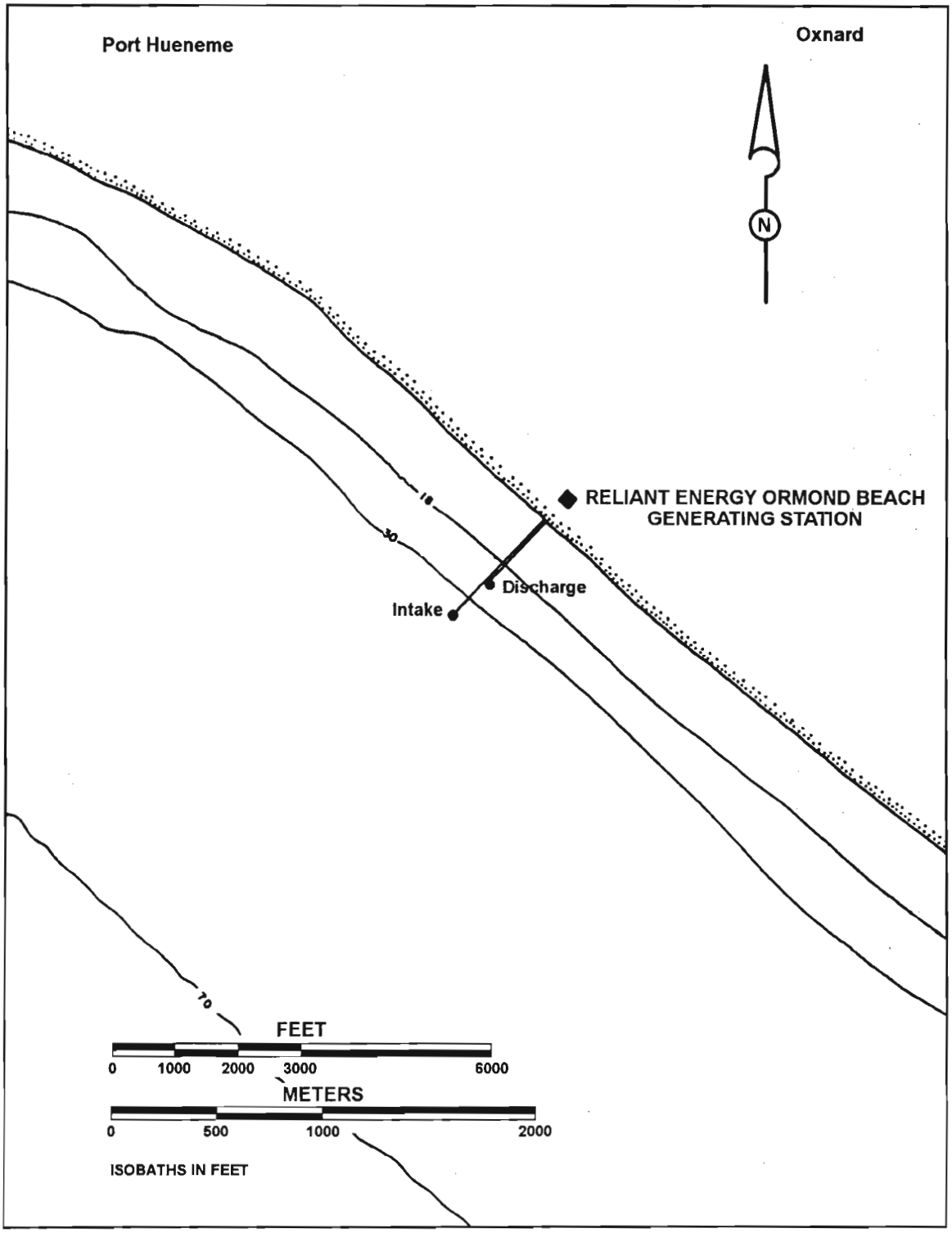
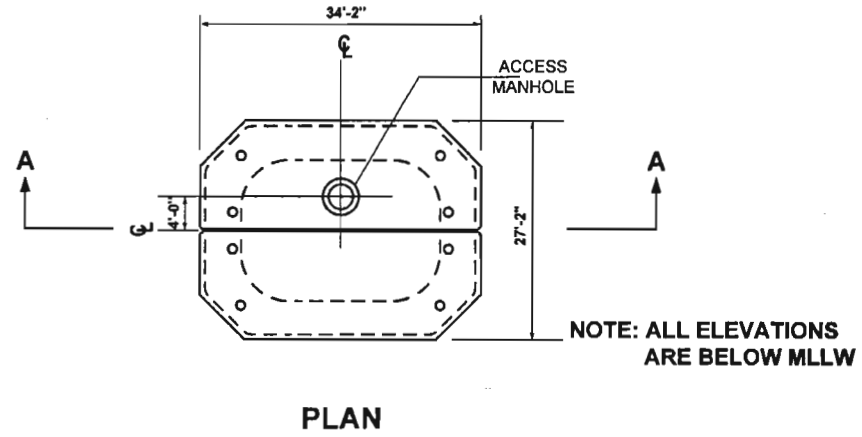


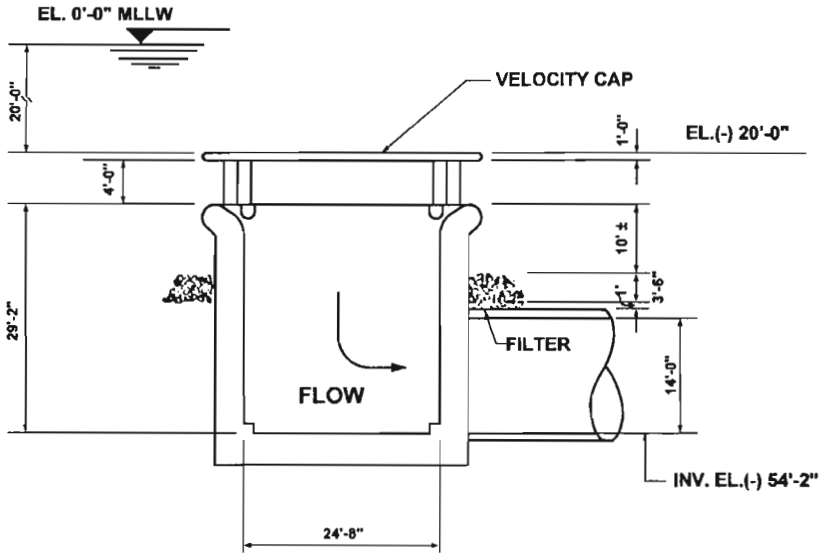
Figure 1. Location of Reliant Energy Ormond Beach generating station.

The cooling water is then pumped to the main condensers through four 2.1-m (7-ft) ID pipes. Flows are then joined to return to the discharge chamber of the screenwell, and subsequently discharged through a single 4.3-m (14-ft) ID discharge conduit. Warmed cooling water is discharged

offshore the generating station through a single discharge structure, resembling the intake but without the velocity cap, terminating approximately 174 m (570 ft) inshore of the intake structure. The discharge structure is located in approximately 9 m (29.5 ft) of water.



PLAN



SECTION A-A

Figure 2. Layout of velocity cap (top) and profile of the offshore intake structure (bottom). Reliant Energy Ormond Beach generating station.

Products of other plant systems join the cooling water stream prior to discharge. Condenser biofouling is controlled by treating the cooling water with chlorine before it passes through the condenser tubes. Chlorine concentrations in the discharged water are controlled at a level to be in compliance with existing National Pollutant Discharge Elimination System (NPDES) permit limitations. Other low-volume inplant waste streams which are generated periodically, such as boiler condensate overboard, yard drains, in-plant drains, floor drains, and sampling streams are either discharged to a retention basin and/or chemically treated prior to ocean discharge, or taken off-site to an appropriate disposal facility. These wastes are generated infrequently (CRWQCB 1994).

Incidental takings by the cooling system intake.

Because of the underwater, offshore location of the intake structures, pinnipeds have not been directly observed entering the velocity cap. Since horizontal intake velocities are relatively low (0.8 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 into the intake velocity cap in search of or in pursuit of prey, or out of natural curiosity. Once inside the velocity cap, the flow rate increases as the mammal approaches the center vertical riser that connects to the intake conduit. 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. Healthy seals are subsequently released to the ocean. Visibly ill or injured seals are transported to specialized facilities for further observation and/or treatment prior to being released.

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

The location of the Reliant Energy Ormond Beach generating station intake structure, where the takes occur, is illustrated in Figure 1. The intake structure is located approximately 631 m (2,070 ft) from shore off Oxnard, California.

Pinniped (seal and sea lion) takes at Reliant Energy Ormond Beach generating station were first reported in July 1977 (Table 1). Of the 75 recorded marine mammal entrainments between July 1977 and September 2000, most occurred between May and September, while fewest entrainments occurred between October and January. Eight pinnipeds were entrained in 1979, 1980, and 1994, seven in 1987, and six in 1995 and 1997.

Of the 41 California sea lions entrained, 27 were found dead, 12 were released unharmed, and two initially seen in the forebay, were not sighted again, suggesting they swam out the intake tunnel under reduced flow conditions. Two of the 12 released entered the plant from the beach, apparently crawling under a boundary fence (Table 2). Of the 33 harbor seals entrained, 13 were found dead and 20 were released unharmed. One individual northern elephant seal was entrained in 1979 and subsequently released unharmed.

Based on this history of seal and sea lion takes in the Oxnard area, it is reasonable to assume that seal/sea lion takes will continue, especially from May to September, throughout the plant's operating life.

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 Reliant Energy Ormond Beach 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).

Table 1. Number and condition of pinnipeds entrained at the Raliant Energy Ormond Beach generating station, 1977 to 2000.

	Harbor seals		California sea lions		Nor. elephant seal
Year	released	found dead	released	found dead	released
1977	-	-	1	-	-
1978	-	-	-	-	-
1979	2	1	4	-	1
1980	2	2	2	2	-
1981	3	-	1	-	-
1982	-	-	-	-	-
1983	-	3	-	2	-
1984	-	-	-	-	-
1985	2	-	1	2	-
1986	1	1	-	3	-
1987	3	1	1	2	-
1988	2	-	-	-	-
1989	-	-	-	-	-
1990	-	-	-	-	-
1991	1	-	-	1	-
1992	-	-	-	1	-
1993	-	-	-	2	-
1994	2	2	1	3	-
1995	1	1	-	4	-
1996	-	-	-	-	-
1997	1	1	-	4	-
1998	-	-	2	-	-
1999	-	-	-	-	-
2000	-	1	1	1	-
Total	**20**	**13**	**8**	**27**	**1**

California sea lions and harbor seals are usually observed by biologists offshore of the Reliant Energy Ormond Beach generating station during annual NPDES monitoring surveys (MBC 1979, 1981, 1986, 1988, 1990, 1994-1999; Ogden 1991-1993).

Year 2000 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*), 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 214,000 to 204,000, respectively. The population has been growing recently, though 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.

Table 2. History of marine mammal takes at Reliant Energy Ormond Beach generating station, 1977 to 2000.

Date Entrained	Date Removed	Species	Comments
7/8/1977	7/8/1977	Cal. sea lion	Released unharmed
1/17/1979	1/17/1979	Elephant seal	Released unharmed
1/24/1979	1/24/1979	Cal. sea lion	Disapp. after sighting in forebay, unconf. report of seal in forebay
5/30/1979	5/30/1979	Harbor seal	Released unharmed
7/6/1979	7/6/1979	Harbor seal	About 75 lb. Dead in forebay behind trash rack
9/29/1979	9/29/1979	Cal. sea lion	Released unharmed
11/3/1979	11/3/1979	Cal. sea lion	Released unharmed
12/20/1979	12/20/1979	Harbor seal	Released unharmed
12/24/1979	12/24/1979	Cal. sea lion	Released unharmed; believed to be same animal as 110379
3/28/1980	3/29/1980	Harbor seal	Juv., released unharmed
4/9/1980	4/9/1980	Harbor seal	Adult released unharmed
5/2/1980	5/2/1980	Cal. sea lion	Adult, dead when found
01/??/1980	5/3/1980	Cal. sea lion	Disappeared after initial sighting in forebay
5/10/1980	5/12/1980	Cal. sea lion	Young adult, released unharmed
6/3/1980	6/3/1980	Cal. sea lion	Adult, dead when found
6/5/1980	6/8/1980	Harbor seal	Dead
6/5/1980	6/8/1980	Harbor seal	Dead
2/10/1981	2/24/1981	Cal. sea lion	Entered cage after 14 days in forebay, released unharmed
2/10/1981	2/24/1981	Harbor seal	Released unharmed
10/10/1981	10/10/1981	Harbor seal	Live in screenwell, released unharmed
10/10/1981	10/10/1981	Harbor seal	Live in screenwell, released unharmed
6/14/1983	6/14/1983	Cal. sea lion	Badly decomposed, no head
6/14/1983	6/14/1983	Cal. sea lion	Carcass several days old
6/14/1983	6/14/1983	Harbor seal	Carcass several days old
7/8/1983	7/8/1983	Harbor seal	Dead, TAG#2010 La Jolla
7/31/1983	7/31/1983	Harbor seal	Approx. 40 lb. Dead
2/4/1985	2/4/1985	Harbor seal	Released unharmed State Personnel 5' 220 lb
2/6/1985	2/6/1985	Harbor seal	Released unharmed State Personnel 4' 100 lb
2/14/1985	2/14/1985	Cal. sea lion	Released unharmed State Personnel Approx. 500 lb
2/25/1985	2/27/1985	Cal. sea lion	Dead, sent to landfill
5/2/1985	5/2/1985	Cal. sea lion	Dead, sent to landfill
4/8/1986	4/8/1986	Cal. sea lion	Dead. No external injuries, sent to landfill
5/7/1986	5/7/1986	Harbor seal	Released unharmed; 35 lb
5/8/1986	5/8/1986	Harbor seal	Dead. Observed in screenwell, carcass not recovered
5/19/1986	5/19/1986	Cal. sea lion	Dead, sent to landfill
9/19/1986	9/19/1986	Cal. sea lion	Dead; Sent to landfill, 200LBS Male,Vanca Rpt.
3/9/1987	3/9/1987	Harbor seal	Released unharmed
4/21/1987	4/21/1987	Cal. sea lion	Released unharmed 50 lb
7/8/1987	7/8/1987	Harbor seal	Released unharmed 85 lb
7/8/1987	7/8/1987	Harbor seal	Released unharmed 90 lb
8/1/1987	8/5/1987	Harbor seal	Dead, sent to landfill
8/21/1987	9/2/1987	Cal. sea lion	Dead buried on beach; Approx. 80 lb. Fresh dead
8/26/1987	9/2/1987	Cal. sea lion	Dead buried on beach; Approx. 65 lb. Fresh dead
8/3/1988	8/15/1988	Harbor seal	Released unharmed 35 lb
8/14/1988	8/15/1988	Harbor seal	Released unharmed 40 lb
3/17/1991	3/29/1991	Harbor seal	Released OK on beach

Table 2. (Cont.).

Date Entrained	Date Removed	Species	Comments
4/15/1991	4/15/1991	Cal. sea lion	Long dead, 4' 100 lb
9/9/1992	9/9/1992	Cal. sea lion	Fresh dead, 54" 100 lb buried on beach
9/8/1993	9/8/1993	Cal. sea lion	Partially decomposed, 42" 100 lb
9/14/1993	9/13/1993	Cal. sea lion	Fresh dead, 60" 100 lb
4/25/1994	4/25/1994	Cal. sea lion	Decomposed carcass, 80 lb. Report delayed.
5/20/1994	5/20/1994	Cal. sea lion	Live, released to SPCA , 60 lb. Report delayed.
6/3/1994	6/3/1994	Cal. sea lion	Fresh dead, 110 lb. Report delayed.
6/20/1994	6/20/1994	Harbor seal	Fresh dead, 60 lb. Report delayed.
7/5/1994	7/9/1994	Harbor seal	Live, released unharmed, 36" 70 lb
8/1/1994	8/1/1994	Harbor seal	Dead, partially decomposed, 48" 110 lb
12/15/1994	12/15/1994	Cal. sea lion	Fresh dead, 50" 50 lb
12/15/1994	12/15/1994	Harbor seal	Live, released unharmed, 36" 45 lb
4/17/1995	4/18/1995	Harbor seal	Live, released unharmed, 36" 45 lb
5/15/1995	5/15/1995	Cal. sea lion	Fresh dead, 50" 50 lb
5/16/1995	5/16/1995	Harbor seal	Fresh dead, 30" 30 lb
5/19/1995	5/19/1995	Cal. sea lion	Fresh dead, 50" 50 lb
7/31/1995	7/31/1995	Cal. sea lion	Fresh dead, Buried on beach, 48" 200 lb
8/15/1995	8/15/1995	Cal. sea lion	Fresh dead, buried on beach, 40" 70 lb
6/11/1997	6/12/1997	Cal. sea lion	Dead, 54" 70 lb
7/8/1997	7/12/1997	Cal. sea lion	Fresh dead (Days), 60" 160 lb
8/22/1997	8/22/1997	Harbor seal	Dead
9/7/1997	9/7/1997	Cal. sea lion	Fresh dead
9/9/1997	9/9/1997	Harbor seal	Released unharmed on beach, 60" 140 lb (Photo)
9/17/1997	9/17/1997	Cal. sea lion	Fresh dead, 60" 80 lb
2/12/1998	2/12/1998	Cal. sea lion	Entered station under fence. Returned to beach (O)
2/12/1998	2/12/1998	Cal. sea lion	Entered station under fence. Returned to beach (O)
6/5/2000	6/5/2000	Harbor seal	Fresh dead, 33" 21.4 lb
7/30/2000	7/30/2000	Cal. sea lion	Transported to San Pedro Care Cntr.
9/25/2000	9/25/2000	Cal. sea lion	Long dead carcass, 79" 150 lb

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 Reliant Energy Ormond Beach 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.

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 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, California. 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 seals in the Reliant Energy Ormond Beach 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 by plant personnel by use of marine mammal cages. Animals in the cages are subsequently released unharmed to the ocean. Pinnipeds can potentially be injured prior to entrainment, or injured once inside the cooling water system. About 53% of the 75 pinnipeds entrained at the Reliant Energy Ormond Beach generating station were found dead. Cause of death of these animals was not discerned.

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 Reliant Energy Ormond Beach 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 41 California sea lions has been entrained by the generating station since 1977, an average of less than two (1.7) California sea lions per year. Take rates have ranged from zero per year to four per year (1979-1980, 1994-1995, and 1997). Of the 23 specimens with weight, lengths, and/or descriptions, 20 were likely juveniles and 3 were adults.

Harbor seal

A recorded total of 33 Pacific harbor seals has been entrained by the Reliant Energy Ormond Beach generating station since 1977, an average of less than two (1.4) harbor seals per year. Take rates have ranged from zero per year to four per year (1980, 1987, and 1994). Of the 19 specimens with weights, lengths, and/or descriptions, 16 were likely juveniles, and 3 were adults.

Northern elephant seal

One northern elephant seal has been entrained since 1977. The individual entrained in January 1979 was a small juvenile.

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

Pinniped species taken at the Reliant Energy Ormond Beach generating station include California sea lion, harbor seal, and northern elephant seal. The continued operation of the Reliant Energy Ormond Beach 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 Reliant Energy Ormond Beach 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 Reliant Energy Ormond Beach generating station was four individuals in 1995 and 1997. This represents 0.3% of the total takes and 0.06% 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. Maximum annual mortality at the Reliant Energy Ormond Beach generating station was three individuals in 1983. This represents 0.2% of the PBR. Continued takes of this species from this source is not significantly affecting the status of the stock of harbor seal.

The PBR for northern elephant seal (California breeding stock) is 2,142 animals per year. Only one individual elephant seal has occurred at the generating station, and that individual was released unharmed. However, 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. Estimated 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 activity 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 Reliant Energy Ormond Beach 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 Environmental Protection Agency (EPA).

Other than the continued operation of the cooling water system, there are no Reliant Energy Ormond Beach 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 operation of the cooling water system. These are considered in further discussion.

Continuing studies conducted since 1978 indicate the generating station is not appreciably impacting the fish and macroinvertebrate populations offshore Oxnard, as populations therein remain healthy, abundant, and diverse (MBC 1979, 1981, 1986, 1988, 1990, 1994-1999; Ogden 1991-1993). The intake and discharge structures do 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 Reliant Energy Ormond Beach generating station is usually detected in the vicinity of the discharge during sampling (MBC 1979, 1981, 1986, 1988, 1990, 1994-1999; Ogden 1991-1993). However, warm waters rarely extend to other water quality stations further than 1000 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 structures as discussed previously.

The operation of the Reliant Energy Ormond Beach 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 10.7 m of water. 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 either 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, harbor seals, and one northern elephant seal. With respect to restoration, the intake and discharge structures will be capped, removed, or appropriately disposed of as part of the decomissioning 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 Reliant Energy Ormond Beach 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 physicochemical conditions in the vicinty of the discharge structure (MBC 1979, 1981, 1986, 1988, 1990, 1994-1999; Ogden 1991-1993). 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 structures is controlled, as the intakes are 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 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 0.8 m/s (2.6 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, and research of available technologies continues. Complete exclusion of pinnipeds from the cooling water system of the Reliant Energy Ormond Beach generating station would require either physical barriers or some other method(s) to discourage their presence in the vicinity of the intake structures. With no significant projected impacts from the generating station to pinniped populations, or to sensitive habitat, the primary purpose of any proposed actions will 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 Reliant Energy Ormond Beach generating station.

In the mid-1970s, specialized cages were designed and deployed at SCE and LADWP coastal generating stations, including the Reliant Energy Ormond Beach generating station, 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 besides 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 Appenidix A. 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.

In early 1988, marine mammal exclusion bars were installed on the intake structure offshore the generating station, and an improved system was installed in 1990. The system consists of bars deployed across the velocity cap down to the riser bowl, and spaced at 18-in. intervals to prevent marine mammals, and debris, from entering the cooling water system of the generating station. Bars spaced at smaller intervals could potentially clog the intake structure with debris. While not designed to exclude all animals from entering the intake structure, the exclusion bars are designed to aid marine mammals in detecting the intake structure. A seal or sea lion foraging for fish that are schooling or feeding in the vicinity of the intake are likely to be alerted to the physical presence of the intake structure when they encounter the marine mammal exclusion bars.

Numerous other options, including lights, sound, and marine mammal exclusion bars, have been considered by SCE, 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 ambivalent 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 becom fouled and inhibit the inward flow of seawater. By the late 1980s, there was sufficient evidence that marine mammal exclusion bars would be feasible if placed sufficiently far apart. This engineering option has resulted in the reduction in entrainment and entrapment of marine mammals, as evidenced by the decline in mammal takes since 1988. The improved design of the marine mammal rescue devices, incorporated in the late 1980s, has enhanced rescue operations at several plants in southern California.

Earlier examples of options included modifying the intake structure to a porous dike or offshore caisson design (MBC 1983). However, at the time, neither of these designs had been installed at coastal power plants. These options were removed from consideration due to their relatively low incremental minimization of impinged fish and the associated estimated costs.

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 Reliant Energy Ormond Beach generating station, marine monitoring studies (including but not limited to annual offshore water quality, fish trawls, macroinvertebrate dive surveys, sediment chemistry studies, and analysis of benthic infauna) conducted offshore the generating station occur annually. 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 (Marine Biological Consultants 1979-1980; MBC 1986, 1988, 1990, 1994-1999; Ogden 1991-1993).

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

Reliant Energy Ormond Beach generating station continues to explore options related to the reduction of effects on marine life, including marine mammals. Reliant Energy 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

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

California Reqional Water Quality Control Board - Los Angeles Region. 1994. Waste discharge requirements - Southern California Edison Company, Ormond Beach Generating Station (NPDES Permit. No. CA0001198).

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.

Marine Biological Consultants, Inc. 1979. National Pollutant Discharge Elimination System reporting and monitoring program, Ormond Beach Generating Station winter and summer 1978 surveys. Prepared for the Southern California Edison Company, Rosemead, CA. 79-RD-47. 52 p. plus appendices.

Marine Biological Consultants, Inc. 1981. National Pollutant Discharge Elimination System reporting and monitoring program, Ormond Beach Generating Station winter and summer 1980 surveys. Prepared for the Southern California Edison Company, Rosemead, CA. 81-RD-21. 54 p. plus appendices.

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

MBC Applied Environmental Sciences. 1983. Ormond Beach Generating Station 316(b) demonstration document. Southern California Edison Company Research and Development Series 83-RD-100. January 1983. 33 pp. with appendices.

MBC Applied Environmental Sciences. 1986. National Pollutant Discharge Elimination System 1986 receiving water monitoring report, Ormond Beach Generating Station, Ventura County, California. Southern California Edison Company, Rosemead, CA. 1986 surveys, 86-RD-57. 45 p. plus appendices.

MBC Applied Environmental Sciences. 1988. National Pollutant Discharge Elimination System, 1988 receiving water monitoring report, Ormond Beach Generating Station, Ventura County, California. Prepared for Southern California Edison Company, Rosemead, CA. 88-RD-53. 47 p. plus appendices.

MBC Applied Environmental Sciences. 1990. National Pollutant Discharge Elimination System, 1990 receiving water monitoring report, Ormond Beach Generating Station, Ventura County, California. 1990 survey. Prepared for Southern California Edison Company, Rosemead, CA. 90-RD-88. 40 p. plus appendices.

MBC Applied Environmental Sciences. 1994. National Pollutant Discharge Elimination System 1994 receiving water monitoring report, Ormond Beach Generating Station, Ventura County, California. Prepared for Southern California Edison Company, Rosemead, CA. 94-RD-011. 41 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. 1997. National Pollutant Discharge Elimination System 1997 receiving water monitoring report, Ormond Beach Generating Station, Ventura County, California. Prepared for Southern California Edison Company, Rosemead, CA. 97-EA-02. 47 p. plus appendices.

MBC Applied Environmental Sciences. 1998. National Pollutant Discharge Elimination System 1998 receiving water monitoring report, Reliant Energy Ormond Beach Generating Station, Ventura County, California. Prepared for Southern California Edison Company, Rosemead, CA and Reliant Energy. 98-EA-08. 41 p. plus appendices.

MBC Applied Environmental Sciences. 1999. National Pollutant Discharge Elimination System 1999 receiving water monitoring report, Reliant Energy Ormond Beach Generating Station, Ventura County, California. Prepared for Southern California Edison Company, Rosemead, CA and Reliant Energy. 99-EA-06. 48 p. plus appendices.

Ogden. See Ogden Environmental and Energy Services Co.

Ogden Environmental and Energy Services Co. 1991. National Pollutant Discharge Elimination System 1991 receiving water monitoring report, Ormond Beach Generating Station, Ventura County, California. Prepared for Southern California Edison Company, Rosemead, CA. 91-RD-29. 43 p. plus appendices.

Ogden Environmental and Energy Services Co. 1992. National Pollutant Discharge Elimination System 1992 receiving water monitoring report, Ormond Beach Generating Station, Ventura County, California. Prepared for Southern California Edison Company, Rosemead, CA. 92-RD-14. 41 p. plus appendices.

Ogden Environmental and Energy Services Co. 1993. National Pollutant Discharge Elimination System 1993 receiving water monitoring report, Ormond Beach Generating Station, Ventura County, California. Prepared for Southern California Edison Company, Rosemead, CA. 93-RD-12. 43 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.

ATTACHMENT

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: _____