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Energy and Ocean Resources
Staff: JJJ, SMH—SF
Staff Report: December 21, 2000
Hearing Date: January 9, 2001

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 technical oversight and independent monitoring of the mitigation projects, to be carried out by independent contract 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.

NOTICE OF TECHNICAL REVIEW WORKSHOP

A public workshop will be conducted by the Commission staff and contract scientists to review the status of the SONGS mitigation projects. The workshop will be held on January 30, 2001, from 10:30 AM to 2:30 PM at the City of San Clemente Community Center. For more information, contact Jody Loeffler at (415) 904-5255.

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 underwent a planning and environmental review process which incorporated the mitigation project into the overall San Dieguito River Valley Regional Open Space Park project and included additional wetland restoration required under the permittee's settlement agreement with the Earth Island Institute. The lead agencies for the CEQA/NEPA environmental review were the San Dieguito River Valley Regional Open Space Park Joint Powers Authority (JPA) and the U.S. Fish and Wildlife Service.

Following the review period on the January 2000 draft EIR/S, the final EIR/S was released on September 5, 2000. At a public hearing on September 15, 2000, the JPA certified the EIR and voted to support the EIR's designation of Mixed Habitat plan as the environmentally preferred alternative. The Commission's contract scientists attended the meeting and concurred with this decision. As required by NEPA, the availability of the final EIR/S was published in the Federal Register on September 15, 2000. The 30-day notice period concluded in mid-October, and the USFWS will prepare and issue a final Record of Decision. Lawsuits challenging the adequacy of the final EIR/S have been filed by the Del Mar Sandy Lane Association and Citizens United to Save the Beach.

SCE currently is preparing its final restoration plan, pending resolution of the final configuration of the least tern nesting sites and berms. Depending on the timing of the submittal, staff expects to bring its recommendations on the final plan to the Commission in March or April 2001.

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

Construction of the Artificial Reef. Construction of the 56-module experimental reef was completed in September 1999. Construction monitoring confirmed that the

footprints and percentage covers of the modules conformed closely to the design specifications.

Kelp Transplanting Experiment. SCE's construction plan requires SCE to transplant kelp on 14 of the 56 modules. SCE's March 2000 work plan called for kelp to be transplanted outside of the staff's permanent sampling area. While this placement reduced the risk that the transplants will be damaged by divers, it increased the area sampled during the staff's kelp counts by 33% and required additional effort to assist with the outplanting and perform subsequent monitoring. The staff's 2000 and 2001 work plan and budget, which was prepared and approved by the Commission before SCE's plan for transplanting kelp was developed, did not anticipate this additional effort. Thus, supplemental funding will probably be required before the end of the two-year budget cycle.

SCE planned to transplant kelp in two stages to evaluate the effects of plant size on survival and the logistical ease of transplanting. In June and July 2000 staff scientists assisted SCE in outplanting small laboratory-grown plants directly to the artificial reef. SCE's attempt to transplant larger plants to the artificial reef was aborted when plants in the field nursery became fouled and died.

In mid-November staff received a report from SCE detailing its transplanting efforts to date.¹ The report notes the successful completion of the direct transplanting of small laboratory plants to the artificial reef. The report also notes that during maintenance activities conducted in September and October of this year, about two-thirds of the artificial transplant sites which received direct transplants from the laboratory supported small juvenile plants (ranging from 10 to 30 cm long). Commission contract staff will continue to monitor the outplants and will present the results after the beginning of the year.

SCE laid out two objectives for its kelp transplant experiment: (1) to promote development of kelp on the reef if natural kelp recruitment was delayed or absent, so that performance of substrate types and coverage can be evaluated, and (2) to determine if transplantation is a cost-effective means of enhancing kelp abundance. SCE concluded that the first objective was no longer relevant, in view of the heavy natural recruitment preceding the transplant, and that the costs for the experimental transplantation were quite high, at nearly \$40,000 per acre. Based on the results of this experiment, SCE believes the objectives have been met and plans no further transplantation experiments at this time.

Staff will continue to analyze the results of SCE's experiment. Staff plans to monitor kelp in February/March this coming year; however, because the plants will not have grown to sufficient size, even under ideal conditions, the staff is not likely to be able to evaluate at that time the effectiveness of the transplanting at producing adult plants. The staff will have a better idea during the July/August 2001 survey.

¹ SONGS Mitigation Program—Update on the Kelp Transplanting Component of the San Clemente Experimental Kelp Project., dated November 13, 2000, from David W. Kay to Susan Hansch.

The entire cost of the reef installation, including construction monitoring, was \$1,650,000, or about \$73,661 per acre. The staff agrees with SCE that at \$40,000 per acre the pilot transplant was very expensive. The staff would like to review in detail SCE's kelp transplant costs to determine whether it is possible to do the transplants in a more cost-effective manner. This would entail more experimentation beyond that needed to fulfill the requirements of the final plan.

Reef Monitoring. To date the reef monitoring staff, working under the direction of the Commission's contract staff scientists, have logged over 1,000 dives on the experimental artificial reef in completing a variety of tasks, including: (1) winter and summer surveys of giant kelp, which included measuring the size, fecundity and survivorship of all adult plants growing along 242 permanent 40 m x 2 m transects, (2) winter and summer surveys of 1,120 stakes used to measure rates of sand burial and/or accretion of the artificial reef, and (3) summer survey of the benthic algae, invertebrates and cryptic bottom fish living along the 242 permanent transects. Sampling the survivorship of transplanted kelp, postponed until SCE completed the task of affixing permanent identification tags to the individual transplant sites, was recently concluded in November.

Protocols for sampling kelp bed fish have been developed and tested by the staff contract scientists. Fish were sampled on all 56 artificial reef modules and at all 18 reference reef locations in early October. An additional survey of all artificial reef modules and reference locations was completed in November.

Since the previous status report, staff has worked on maintenance of transects on the reef modules and the reference sites, completed entering and performing quality assurance and control on the monitoring data, and begun analyses necessary for the public workshop to be conducted in January.

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

The permittee initially installed mercury vapor lights in Units 2 and 3 in September 1992 and tested them for approximately one year. No clear conclusions could be reached concerning the effectiveness of the lights. In 1994, the staff instructed SCE to conduct a series of laboratory and in-plant experiments testing the behavioral response of fish to lights and sound.

Following the permittee's experiments on light and sound devices from 1995 to 1997, 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.

A three-phased experiment to evaluate the effectiveness of the fish guidance lights was conducted between February and December 1999. Initial data from the early phases seemed to indicate that rather than attracting fish to the fish return system the lights repelled the fish. A new experiment was initiated in the final phase to evaluate whether eliminating light could be used as an effective means of reducing impingement losses of fish. Results from these experiments showed no evidence that installing lights in the cooling water systems of Units 2 and 3 would reduce fish impingement losses.

At the October 2000 meeting, staff presented to the Commission its conclusions on the effectiveness of the behavioral barriers (*Executive Director's Determination that Fish Behavioral Barriers Tested at SONGS are Ineffective*, dated September 22, 2000). The Executive Director determined and the Commission concurred that (1) the fish behavioral barriers installed and tested at the plant were ineffective and unlikely to result in a two metric ton (MT) reduction in fish impingement losses as required by Condition B of the permit, (2) no currently available alternative behavioral barriers are likely to be effective or feasible in reducing fish losses as required by Condition B, and (3) a procedural modification made by SCE in the heat cleaning treatment of the cooling water intake systems of SONGS Units 2 and 3 has reduced fish losses on average by approximately 4.3 MT per year. Based on this determination, the Executive Director concluded that no further testing of alternative behavioral barriers should be required at this time, provided that (1) SCE continues to adhere to the operating and monitoring procedures for the modified heat cleaning treatments and (2) SCE makes every effort to test and install, if feasible, future technologies or techniques for fish protection if such techniques become accepted industry standards or are required by the Commission in other power plant regulatory actions. Thus, the Executive Director determined, and the Commission concurred, that SCE is currently in compliance with Condition B of the SONGS permit.

