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Energy and Ocean Resources
Staff: JJJ, SMH—SF
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**STATUS REPORT ON SONGS MITIGATION PROGRAM
JULY – SEPTEMBER 2002**

Following is a brief status report for the July-September 2002 period 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.

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.

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Wetland Restoration Planning. The Commission approved SCE's preliminary wetland restoration plan for the San Dieguito Lagoon in November 1997. The CEQA/NEPA environmental review incorporated the mitigation project into the overall San Dieguito River Valley Regional Open Space Park project. The lead agencies for the CEQA/NEPA 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/EIS, the final EIR/EIS was released in September 2000. At a public hearing in September 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/EIS was published in the Federal Register in September 2000; however, the USFWS had not yet issued a final Record of Decision (ROD) when lawsuits on the Final EIR (FEIR) were filed (see next paragraph). The final ROD will be issued after the conclusion of the lawsuits and any revisions to the FEIR that may be necessary.

Litigation on Final EIR. Lawsuits challenging the adequacy of the FEIR were filed by the Del Mar Sandy Lane Association and Citizens United to Save the Beach. Although in a July 2001 decision the Court rejected certain of the plaintiff's claims, it determined that the FEIR is inadequate with regard to several issues, most significantly that there is insufficient evidence supporting the FEIR's conclusion that the project will not increase scour and loss of sand at the river mouth. The Court set aside the JPA's certification of the FEIR and remanded the matter back to the JPA. Both parties appealed the Court's decision. Briefings should be completed by October 2002.

Outstanding Issues. Although the JPA is appealing the Court's ruling on the FEIR, the JPA, SCE and USFWS have agreed to move forward during the appeals process to address the points other than the coastal process issue deemed inadequate by the Court in order to be ready to re-certify the FEIR if necessary. The JPA and SCE have consulted regularly with Commission staff. Regardless of the outcome of the appeals process, most of the analyses on the FEIR issues will be needed at the time of the Commission's review of the coastal development permit application for the restoration project.

At the same time, the staff and SCE are continuing to work with the parties to resolve the remaining issues involving the least tern nesting sites. Although the least tern nesting sites are included in the overall plan, they are a previous requirement from a coastal development permit (CDP No. 6-84-525) granted to the 22nd Agricultural District (District), and not a requirement of SCE's SONGS permit. SCE has agreed to construct the nesting sites for the District in exchange for access to and use of District property near the river mouth. At issue is who is to take on the financial responsibility for implementing the maintenance, monitoring, and mitigation requirements.

Staff has worked with SCE, USFWS, Department of Fish and Game, the JPA, and the District on these issues. During the past year and a half, staff has discussed the annual nesting site maintenance and maintenance monitoring (i.e., site maintenance, including vegetation control and fence inspection and repair, predator monitoring and control, and bird monitoring) needed to maintain a viable least tern habitat as required under the District's coastal development permit, raised the need for mitigating impacts to existing wetlands caused by the construction of the nesting sites, and provided a draft annual maintenance plan and estimated annual costs. In July 2001, staff presented a formal interpretation of the outstanding obligations the District continues to have under its permit.

In addition, the State Lands Commission is continuing its efforts to resolve property ownership issues with the District. Resolution of title and boundary interests involving the San Dieguito River will assist in negotiations for access to the river mouth for the restoration project.

The District is seeking resolution on these and other issues (unrelated to the wetland restoration project) with the Coastal Commission, Department of Fish and Game, and State Lands Commission. A meeting with the parties with participation from the Resources Agency and the Attorney General's Office is being scheduled for later in September.

In the meantime, SCE has moved ahead to develop its Final Plan while recognizing that project revisions may be necessary pending resolution of the outstanding issues. The staff is reviewing SCE's plan informally and will continue to work with SCE to ensure that the plan meets the objectives and standards specified in the permit and to ensure that Coastal Act issues will be addressed appropriately at the coastal development permit stage of the project. *The staff plans to bring SCE's final plan to the Commission for approval only after the CEQA/NEPA process is completed.*

Pre-restoration Monitoring. As part of the Commission's technical oversight, monitoring and management responsibilities under Condition D, the contract scientists are conducting pre-restoration monitoring in San Dieguito Lagoon and in other southern California wetlands that may be used as reference sites in post-restoration monitoring. Pre-restoration monitoring includes the collection of baseline physical and biological data on the wetland attributes to be monitored during post-restoration monitoring. Pre-restoration data are required to assess construction-related impacts and changes in the existing wetland following construction. Pre-restoration monitoring data are also needed to develop sampling designs for post-restoration monitoring that can effectively determine whether the various performance standards have been met.

One focus of the pre-restoration monitoring is the analysis of data collected to determine the appropriate number and spacing of samples for use in the post-restoration monitoring of intertidal epibenthic and infaunal invertebrates. Fieldwork for this study was carried out in three wetlands that may serve as reference sites in post-restoration monitoring (Tijuana Estuary, Mugu Lagoon, and Carpinteria Salt Marsh). Laboratory processing of the samples is complete and analyses to determine the spacing and number of samples are underway. The contract scientists are continuing to monitor water quality in San Dieguito Lagoon and Carpinteria Salt Marsh. Results of the pre-restoration monitoring activities undertaken during 2001 were reviewed at the second annual public workshop held in February 2002. Written proceedings of the workshop are posted on the Coastal Commission web site at <http://www.coastal.ca.gov/energy/songs-workshop-mm2.pdf>.

Another major focus of the contract scientists' pre-restoration monitoring tasks is to develop sampling designs that will allow unbiased comparisons of the abundance and number of species of fish in the restored and reference wetlands and will minimize any adverse effects of sampling on fish and invertebrate populations. Recent work focused on evaluating the effectiveness of enclosure traps. This is important because enclosure traps have been estimated to be much more effective at sampling gobies, small fish that dominate wetland fish communities. Work to date suggests that enclosure traps are between 50 to 100 times more effective at sampling gobies than other sampling gear. Current work by the contract scientists is focusing on determining the appropriate number and spacing of enclosure trap samples. This work will also determine whether the enclosure trap estimates are consistently higher than more traditional sampling methods or whether differences vary with habitat type or fish density.

Future work will involve fish sampling with three other types of gear—beach seines, purse seines, and trawls—to determine the minimum sample size for each gear type so as to minimize impacts on fish populations and the effort per sample. Work will then proceed on determining the appropriate spacing and number of samples for each of these gear types.

KELP REEF MITIGATION

The Project

Condition C of the permit requires construction of an artificial reef that consists 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 which combinations of substrate type and substrate coverage will most likely 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.

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Following completion of the environmental review and permitting process, construction of the experimental reef located off San Clemente was completed in September 1999. The experimental reef tests eight different reef designs that vary in substrate composition (quarry rock or recycled concrete), substrate coverage (actual coverages are higher than the intended nominal coverages of 17%, 34% and 67%, at approximately 54%, 65%, and 84%, respectively), and presence of transplanted kelp. All eight reef designs are represented as individual 40 m x 40 m modules that are replicated in seven areas (i.e., blocks) for a total of 56 artificial reef modules totaling 22.4 acres.

Monitoring of Experimental Reef. The monitoring plan approved by the Commission specifies that the abundance of giant kelp, macro invertebrates, understory algae, and kelp bed fish, and the area and coverage of hard substrate on the artificial reef modules be surveyed each year for five years.

The results of the second year of these studies were reviewed at the second annual public workshop held in February 2002. Written proceedings of the workshop are posted on the Coastal Commission web site at <http://www.coastal.ca.gov/energy/songs-workshop-mm2.pdf>.

During the spring 2002 survey of giant kelp, dense colonization of the invasive sea fan *Muricea californica* was observed on many of the experimental reef modules. The third annual survey of benthic invertebrates and algae was begun in late June 2002 and was completed at the end of August 2002. During this survey the effect of different artificial reef designs on the growth and survivorship of these *Muricea* recruits is being evaluated by following changes in the density and size structure of *Muricea* in the 12 permanently marked 1 m² quadrats located on each experimental reef module. Concurrent data collected on the physical and biological

characteristics of each quadrat will be used to determine whether the survivorship and growth of *Muricea* is related to other variables.

Studies on the resident blackeye goby began in June 2002 to compare reproductive rates on the artificial reef to those at the two reference reefs. This work is being done in collaboration with Professor Todd Anderson of San Diego State University.

An experiment to determine the effects of reef material (artificial vs. natural) and location (artificial reef vs. reference reef) on the species composition and abundance of colonizing reef biota was set up in March 2002, and sampled during early June 2002. At this early stage of the experiment, there was scant colonization of biota (mainly hydroids, diatoms and microscopic algal turf) and no apparent effects of substrate type or location on colonization rates.

Because fish are highly mobile and display considerable short-term temporal variability, there was uncertainty as to whether the two temporal replicates being used for each year's fish survey provided an estimate of fish abundance that would allow reasonable statistical power to detect differences among reef designs. To address this issue, the fish monitoring for 2002 will be altered as follows. Instead of surveying each replicate of each reef design and both reference sites as is normally done, sampling will be done at only one of the eight reef designs (34% cover of quarry rock) in each of the seven blocks and at seven of the nine sites at only one of the two reference reefs (San Mateo kelp forest). All 14 locations in this reduced design will be sampled during a single day, with the goal of collecting 10 to 15 temporal replicates before the end of November 2002 (weather permitting). Budget constraints prevent implementing this new sampling protocol in addition to the normal fish sampling during this third year of monitoring. Data collected using the new fish monitoring protocol in 2002 will be used to determine an effective monitoring strategy for evaluating which of the artificial reef designs meet the performance standards for fish in the fifth and final year of the experiment.

Data entry, data quality assurance and control and data base management are essential elements in the monitoring of both the reef and wetlands restoration projects. These ongoing activities require significant effort (about 1 to 2 days in the office for every day in the field).

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

SCE is currently in compliance with Condition B of the SONGS permit.

SCE conducted a number of laboratory and in-plant experiments testing the behavioral response of fish to lights and sound devices from 1992 through 1999. None of the experiments showed evidence that these devices would reduce fish impingement losses as required by Condition B. At the same time, SCE continued its modified heat cleaning treatments at the plant (called the Fish Chase procedure), which result in a considerable reduction in fish impingement

In October 2000, the Commission reviewed the results and 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, monitoring, and reporting 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.

The staff received SCE's *2001 Annual Marine Environmental Analysis* report in August 2002. The staff is reviewing the report's data and analysis on the fish chase procedure at SONGS to determine consistency with the Commission's requirements. During 2001, SONGS Units 2 and 3 impinged a total of 17,370 kg of fish. During the same period a total of 3,846 kg of fish were returned alive to the ocean as a result of the Fish Chase procedure, resulting in a reduction in total impingement of slightly more than 18%. This percentage reduction is greater than the 10% reduction required to meet compliance conditions for fish behavioral barriers¹. The other compliance condition, no unusual fish mortality events, was also met during 2001.

¹ *Executive Director's Determination that Fish Behavioral Barriers Tested at Songs Are Ineffective*. California Coastal Commission Staff Report, September 22, 2000.