CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200
FAX (415) 904-5400

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Energy and Ocean Resources
Staff: JJL, SMH—SF
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STATUS REPORT ON SONGS MITIGATION PROGRAM

Following is a brief status report for the mitigation projects required in Southern California Edison Company's (SCE) coastal development permit for the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 (permit no. 6-81-330, formerly 183-73). The conditions originally were adopted by the Commission in 1991 to mitigate the adverse impacts of the power plant on the marine environment. The 1991 conditions also require SCE to provide the funds necessary for Commission staff technical oversight and independent monitoring of the mitigation projects, to be carried out by independent scientists under the direction of the Executive Director. In 1993, the Commission added a requirement for the permittee to partially fund construction of an experimental fish hatchery. The Commission has since approved amendments to the conditions in April 1997 and October 1998.

WETLAND RESTORATION MITIGATION

The Project

Condition A of the permit requires the permittee to create or substantially restore a minimum of 150 acres of wetlands to mitigate for impacts to fishes caused by the operation of SONGS. In April 1997, the Commission reaffirmed its 1992 approval of the permittee's choice of the San Dieguito River Valley as the site for the wetland restoration project and allowed for up to 35 acres credit for enhancement at San Dieguito Lagoon on the condition of perpetual inlet maintenance.

Progress Report

Following the Commission's November 1997 approval of SCE's preliminary wetland restoration plan, the wetland restoration mitigation project has been undergoing a planning and environmental review process which incorporates the mitigation project into the overall San Dieguito River Valley Regional Open Space Park project and includes additional wetland restoration required under the permittee's settlement agreement with the Earth Island Institute. The lead agencies for the CEQA/NEPA environmental review are the San Dieguito River Valley Regional Open Space Park Joint Powers Authority (JPA) and the U.S. Fish and Wildlife Service.

The permit conditions require SCE to submit a final restoration plan that substantially conforms to the preliminary restoration plan unless the CEQA/NEPA review concludes that an alternative plan that meets the conditions for minimum standards and objectives is the environmentally superior alternative. The permit conditions, as amended by the Commission in October 1998, contain specific due dates for SCE's submittal of the final restoration plan and coastal development permit application based on a completion of the CEQA/NEPA environmental review process around August 1999. The EIR/S team has worked diligently and cooperatively to resolve the many significant issues raised during this process; however, the additional detailed analyses that have been undertaken to address these issues significantly delayed completion of the EIR/S. Notwithstanding the specific due dates, the permit requires SCE to submit the final restoration plan within 60 days following the JPA's certification of the EIR and the U.S. Fish and Wildlife Service's record of decision adopting the EIS. The staff will work with SCE to determine a more precise schedule for SCE's submittal of the final restoration plan and coastal development permit application following completion of the EIR/S.

The draft EIR/S was released on January 31, 2000. CEQA review notice was made at that time, and NEPA review notice appeared in the February 4, 2000 Federal Register. A public hearing was held on February 28, 2000, and the public review period continued through March 20, 2000. More than 500 comments were received by the lead agencies, distributed over 38 letters. The primary issues appear to be related to hydrology and coastal processes. Additional hydrologic modeling has been completed for each of the project alternatives and review of public access, coastal processes, engineering and other issues is underway to enable the EIR/S team to respond to comments and complete the Final EIR/S.

KELP REEF MITIGATION

The Project

Condition C of the permit requires construction of an artificial reef that will consist of an experimental reef and a larger mitigation reef. The experimental reef must be a minimum of 16.8 acres and the mitigation reef must be of sufficient size to sustain 150 acres of medium to high density kelp bed community. The purpose of the experimental reef is to determine what combination of substrate type and substrate coverage will best achieve the performance standards specified in the permit. The design of the mitigation reef will be contingent on the results of the experimental reef.

In April 1997, the Commission added the requirement for a payment of $3.6 million to the State's Ocean Resource Enhancement and Hatchery Program (OREHP) to fund a mariculture/marine fish hatchery to provide compensation for resources not replaced by the artificial mitigation reef. SCE has fully satisfied this requirement.

Progress Report

Following completion of the environmental review and permitting processes for the reef mitigation, SCE began construction of the artificial reef on August 18, 1999, and completed the 56-module reef on September 29, 1999. Construction monitoring for the experimental reef modules has been completed, fulfilling the requirements of Special Condition 4 of the reef construction permit (Coastal Development Permit E-97-10). The staff found that the footprints and percentage covers of the modules conformed very closely to the design specifications.

In addition to constructing the artificial reef, the construction plan requires SCE to transplant kelp on 14 of the 56 modules. The staff worked with SCE and its consultants in developing a strategy to transplant kelp to the artificial reef. SCE submitted its work plan to transplant kelp to the artificial reef on March 30, 2000. The plan calls for kelp to be transplanted outside of the staff's permanent sampling area. While this placement reduces the risk that the transplants will be damaged by divers, it demands additional effort by the staff to monitor. This additional effort may require supplemental funding not anticipated in the staff's work plan, which was prepared and approved by the Commission before SCE's plan for transplanting kelp was developed.

Kelp will be transplanted in two stages to evaluate the effects of plant size on survival and the logistical ease of transplanting. Both stages of kelp transplantation were planned to have been completed by mid-June 2000, with a follow up survey in July 2000. However, the first stage of the transplant has been delayed due to logistical difficulties caused by unfavorable field conditions. Small plants cultured in the laboratory by SCE consultants have now been moved into field nurseries and it is anticipated that these will be outplanted to the reef modules near the end of July. In the meantime, new laboratory cultures of small plants have been started with the hopes of outplanting them after the first week of June 2000.

Reef Monitoring. The staff completed installing permanent transect lines on each module in mid-November 1999. Staff's monitoring of the abundance of giant kelp and sediment depth on the artificial reef modules began in mid-February 2000 and was completed during the first week in May 2000. The staff also has been conducting field and analytical work to determine the locations of reference sites in nearby natural kelp forests. The staff has obtained consensus from SCE's consulting biologists on the appropriateness of using San Mateo and Barn kelp beds as reference areas for the artificial reef experiment. Spatial data on the long-term abundance of giant kelp collected using down-looking sonar together with diver surveys was used to identify the precise location of twelve potential reference sites in each of the two kelp beds.

Site visits were made by the staff scientists and reef monitoring staff. Based on these site surveys, nine sites in both the San Mateo and Barn kelp beds were chosen as suitable for monitoring during the five year experiment. Each site consists of a single 40 m x 3 m area and has been marked with permanent transects. As on the artificial reef modules, the number, sizes, and reproductive condition of adult kelp were

measured at each site, as was the depth of the sediment at a number of locations in each 40 m x 3 m area. These measurements have been completed in the Barn Kelp bed and are planned to be completed at the remaining sites in the San Mateo kelp bed before the end of May 2000. Sampling for invertebrates, algae, and the juvenile stages of giant kelp and other brown algae will begin in June.

Because of the timing of the reef installation, the staff anticipated little recruitment of young-of-year giant kelp and none of larger plants. Contrary to expectations, however, the staff found that the artificial reef modules were sparsely colonized by small adult kelp plants. These plants were attached to small cobbles, and their buoyancy allowed them to be moved about by surge and current until they became lodged in the artificial reef modules. Each plant was individually tagged, allowing staff to measure its subsequent survival and to compare the survival of these "drifters" to plants that recruit as small juveniles to the reef.

Table 1 summarizes patterns of the density (number per 100 m^2) of these plants on each of the eight reef designs for each of the seven blocks of modules. The blocks of 8 modules are numbered sequentially from 1 to 7 and extend upcoast from the San Mateo kelp bed. Block 1 is about 0.5 kilometers upcoast from the San Mateo kelp bed, while block 7 is about 3.5 kilometers upcoast.

Table 1. Number of adult kelp plants per 100 m^2 by block and treatment within block and means and 95% confidence intervals by block and treatment.

	Treatments									
	17%		34%				67%			
Block Number	Concrete	Quarry Rock	Concrete	Concrete Transplant	Quarry Rock	Quarry Rock Transplant	Concrete	Quarry Rock	Block Means	95% CI
1	1.9	3.2	3.1	2.3	2.2	2.8	2.2	3.1	2.6	0.3
2	0.4	1.7	0.8	2.3	1.0	3.8	1.5	0.6	1.5	0.8
3	0.4	1.0	0.6	0.4	1.3	0.4	0.4	0.0	0.6	0.3
4	0.2	0.0	0.2	0.6	0.2	0.4	0.6	0.4	0.3	0.1
5	0.4	0.2	0.2	0.0	0.8	0.2	0.2	0.6	0.3	0.2
6	0.2	0.8	0.0	0.0	0.4	0.4	1.5	0.0	0.4	0.4
7	0.0	0.2	0.2	0.2	0.2	0.4	0.6	1.3	0.4	0.3
Treatment Means	0.5	1.0	0.7	0.8	0.9	1.2	1.0	0.9		
95% CI	0.5	0.8	0.8	0.8	0.5	1.1	0.5	0.8		

Two results are apparent from these data: 1) there were no differences in the densities of drifter kelp plants among reef designs, and 2) drifters were more abundant on modules nearest the San Mateo kelp bed (i.e., blocks 1 and 2) than on those farther away.

Naturally recruited small young-of-year kelp were also noted on the artificial reef during the surveys. There were no obvious differences in the abundance of these small plants among reef designs or blocks. More quantitative information on small kelp recruits will be gathered during the June-July 2000 survey of algae and invertebrates as will the sizes and numbers of laboratory cultured kelp outplants. As mentioned above, design features of the kelp outplanting put into effect by SCE after the staff finalized its monitoring design will increase the area sampled during kelp counts by 33% and will require additional effort on the part of the staff. The exact scope of the additional effort won't be known until after the monitoring following the outplanting begins.

FISH BEHAVIORAL MITIGATION

The Project

Condition B requires the permittee to install and maintain behavioral barrier devices at SONGS to reduce fish impingement losses.

Progress Report

Following the permittee's experiments on light and sound devices, the permittee considered fish guidance lights to be more effective in preventing fish from being trapped and killed. In October 1998, the Executive Director approved the permittee's installation plan for the lights and the lights were installed in December 1998.

Monitoring to evaluate the effectiveness of the fish guidance lights began in March 1999 and is continuing. Initial data seemed to indicate that rather than attracting fish to the fish return system the lights are repelling the fish. A new experiment was initiated to evaluate whether eliminating light could be used as an effective means of reducing impingement losses of fish. Results from these experiments are being analyzed. Staff expects to present a report to the Commission at the July 2000 meeting.

MARINE MAMMALS AND SEA TURTLES

In December 1999, the staff updated information on the mortality of marine mammals (harbor seals and sea lions) at SONGS first presented to the Commission in May 1997 and presented new information on the entrainment of sea turtles at SONGS. The staff also reported on the next steps to be taken to minimize these deaths and entrainments.

The staff met with the Commission's Scientific Advisory Panel in January 2000 to determine and arrange for filling of data gaps. In cooperation with SCE and other involved agencies and interested parties, the staff will assemble a working group of scientific experts to more fully explore possible ways of minimizing the entrainment and deaths of harbor seals, sea lions and sea turtles, and hopes to report back to the Commission on the results of this working group in summer of 2000.

In the interim, the staff is working closely with SCE biologist Kevin Herbinson who reports that work is continuing to step up the monitoring of marine mammals in the screen well to reduce mortality by recovering and returning marine mammals in a more timely fashion. The SCE biologists and Commission staff scientists are also working closely with the National Marine Fisheries Service to review the current status of marine mammal takes by coastal power plants (including SONGS Units 2 and 3) and to implement a policy consistent with that now in effect on the east coast. Staff is being supplied with the most current data on marine mammals and sea turtles entrained by SONGS and will update the Commission on a quarterly basis, or more frequently if there are unforeseen catastrophic mortalities. Since the last report to the Commission, there have been a total of six sea lions entrained by the plant. Three died and three were returned unharmed to the ocean.