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**W-17****Energy and Ocean Resources Unit**

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Mitigation Program Scientific  
Team—SF

Staff Report: November 19, 1999

Hearing Date: December 8, 1999

**SONGS Mitigation Program:  
2000 and 2001 Two-Year Work Program and Budget**

**EXECUTIVE SUMMARY**

The staff is recommending Commission approval of a two year work program and \$2,293,162 budget for the Commission's independent monitoring and technical oversight of the SONGS mitigation projects. The projects are required under Southern California Edison Company's coastal development permit (No. 6-81-330-A, formerly 183-73) to mitigate the adverse impacts of the operation of Units 2 and 3 on the marine environment offshore from San Onofre. The projects include (1) the creation or restoration of at least 150 acres of southern California wetlands (Condition A), (2) installation of fish barrier devices at the power plant (Condition B), and (3) construction of an artificial reef large enough to sustain 150 acres of medium to high density kelp bed community together with funding for a mariculture/marine fish hatchery (Condition C).

**Permittee's Funding Requirement**

Condition D of the permit also requires SCE to fund the Commission's oversight of the mitigation and independent monitoring functions identified in and required by Conditions A through C. The permittee is required to provide "reasonable and necessary costs" for the Commission to retain personnel with appropriate scientific or technical training and skills, as well as reasonable funding for necessary support personnel, equipment, overhead, consultants, the retention of contractors needed to conduct identified studies, and to defray the costs of members of any scientific advisory panel convened by the Executive Director for the purpose of implementing these conditions.

**Implementation of Commission Oversight and Independent Monitoring**

The Commission retains contract scientists and technical staff to assist in carrying out its oversight and monitoring functions. In addition, the Commission retains a scientific advisory panel to provide advice on the design, implementation, monitor-

ing and remediation of the mitigation projects. The Commission has operated under approved work programs and budgets since 1993.

In July 1999, the Commission approved the experimental reef monitoring plan and authorized a supplement to the 1998-99 budget to fund the initial work from July through December 1999. The Commission's approval incorporated the staff's recommendation for an implementation structure through a contract with the University of California, Santa Barbara, that utilizes the existing contract scientists (who are employed as research biologists at UCSB) as project managers at no additional cost, with data collection done by contract field assistants under their direction. Streamlining the structure of the monitoring program by implementing it through UCSB makes more efficient use of the contract scientist's time and better enables them to ensure that the monitoring is carried out according to the plan approved by the Commission.

### **SCE Concerns About Reef Monitoring Program**

Prior to the Commission's approval of the reef monitoring program in July 1999, SCE raised a concern about a directed contract to UCSB rather than a process seeking competitive bids, but agreed to support the staff's recommendation for the experimental reef monitoring program on the conditions that in the 2000-2001 work program the staff would lay out a five-year budget for the monitoring program, and, as an alternative to a formal bid process, develop a cost comparison to evaluate whether the UCSB contract approach is the most cost-effective. Despite the results of the staff's cost comparison, in consultations on the 2000 and 2001 work program SCE again suggested that the staff seek bids to ensure the most competitive price. SCE further suggested that if State funds were involved, the staff would be required to conduct a bid process and contended that the staff is avoiding such a process because private industry funds, and not State funds, are used for the Commission's monitoring and oversight program. In fact, the Commission tries to work with academic institutions whenever possible and, in the case of State-funded universities, no competitive bid process is required.

### **Results of Cost Comparison Requested by SCE**

In accordance with the agreement with SCE, the staff has prepared a discussion of the methods used to estimate costs for the experimental reef monitoring program, a five-year budget, and a comparison of costs (Appendix A). Costs, as estimated in the UCSB budget, were compared with cost data from private consultants provided to the staff in response to a 1995 Request for Proposals for kelp reef field work. The RFP included a kelp recruitment experiment and a monitoring program of the same physical and biological variables that will be used to evaluate the experimental reef. No contracts were executed at the time. Although the data for the consultants' costs are now four years old, their use in determining the cost effectiveness of the UCSB contract are conservative, since consultant costs in 1995 dollars are compared to UCSB costs in 2000 dollars. Economic changes reflected in the Consumer Price Index (All Urban Consum-

ers) show an increase of 13.92% for the San Francisco Bay Area and 8.15% for the Los Angeles region since September 1995.

The results are clear: a UCSB contract for implementing the experimental reef monitoring program will save SCE a substantial sum. Personnel rates for private consultants ranged from \$20 to \$126 per hour, with the preponderance of effort at rates of \$65, \$70 and \$80 per hour. In contrast, rates for UCSB-hired field assistants range from \$21 to \$32 per hour, with the greatest workload at the \$21 rate. Diving-related costs added by the private consultants would exceed \$650,000 per year compared to less than \$70,000 per year for UCSB, for a savings of over \$2.9 million during the course of the five-year monitoring program on diving costs alone.

The staff recognizes that a lower price for diving-related costs could potentially be negotiated with a private consultant for a long-term contract. However, a large portion of diving costs are insurance premiums that cannot be avoided by consultants, whereas the University is self-insured. The staff believes that the nearly ninety percent reduction needed to make one of these private consultants competitive with the UCSB contract is beyond reasonable expectation. When taken together with the personnel cost data from firms willing and able to undertake the kelp reef monitoring, the cost comparison clearly shows that hiring field assistants under the UCSB contract costs substantially less than representative private consultants.

The staff carefully considered other alternatives as well. For example, other university rates are comparable to UCSB rates, and the project in fact draws on the expertise from other universities through members of the scientific advisory panel (UCLA and UCSC in addition to UCSB) and through extensive recruitment activities throughout the University of California system and beyond. Even though the contract is through UCSB, the program will maximize collaboration with other university scientists. However, setting up the monitoring program through another university would result in increased costs for project management, since university policy dictates that at least one Ph.D. level scientist would need to serve as project manager for a contract such as this that hires field assistants. In the case of the UCSB contract, existing Commission contract scientists act as project managers at no additional cost to the project. Thus, a contract with a university other than UCSB would not only increase costs for project management, it would also reduce the efficiency of the monitoring program by adding an unnecessary and duplicative layer of project management.

### **Close Oversight and Collaboration Needed for Reef Monitoring**

It is essential that the Commission's contract scientists remain closely involved regardless of whether the monitoring program is conducted by contract field assistants under their direction, private consultants or another university. The specific design of many of the process studies described in the monitoring plan will depend on which organisms colonize the artificial reef modules and when. Consequently, close collaboration between the scientists collecting the data and those analyzing them is needed to successfully implement the monitoring plan. With close collabora-

tion and consistent staffing, the process studies can be tailored to obtain the information needed to meet the project's objectives within the five year study period. The Commission staff believes the most effective way to achieve this close collaboration is to use the existing contract scientists in their role of project managers.

The staff believes that the cost comparison—based on factual, relevant cost data—shows that implementing the monitoring program under contract with UCSB, with data collection done under the direction of the Commission's contract scientists, is the most efficient, cost-effective, and timely method of achieving the goals of the independent monitoring required by the SONGS permit. The staff is therefore recommending a work program and budget that continues this implementation structure.

### **Work Program for 2000 and 2001**

The status of each mitigation project guides the Commission's work program for the next two years. The environmental review and final planning for the wetland restoration project will continue over the next several months, followed by SCE's submittal of a coastal development permit application. The contract scientists' work will focus on assisting the Commission with those processes, finalizing the wetland monitoring plan, and conducting pre-restoration monitoring. Construction of the experimental reef is complete; contract scientists and field assistants will conduct the monitoring. Similarly, installation of fish guidance lights is complete, and the contract scientists will continue to work with SCE to evaluate their effectiveness. Permanent Commission staff will continue to participate in the oversight of the fish hatchery program operated by the Department of Fish and Game's Ocean Resources Enhancement and Hatchery Program, with very minor assistance from the contract scientists.

### **Budget for 2000 and 2001**

The proposed budget for calendar years 2000-2001 covers the monitoring and oversight program costs for the Commission's contract scientists, contract field personnel to monitor the wetlands and experimental reef, science advisory panel, consultants, administrative support, and operating expense. The proposed funding totals \$2,293,162 for the two years.

## **I. STAFF RECOMMENDATION**

The staff recommends that the Commission approve a two-year work program and budget for calendar years 2000 and 2001 for a total amount of \$2,293,162 for both years in support of the Commission's independent monitoring and technical oversight of the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 marine resource mitigation projects required in Conditions A through C of permit 6-81-330-A (formerly 183-73). The Commission's independent monitoring and technical oversight

program is to be funded by the permittee, Southern California Edison and the other SONGS owners, in accordance with the provisions of Condition D of the permit.

## **II. MOTION AND RESOLUTION**

Commission approval of the 2000 and 2001 two-year Work Program and Budget requires the following motion:

I hereby move that the Commission approve the 2000 and 2001 two-year SONGS Work Program and Budget as recommended by the staff.

The staff recommends a "yes" vote on the foregoing motion, which will result in the adoption by the Commission of the following resolution:

The Commission hereby determines that the 2000 and 2001 two-year SONGS Work Program and Budget that is set forth in the staff recommendation, dated November 19, 1999, carries out the intent of Condition D of Permit 6-81-330-A (formerly 183-73) by requiring the permittee to provide reasonable and necessary funding for the Commission staff's technical oversight and independent monitoring responsibilities pursuant to the mitigation and lost resource compensation conditions (A through C).

## **III. TWO-YEAR WORK PROGRAM AND BUDGET: 2000 AND 2001**

The Commission finds and declares as follows:

### **A. SONGS PERMIT BACKGROUND**

In 1974, the California Coastal Zone Conservation Commission issued a permit (No. 6-81-330- A, formerly 183-73) to Southern California Edison Company for Units 2 and 3 of the San Onofre Nuclear Generating Station (SONGS). A condition of the permit required study of the impacts of the operation of Units 2 and 3 on the marine environment offshore from San Onofre, and mitigation of any adverse impacts. As a result of the impact studies, in 1991 the Coastal Commission added new conditions to mitigate the adverse impacts of the power plant on the marine environment which require the permittee to (1) create or restore at least 150 acres of southern California wetlands, (2) install fish barrier devices at the power plant, and (3) construct a 300-acre kelp reef (Conditions A through C). The 1991 conditions also require SCE to provide the funds necessary for Commission staff technical oversight and independent monitoring of the mitigation projects (Condition D). In 1993, the Commission added a requirement for the permittee to partially fund construction of an experimental white sea bass hatchery. Due to its experimental nature, the Commission did not assign mitigation credit to the hatchery requirement.

After extensive review of new kelp impact studies, in April 1997 the Commission approved amended conditions which (1) reaffirm the Commission's prior decision that San Dieguito is the site that best meets the permit's standards and objectives for wetland restoration, (2) allow up to 35 acres credit for enhancement of wetland habitat at San Dieguito Lagoon, and (3) revise the kelp mitigation requirements. Specifically, the revised Condition C requires construction of an artificial reef large enough to sustain 150 acres of medium to high density kelp bed community (which could result in a reef larger than 150 acres) together with funding for a mariculture/marine fish hatchery as compensation for the loss of 179 acres of high density kelp bed community resulting from the operation of SONGS Units 2 and 3. The artificial reef is to consist of an experimental reef of at least 16.8 acres and a larger mitigation reef to meet the 150-acre requirement. 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.

The Commission also found in April 1997 that there is continuing importance for the independent monitoring and technical oversight required in Condition D to ensure full mitigation under the permit.

## **B. COMMISSION OVERSIGHT AND INDEPENDENT MONITORING**

Condition D establishes the administrative structure to fund the independent monitoring and technical oversight of the mitigation projects. It specifically (1) enables the Commission to retain contract scientists and technical staff to assist the Commission in carrying out its oversight and monitoring functions, (2) provides for a scientific advisory panel to advise the Commission on the design, implementation, monitoring, and remediation of the mitigation projects, (3) assigns financial responsibility for the Commission's oversight and monitoring functions to the permittee and sets forth associated administrative guidelines, and (4) provides for periodic public review of the performance of the mitigation projects.

Pursuant to this condition, the Commission has operated under approved work programs and budgets since 1993. The Commission retains a science advisory panel and a small technical oversight team (two scientist positions and administrative support) under contract to provide the necessary scientific expertise to the Commission and serve as project managers for the monitoring program. Field assistants also are retained under contract to conduct the monitoring. In addition, independent consultants and contractors are called upon when specific expertise or assistance is needed for specific tasks. Costs for permanent Coastal Commission staff that spend a portion of their time on this program, direct operating expenses incurred in support of the Commission's permanent staff (such as travel), and indirect operating expenses associated with the program are *not* paid by the permittee but are absorbed by the Commission.

In November 1997, the Commission approved a work program and budget for the monitoring and oversight program for calendar years 1998 and 1999. In July 1999, the Commission approved a supplement to the work program and budget that adds initial implementation of the experimental reef monitoring program from July 15 through December 31, 1999. The Commission approved the staff's recommendation for an implementation structure through a contract with the University of California, Santa Barbara, that utilizes the existing contract scientists as project managers at no additional cost, with data collection done by contract field assistants under their direction.

## **C. STATUS OF MITIGATION PROGRAM**

### **1. Status of Wetland Restoration**

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.

#### **Planning and Environmental Review Initiated**

In November 1997 the Commission approved SCE's preliminary wetland restoration plan as being largely in conformity with the minimum standards and objectives stated in the permit. Following approval of the preliminary plan, SCE completed additional planning studies before initiating the environmental review process required for CEQA/NEPA in June 1998. The lead agencies for the CEQA/NEPA environmental review are the San Dieguito River Valley Regional Open Space Park Joint Powers Authority (JPA) and U.S. Fish and Wildlife Service.

The environmental review for the wetland restoration mitigation project incorporates the mitigation project into the overall San Dieguito River Valley Regional Open Space Park project, and also includes additional wetland restoration required under the permittee's settlement agreement with the Earth Island Institute.

#### **Final Plan and CEQA/NEPA Review for Wetland Restoration Delayed**

The permit conditions require SCE to submit a final restoration plan that substantially conforms to the preliminary restoration plan approved by the Commission in November 1997 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 have 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.

An administrative draft EIR/S was circulated in June 1999 to the involved local, state and federal agencies. Once the public draft EIR/S is released, 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.

### **Wetland Restoration Monitoring**

As part of the Commission's technical oversight, monitoring and management responsibilities under Condition D, the contract scientists are to conduct pre-restoration monitoring to collect baseline data on the wetland attributes to be monitored. One goal of this monitoring is to develop a definition of tidal marsh based on vegetation type, coverage, and tidal inundation. Data on vegetation from San Dieguito Lagoon and other wetlands will be matched with data on tidal elevation and inundation to develop a quantitative definition of tidal marsh that can be used to guide wetland planning and construction, and for selecting reference sites that will be used to evaluate the success of the restoration project. Contract scientists began pre-restoration monitoring of vegetation, tidal elevation, and height of tidal inundation at San Dieguito Lagoon, Tijuana Estuary, Mugu Lagoon, and Carpinteria Salt Marsh in October 1998.

## **2. Status of Reef Mitigation**

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.



### **Preliminary Reef Mitigation Plan**

Following the Commission's approval of the permit amendments in April 1997, the permittee submitted a preliminary conceptual plan for the experimental reef in June 1997, which was approved by the Executive Director and forwarded to state and federal agencies for review. The permittee also was required to obtain a coastal development permit before constructing the experimental reef. Edison submitted an initial coastal development permit application after the conceptual preliminary plan was approved, but the application could not be filed or acted upon until other agency approvals had been obtained. Edison also filed an application with the California State Lands Commission for an offshore lease to construct the experimental reef.

The State Lands Commission determined that under the requirements of CEQA a Program EIR should be prepared to evaluate both the experimental reef and the subsequent full mitigation reef. SCE then filed an amended application with State Lands in February 1998.

### **Environmental Review**

As lead agency for CEQA, the State Lands Commission began the environmental review process in March 1998. A draft PEIR was released in November 1998 and a public meeting held in December 1998. As a result of public and agency comments received on the draft PEIR, SCE and staffs of both the State Lands Commission and Coastal Commission revised the size and design of the experimental phase originally planned at San Clemente. In March 1999, the Executive Director approved the modified design for the experimental phase conditional on it being deemed the preferred plan after environmental review under CEQA and on SCE requesting such an amendment to its proposed project. Edison provided these project modifications to State Lands in early April 1999. At the same time, Edison submitted its revised application for the experimental reef to the U.S. Army Corps of Engineers.

### **Permitting and Construction Completed**

The final PEIR was released May 24, 1999 and concluded that for the experimental reef phase the environmentally preferred project would be the proposed project because it involves less construction and less impacts initially than the other alternatives (other than the No Project alternative). The State Lands Commission certified the final PEIR and issued the offshore lease for the experimental reef on June 14, 1999.

The Coastal Commission approved the coastal development permit for the experimental reef on July 15, 1999. The Army Corps issued its permit on August 13, 1999, enabling SCE to begin construction. Construction of the experimental reef was completed on September 30, 1999.

### **Experimental Reef Monitoring**

The contract scientists produced a proposed monitoring plan for the experimental reef which was reviewed by SCE, resource agencies and other technical specialists and also was included in the draft PEIR for general public review. The Commission approved the proposed monitoring plan for the experimental reef on July 15, 1999. The contract scientists and field assistants began setting up the permanent sampling stations on the experimental modules soon after they were constructed. The contract scientists anticipate completing the setup on the experimental modules and on seven natural reference sites during November 1999.

### **3. Status of Behavioral Barriers**

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

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 seems to indicate that rather than attracting fish to the fish return system, the lights are repelling the fish. The contract scientists are working with SCE to design and implement additional experiments on the lighting system.

### **4. Status of Hatchery Program**

In 1992 the Commission required the permittee to contribute \$1.2 million towards the construction of an experimental marine fish hatchery and an evaluation program to determine whether the hatchery is effective at increasing the stock of fish. (Condition F). The permittee paid the initial sum, therefore fulfilling its permit condition. Construction of the main hatchery began in October 1994 and the building was occupied in May 1995. Development of the tanks and plumbing system for the hatchery began in 1995 and additions and improvements are still being made.

The marine fish hatchery program is operated by the State of California through the Ocean Resources Enhancement and Hatchery Program (OREHP), which is administered by the Department of Fish and Game (DFG). A ten member panel, the Ocean Resources Enhancement Advisory Panel (OREAP), assists DFG in establishing policy for the program. Although the permittee provided funding for the hatchery program, the permittee does not take part in it. Instead the program is overseen by DFG and OREAP. Most of the conditions for the hatchery program contained in the permit therefore have to be met by DFG and OREAP, through a 1994 Memorandum of Agreement (MOA), rather than by the permittee.

## **Department of Fish and Game Operations**

The DFG has been overseeing field sampling associated with sea bass enhancement efforts since at least 1989; the formal evaluation program called for in the MOA was initiated in 1994.

White sea bass are cultured at the hatchery until they reach a length of about 3 inches. At that time they are transferred to grow-out pens which are maintained throughout southern California by a network of community volunteers. After the fish attain a length of about 10 inches they are released. About 10% are tagged for later identification. During calendar year 1998, 32,993 white sea bass were released. There is also an ongoing program to sample wild populations of white sea bass. During 1998, 961 individuals were caught, of which 45 were tagged.

The hatchery program includes a research program to investigate genetic issues. Work began in fall 1998 to document the genetic diversity of natural and hatchery-grown populations. During the past year, there have been recurring problems with water quality at the hatchery. However, the operators believe that those problems have now been solved. There are currently 82,000 one to two inch fish in culture which will be moved to grow-out facilities in the next few months. Hatchery workers are modifying their system to increase water temperatures. The extremely cold water associated with the current La Niña condition results in slow growth.

Oversight of the hatchery program is conducted primarily by permanent Coastal Commission staff. Minor assistance is provided by the contract scientists.

### **D. WORK PROGRAM: 2000 AND 2001**

Condition D requires the permittee to fund scientific and support staff retained by the Commission to oversee the site assessments, project design and implementation, and monitoring activities for the mitigation projects. Scientific expertise is provided to the Commission by a small technical oversight team hired under contract. The technical oversight team members include three Associate Research Biologists from UC Santa Barbara: Stephen Schroeter, Ph.D., marine ecologist, Mark Page, Ph.D., wetlands ecologist (half time), and Daniel Reed, Ph.D., kelp forest ecologist (half-time). A half-time administrator and half-time clerical assistant complete the contract program staff. In addition, a science advisory panel advises the Commission on the design, implementation, monitoring, and remediation of the mitigation projects. Current science advisory panel members include Richard Ambrose, Ph.D., Associate Professor, UCLA, William Murdoch, Ph.D., Professor, UC Santa Barbara, and Peter Raimondi, Ph.D., Associate Professor, UC Santa Cruz.

In addition to the science advisors, the contract program staff is aided by contract field assistants who are responsible for collecting and assembling the monitoring data. The

contract program staff is also assisted on occasion by independent consultants and contractors when expertise for specific tasks (e.g., side scan sonar surveys) is needed. The Commission's permanent staff also spend a portion of their time on this program, but their costs are paid by the Commission and are not included in the SONGS budget.

The Commission's contract scientists working on the SONGS mitigation project are hired under a contract with the University of California, Santa Barbara. They serve as project managers for both the artificial reef experiment and pre-restoration monitoring of the wetland. They are responsible for supervising the contract field assistants, authorizing purchases and subcontracts, and interacting with UC administrative staff on issues pertaining to personnel, budget, and UC policies relevant to the project (e.g., boating and diving safety regulations). Much of the monitoring and many of the experimental reef process studies will need to be adaptively managed, and continuous interaction between the contract scientists and field assistants is crucial to fulfilling the tasks outlined in the monitoring and management plan for the artificial reef experiment.

In July 1999, SCE supported the initial reef monitoring budget approved by the Commission on the conditions that the staff (1) lay out a five-year budget for the reef monitoring program, and (2) as an alternative to a formal bid process, develop cost comparisons to evaluate whether the staff's approach is the most cost-effective. In recent consultations with SCE on this work program, SCE expressed concern about the cost of the experimental reef monitoring program and again suggested that the staff seek competitive bids despite the results of the staff's cost comparison that clearly demonstrate substantial savings by implementing the reef program through a contract with UCSB rather than through private consultants or another university. SCE further suggested that if State funds were involved, the staff would be required to conduct a bid process and contended that the staff is avoiding such a process because private industry funds, and not State funds, are used for the Commission's monitoring and oversight program. In fact, the Commission tries to work with academic institutions whenever possible and, in the case of State-funded universities, no competitive bid process is required.

The staff's conclusions are summarized in the Executive Summary. Appendix A contains the full discussion of the staff's approach for implementing the reef monitoring plan, a five-year budget, and a cost comparison that clearly indicates that the staff's approach is the most efficient, cost-effective, and timely method of achieving the goals of the independent monitoring required by the SONGS permit.

The following oversight and monitoring tasks are anticipated for the mitigation projects in calendar years 2000 and 2001. An estimated timeline for completing these tasks is shown in Exhibit 1.

## **1. Wetlands**

### **1.1 Wetland Restoration Planning**

- a. Consult with the permittee on preparation of the Final Plan and CEQA/NEPA environmental review. Attend frequent meetings to (1) ensure that preparation of the EIR/S and Final Plan is on track, and (2) provide guidance when necessary. Verify the accuracy of the acreage estimates for different habitats using the GIS (Geographic Information System) database.
- b. Review the Final Plan. Determine whether the plan meets the permit requirements and evaluate the potential for degradation of existing wetlands and other sensitive habitats. Consult with experts in the fields of hydrology, engineering, and GIS databases, resource agencies and other interested parties on the Final Plan.
- c. Prepare staff report on the Final Plan. Present findings and recommendations to the Commission.
- d. Assist staff review of coastal development permit application for the restoration.
- e. Consult with the permittee on the restoration. Attend frequent meetings to ensure that restoration proceeds according to the Final Plan and coastal development permit, and in a timely manner.

### **1.2 Finalize the Monitoring and Management Plan**

The permit requires preparation of a Monitoring and Management Plan concurrently with the permittee's preparation of the restoration plan.

- a. Select reference sites for post-construction monitoring. The permit requires an evaluation of the restored wetland relative to approximately four reference wetlands. Contract scientists will select relatively undisturbed, natural tidal wetlands within the Southern California Bight that would be appropriate reference sites for the constructed wetlands. Low elevation aerial photography and differential GPS (Global Positioning System) will be used to assist in this task. The contract scientists will consult with the permittee and experts in wetland ecology during this selection process.
- b. Select method to be used for determining the wetland mitigation project's compliance with the performance standards. The permit requires selection of the standard of comparison for assessing wetland success. Contract scientists will continue to review the literature, evaluate existing data, collect and

evaluate additional data, and consult with other experts in wetland ecology and statistics, as needed, to develop the criteria for assessing similarity between the restored wetland and reference wetlands.

- c. Review existing biological and physical data for San Dieguito and reference wetlands to obtain insight for developing appropriate sampling designs for post-construction monitoring. Preliminary examination of the data collected by the permittee at San Dieguito Lagoon suggests that these data have confounded spatial and temporal patterns of variability and cannot be used to determine the proper spatial scale of sampling. Contract scientists will consult with other wetland experts as needed on ways to resolve this problem (which will include collecting additional data) so that they can develop a robust sampling design.
- d. Select sampling methodology for post-construction monitoring. Decide on best sampling methods (e.g., beach seines vs. beam trawls), and sampling designs (frequency of sampling in time, and the position of samples in space).
- e. Select sampling sites within San Dieguito Lagoon and the reference wetland habitats for post-construction monitoring. This task will require use of differential GPS to determine elevations at the different sampling sites.
- f. Consult with permittee, resource agencies and other wetland ecology experts on wetland management issues. These issues include dredging for inlet maintenance, dredging for restoration-site maintenance, rebuilding revetment that collapses during flooding, re-vegetating barren areas and removing trash.
- g. Finalize the Monitoring and Management Plan. The plan will contain details of the sampling design (methods, spatial and temporal sampling regimes, reference sites, etc.) and a description of the management tasks that are anticipated (e.g. trash removal, control of exotic species).

### 1.3 Conduct Monitoring

The permit requires the staff (through its contract scientists) to conduct and oversee all monitoring associated with evaluating the success of the wetland mitigation project.

- a. Conduct pre-restoration monitoring. The contract scientists and field and laboratory assistants will collect and analyze pre-restoration monitoring data at San Dieguito Lagoon and appropriate reference sites. Pre-restoration monitoring is needed to develop sampling designs for post-restoration monitoring that can most effectively determine whether the various performance standards have been met. Of particular importance are data on the

temporal and spatial scales over which densities and number of wetland species vary. Such data are critical for determining proper sample sizes, and the locations and frequency that samples are collected. The contract scientists will continue experimenting with sampling methods that allow simultaneous (or near simultaneous) monitoring of multiple locations to minimize the potential for spatial patterns of abundance to be confounded by sampling at different times. Field assistants will be hired under contract to help in this work and independent consultants will be retained as needed to assist in taxonomic identification of invertebrate infauna. Other issues that will be investigated during pre-restoration monitoring are (1) the impact to wetlands caused by repeated sampling, and (2) the suitability of various wetlands as reference sites. The contract scientists will continue to collect data on water quality at San Dieguito Lagoon as part of this monitoring.

- b. Conduct construction monitoring. Monitoring will be conducted during construction to: (1) determine whether the work is conducted according to plans, (2) determine whether construction causes adverse impacts to sensitive habitats, and (3) finalize the sampling methodologies for post restoration monitoring. This may require consultation with experts in hydrology, engineering, and GIS databases, and will require the use of differential GPS to determine whether elevations have been constructed to plan.

## 2. Reef

### 2.1 Experimental Reef Monitoring

The permit requires that the Commission's contract scientists oversee the monitoring of the artificial reef experiment, analyze and interpret the monitoring data, and provide the Commission and the Executive Director with recommendations for the design of the larger "build out" reef. Contract scientists will conduct the following activities to accomplish these tasks.

- a. Assemble and manage a team of scientists to conduct the sampling and process studies described in the monitoring and management plan for the artificial reef experiment.<sup>1</sup> Implementation of the monitoring program for the artificial reef experiment involves hiring field assistants (i.e., divers trained in marine biology) to conduct the monitoring and organize the data collection, and issuing subcontracts for side-scan sonar surveys to evaluate changes in reef size and topography.

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<sup>1</sup> *Monitoring and Management Plan for the SONGS Experimental Kelp Reef*, June 1999, approved by the California Coastal Commission July 15, 1999. See staff report entitled Amendment to SONGS Mitigation Program 1998 and 1999 Work Program and Budget: Experimental Reef Monitoring Plan, dated June 24, 1999.

- b. Organize and analyze data collected during the monitoring and process studies and consult with database experts as needed.
- c. Dive at the artificial reef and nearby reference reefs as needed to assist in data collection and to resolve any issues that arise in the monitoring and process studies.
- d. Use results of most recent analyses to evaluate sampling protocols and the experimental designs of the different process studies. Make decisions on how to adapt these protocols and designs as needed.
- e. Consult with the permittee and its contractors on the status of the monitoring and process studies.
- f. Present results on the status of the artificial reef experiment at annual public workshops.

### **3. Behavioral Barriers**

#### **3.1 Effectiveness of Behavioral Barriers**

- a. Consult with the permittee on its experiment investigating the use of lights in attracting fish away from the screenwells of SONGS Units 2 & 3.
- b. Analyze data from the permittee's experiment and determine the effectiveness of the installed lights in reducing in-plant fish losses.
- c. Prepare staff report on the use of lights as an effective behavioral barrier device to reduce fish impingement losses in SONGS Units 2 & 3 and provide recommendations to the Executive Director on the mitigation value associated with the continuous operation of the lights.

### **4. Hatchery**

The majority of the work will be done by permanent Commission staff with very minor assistance from the contract scientists funded through this work program. These tasks add no costs to the overall budget.

#### **4.1 Oversight of the fish hatchery program**

- a. Participate on Joint Panel. Permanent Commission staff member Dr. John Dixon is a member of the Joint Panel that oversees the evaluation of the fish hatchery program and the genetic quality assurance program. The panel's tasks include development of Requests for Proposals, recommendation of



contractor selections to the Director of DFG, development of contract terms, and oversight and evaluation of contractor performance in carrying out the evaluation and genetic quality assurance programs.

- b. Review reports on environmental degradation. Contractors hired by DFG will monitor the hatchery fish to ensure that they are not causing environmental degradation. Each year the contractors will provide written and verbal reports to the Commission for review. If the Executive Director determines that the hatchery is causing significant degradation of the environment, he may order that the hatchery operations be halted.
- c. Review reports on evaluation of success. A contractor hired by DFG will evaluate the success of the hatchery program by: (1) estimating the contribution of hatchery fish to the catch; and (2) estimating the mortality rate of hatchery fish. Each year the contractor will provide written and verbal reports to the Commission for review.

**EXHIBIT 1**

**Estimated Timeline for 2000 and 2001, by Quarters**

◆ = Events ● = Staff tasks	2000				2001			
	J/F/M	A/M/J	J/A/S	O/N/D	J/F/M	A/M/J	J/A/S	O/N/D
<b>1. WETLANDS</b>								
1.1 Wetland Restoration Planning								
Completion of Final EIR/S		◆						
Coordinate peer-review of SCE's hydrology reports	●							
Verify acreage estimates using GIS	●							
Consult with SCE on preparation of Final Plan		●	●					
SCE submits Final Plan to the CCC			◆					
Review Final Plan			●	●				
Prepare staff report on Final Plan				●				
SCE obtains local permits & submits CDP				◆	◆			
Assist staff review of construction permit					●	●		
Consult with SCE on restoration	●							●
Construction						◆		◆
1.2 Finalize Monitoring and Management Plan								
Select reference sites	●			●				
Select method for assessing wetland success	●			●				
Review sampling designs	●			●				
Select sampling methodology	●			●				
Select sampling sites	●			●				
Consult on management issues	●							●
Finalize Monitoring and Management Plan				●				
1.3 Monitoring								
Conduct pre-construction fish and invertebrate sampling and analysis; conduct water quality sampling	●					●		
Conduct construction monitoring						●		●
<b>2. REEF</b>								
2.1 Experimental Reef Monitoring								
Conduct post-construction monitoring & process studies	●							●
<b>3. BEHAVIORAL BARRIERS</b>								
Consult with SCE on effectiveness of installed lights	●			●				
Prepare staff report on the use of lights as effective behavioral barrier device					●			
<b>4. HATCHERY</b>								
Attend Joint Panel meetings	●							●
Review reports on Environmental Degradation				●				●
Review reports on Evaluation of Success				●				●

**E. BUDGET: 2000 AND 2001**

The annual and/or biennial budgets for the Commission's monitoring and oversight program are "zero-based budgets," that is, each budget period begins anew, based on the proposed activities, with no funds from the previous budget carried forward to the new budget period. The total budget to implement the work program is intended as a "not-to-exceed" amount. The permittee provides funds periodically throughout the budget period rather than as a lump sum to minimize the advance outlay of cash. Any funds not expended at the end of the budget period are returned to the permittee.

The proposed budget for calendar years 2000 and 2001 covers the monitoring and oversight program costs for the Commission's contract scientists, contract field personnel to monitor the wetlands and experimental reef, science advisory panel, consultants, contract administrative support, and operating expense during the two-year budget period. Costs associated with the implementation of the SONGS permit and attributable to permanent Coastal Commission staff work and logistical support (time and expense) are not paid by the permittee and thus are not included in this budget.

All of the current and proposed contract program staff except for the half-time administrator are hired under contract with the University of California, Santa Barbara. Drs. Reed, Schroeter and Page are the principal contract scientists overseeing the Commission's technical oversight and monitoring program; they also serve as project managers for the experimental reef and wetland pre-restoration monitoring programs.

The funding proposed to cover the monitoring and oversight program costs during the two year budget period (calendar years 2000 and 2001) is \$2,293,162, as shown below.

**2000 and 2001 SONGS PROGRAM BUDGET**

	2000	2001	Two Yr Totals
<b>Salaries<sup>1</sup></b>			
Scientific and Administrative Staff (3 PY)	225,767	237,462	463,229
Reef Monitoring Field Assistants (6.5 PY)	274,128	289,537	563,665
Wetland Monitoring Field Assistants (1.5 PY)	63,374	66,260	129,634
<b>Total Salaries</b>	<b>\$563,269</b>	<b>\$593,259</b>	<b>\$1,156,528</b>
<b>Benefits<sup>2</sup></b>			
Scientific and Administrative Staff	41,851	44,047	85,898
Reef Monitoring Field Assistants	59,743	63,101	122,844
Wetlands Monitoring Field Assistants	14,576	15,240	29,816
<b>Total Benefits</b>	<b>\$116,170</b>	<b>\$122,388</b>	<b>\$238,558</b>
<b>Scientific Advisory Panel<sup>3</sup></b>	<b>\$118,831</b>	<b>\$121,802</b>	<b>\$240,633</b>

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	2000	2001	Two Yr Totals
<b>Consultants and Contractors<sup>4</sup></b>			
1. Wetlands			
• GIS data base consultation, final restoration plan (task 1.1.a and 1.1.b)	10,000		10,000
• Hydrology/engineering consultation, final restoration plan (task 1.1.b)	10,000		10,000
• Aerial photos, reference site selection (task 1.2.a)	3,000	3,000	6,000
• Invertebrate taxonomic consultation, pre-restoration monitoring (task 1.3.a)		10,000	10,000
• Water quality monitoring (task 1.3.a)	2,500	2,500	5,000
• Hydrology/engineering consultation, construction monitoring (task 1.3.b)		10,000	10,000
• GIS data base consultation, construction monitoring (task 1.3.b)		10,000	10,000
2. Reef			
• Side-scan sonar surveys, post-construction monitoring (task 2.1.a)	30,000	30,000	60,000
• Data base consultation, post-construction monitoring (task 2.1.b)	7,500	7,500	15,000
<b>Total Consultants and Contractors</b>	<b>\$63,000</b>	<b>\$73,000</b>	<b>\$136,000</b>
<b>Operating Expense</b>			
1. Travel (scientific and administrative staff) <sup>5</sup>	25,625	26,266	51,891
2. General expense (SF office) <sup>6</sup>	14,000	14,350	28,350
3. Office space rental, services & supplies (Carlsbad) <sup>7</sup>	34,464	35,326	69,790
4. Arc Info GIS software <sup>8</sup>	14,105		14,105
5. GPS rental <sup>9</sup>	5,000	5,000	10,000
6. Computer repair, maintenance & technical support <sup>10</sup>	5,000	5,000	10,000
7. Review workshop <sup>11</sup>	2,500	2,563	5,063
8. Audit <sup>12</sup>		8,000	8,000
9. Administrative services <sup>13</sup>	30,000	30,000	60,000
<b>Total Operating Expense</b>	<b>\$130,694</b>	<b>\$126,505</b>	<b>\$257,199</b>
<b>Contract Operating Expense</b>			
1. Supplies <sup>14</sup>			
• SCUBA airfills	5,430	5,566	10,996
• Misc. office, lab & field supplies, equip. maintenance	32,800	33,620	66,420
2. Field assistant travel <sup>15</sup>			
• Reef monitoring	10,006	10,256	20,262
• Wetland monitoring	775	795	1,570
3. Boat storage <sup>16</sup>	2,400	2,460	4,860
4. Boat operating expense <sup>17</sup>	23,256	23,837	47,093
5. Insurance, registration & license fees <sup>18</sup>	4,000	4,100	8,100
6. Dive physicals <sup>19</sup>	1,800	1,845	3,645
7. Communications (on-campus) <sup>20</sup>	2,400	2,460	4,860
8. Indirect costs @ 26% of contract operating expense <sup>21</sup>	21,545	22,084	43,629
<b>Total Contract Operating Expense</b>	<b>\$104,412</b>	<b>\$107,023</b>	<b>\$211,435</b>
<b>Equipment<sup>22</sup></b>	<b>\$46,659</b>	<b>\$6,150</b>	<b>\$52,809</b>
<b>TOTAL EXPENSE</b>	<b>\$1,143,035</b>	<b>\$1,150,127</b>	<b>\$2,293,162</b>

**BUDGET NOTES:**

1. Includes salaries and wages for the contract program staff, which includes two scientist positions, administrative support, 6.5 field assistants for the experimental reef monitoring and 1.5 field assistants for the wetland pre-restoration monitoring. All of the current and proposed contract program staff except a half-time administrator are hired under contract with the University of California, Santa Barbara; costs include the University's indirect costs (see Note 21). The half-time administrator is hired under contract with Simpson & Simpson Business and Personnel Services, the firm that provides financial services for the program. The costs for the Commission's permanent staff that spend a portion of their time on this program are not included here; they are paid by the Commission.
2. Includes benefits and employer-paid payroll taxes for contract program staff only. Includes the indirect costs for personnel hired under contract to UCSB (see Note 21).
3. The Scientific Advisory Panel is a panel of experts established by the Commission pursuant to the permit conditions to provide scientific and technical advice. Expenses cover members' time and travel and are limited by the permit to \$100,000 per year adjusted annually in accordance with the consumer price index (CPI) applicable to California. CPI adjustments were made in previous budgets beginning in 1994. The proposed budget for Year 2000 reflects these increases in the CPI through June 1999. A 2.5% increase over the amount for Year 2000 is budgeted for Year 2001.
4. Includes estimated costs for consultants and contractors to provide the technical and expert advice identified in individual tasks of the work program to assist the contract scientists in completing the tasks. Estimated costs are based on previous experience with similar consultants, at rates of \$100-150 per hour.
5. Covers travel for meetings with SCE, Commission staff, consultants and contractors, attendance at agency and public workshops and meetings, site visits, and attendance at conferences related to wetland and kelp forest community restoration issues. Travel costs are for contract scientific and administrative staff only; travel for contract field assistants is covered under Contract Operating Expense, below. Total travel costs are based on previous years' expenditures, with a 2.5% escalator per year.
6. Covers operating expense for contract program staff working out of the Commission's San Francisco office (half-time administrator). Annual costs are based on the Commission's operating expense of \$32,000 per PY for General Expense, Printing, Communications, Postage, Travel, Training and Facilities Operations, calculated less travel allowance for a total of \$28,000/PY. A 2.5% escalator is applied for Year 2001.
7. Rented office space in Carlsbad houses one contract scientific staff (1 PY) and contract field assistants for the reef (6.5 PY) and wetland (1.5 PY) monitoring programs. Annual costs cover space rental, office services and supplies, and communications (including telephone, cell phone service, and DSL service). A 2.5% escalator is used for Year 2001.
8. Covers a one-time cost for Arc Info GIS software and licensing to enable contract scientists to plot biological and physical data over a geographic area.
9. Covers annual rental for GPS equipment to assist contract scientists in determining wetland elevations.
10. Covers annual costs for maintaining the computers used by contract program staff and field assistants, including regular maintenance, repairs, and technical support needed for troubleshooting problems.
11. Covers costs for conducting an annual review workshop, excluding costs for consultants who may be requested to attend the workshop. The intent of the review workshop is to determine whether performance standards have been met, whether revisions to the standards are necessary, and whether remedial measures are required. While it is premature to apply these issues to the mitigation projects still in the planning stages, annual status reviews of the mitigation projects and experimental reef monitoring program will be conducted for the Commission and the public during the two year budget. A 2.5% escalator is used for Year 2001.
12. Covers costs for an independent audit of the contract reimbursements and service fees for the Commission's oversight and monitoring program. Independent audits have been conducted since 1994; no deficiencies in the financial systems have been discovered. Costs are estimated for a 2-year audit.
13. Covers the annual cost of administrative and financial services provided by Simpson & Simpson Business and Personnel Services, Inc.

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14. Covers annual costs for SCUBA airfills for reef monitoring (2,715 fills @ \$2/fill) and miscellaneous office, laboratory and field supplies for reef monitoring (\$18,000), wetland pre-restoration monitoring (\$3,600), project managers and clerical assistant (\$10,000), and software (\$1,200). A 2.5% escalator is applied for Year 2001.
15. Covers travel for contract field assistants. Annual reef monitoring travel costs cover travel to and from launch sites and launch fees (calculated as 306 trips @ 70 miles/trip @ \$.31/mile plus \$11 launch fee/trip). Annual wetland monitoring travel costs cover travel to and from field sites (calculated as 50 trips @ 50 miles/trip @ \$.31/mile). A 2.5% escalator is applied for Year 2001.
16. Boat storage costs for the reef monitoring program are calculated at \$200/month per year. A 2.5% escalator is applied for Year 2001.
17. Annual boat operating expense for the reef monitoring program is calculated as 306 trips, 2 hours running time/trip @ \$38/hour. A 2.5% escalator is applied for Year 2001.
18. Covers annual insurance, registration and license fees for the boats and tow vehicles. A 2.5% escalator is applied for Year 2001.
19. Annual dive physicals are required of each diver, calculated as nine @ \$200 each. A 2.5% escalator is applied for Year 2001.
20. Covers on-campus telephone service for contract scientific and administrative staff located at UCSB. A 2.5% escalator is applied for Year 2001.
21. The off-campus rate of 26% of direct costs is set by the U.C. Systemwide Administration. For these costs, the project receives: office space at UCSB for 1 PY contract scientific staff and .5 PY contract administrative staff (even through the on-campus overhead rate is normally 46%), utilities, internet services, laboratory facilities and equipment, administrative services associated with payroll, employee benefits, liability insurance, dive and boat safety programs, and purchasing for both on-campus staff and staff located in the Carlsbad office, library services, UC subsidized pricing on goods and services, site licenses for software, and access to faculty and staff expertise on a wide variety of issues. In previous years, the Commission and SCE were fortunate to have UCSB allow the very low 10% overhead rate reserved for state agencies, based on the premise that the Commission's oversight and monitoring program is conducted under the direction of a state agency even though the funds are provided by private industry. The U.C. Systemwide Administration has now disallowed this rate unless the funds are actually state funds. Despite the increase in the overhead rate—which is still reasonably low—the project, as run through the UCSB contract, will cost less than private consultants or other universities, as detailed in the cost comparison contained in Appendix A.
22. Covers durable equipment for the experimental reef and wetland pre-restoration monitoring programs to be purchased as needed. May include computers, office equipment (such as fax and copier), microscopes, soil salinity test kits, inflatable boat and trailer, multi-parameter monitoring system, and miscellaneous equipment for the reef and wetland monitoring programs.

## APPENDIX A

### EXPERIMENTAL REEF MONITORING PROGRAM: FIVE-YEAR BUDGET AND COST COMPARISON

In July 1999, the Commission approved the *Monitoring and Management Plan for the SONGS Experimental Kelp Reef*, which describes the sampling and process studies to be conducted during the 5-year experimental phase of the reef mitigation project, and a supplemental budget to initiate implementation of the monitoring program between July and December 1999. At that time, the staff had proposed to implement the monitoring program using (1) existing contract scientists (who are employed as research biologists at the University of California, Santa Barbara) to serve as project managers to oversee the monitoring program and evaluate the results of the experiment, and (2) contract technicians working under their direction to conduct the monitoring and organize the data collection. The staff believed that this would be the most effective structure, primarily because the existing contract scientists are already hired under contract with UCSB and could serve as project managers at no additional cost and because the University's salary and benefit rates are competitive with (and usually lower than) non-academic contractors. At that time, SCE raised a concern about a directed contract to UCSB rather than a process seeking competitive bids, but agreed to support the staff's recommendation for the experimental reef monitoring program on the conditions that the staff (1) lay out a five-year budget for the monitoring program, and (2) as an alternative to a formal RFP process, develop a cost comparison to evaluate whether the UCSB contract approach is the most cost-effective.

The following discussion summarizes the monitoring and management plan, the work effort and structure needed to implement the monitoring program, the five-year budget, and a cost comparison.

#### Development of the Monitoring Plan

The Commission's independent monitoring and technical oversight program includes the preparation of a monitoring plan for the experimental reef to assess the effectiveness of alternative reef designs, materials, and management techniques in achieving the performance standards contained in the permit conditions for giant kelp and associated kelp forest biota.

Important changes have occurred in the experimental reef project design since the staff first began formulating its conceptual monitoring plan. First, in its April 1997 approval of amended permit conditions, the Commission agreed to allow substrate materials other than the originally required quarry rock and less coverage of the sea floor if the results of the experimental reef indicated that a different coverage or substrate type could replace a minimum of 150 acres of medium to high density giant kelp and associated kelp forest biota. Thus, a major objective of the experimental reef is to determine the percentage of substrate coverage and substrate types that can be used to meet the performance standards for the mitigation reef.



Second, to address public and agency comments during the CEQA review, SCE revised the experimental reef preliminary plan in April 1999, in cooperation with the staffs of the Commission, California State Lands Commission, and California Department of Fish and Game. The revised plan calls for seven replicate blocks consisting of eight 0.4-acre modules or reef designs that have varying combinations of substrate cover, substrate type and kelp transplanting, for a total of 22.4 acres of hard substrate.

Finally, the Commission reduced the length of the reef experiment from ten years to five years in an attempt to have the mitigation reef built as soon as possible. This period may not be sufficient for the development of a mature kelp forest community and there is no guarantee that reef designs that appear successful at the end of the experimental period will continue to meet the performance criteria in the future. In recognizing the uncertainty created by shortening the monitoring period, the Commission found that mechanistic studies will be necessary to assess the effectiveness of the alternative reef designs, materials, and management techniques and specifically required SCE to fund these and any other studies that the Executive Director deems necessary to make reliable projections of reef performance over the long term.

With these changes in mind, the contract scientists completed a draft of the monitoring plan in May 1998 and circulated it to SCE and state and federal resource agencies for review. The draft monitoring plan also was included in the draft Program Environmental Impact Report (PEIR) for the reef mitigation project for general public review, and is contained in the final PEIR. In response to comments, the contract scientists revised the monitoring plan and conducted a technical workshop with SCE, the resource agencies, and other technical specialists in June 1999. The resulting *Monitoring and Management Plan for the SONGS Experimental Kelp Reef* was approved by the Commission in July 1999.

### **Summary of the Approved Monitoring Plan**

The Commission's monitoring and management plan contains a three-part approach to evaluating the results of the experimental reef. First, physical and biological variables will be monitored to determine the degree to which the eight reef designs achieve certain performance standards that will be used to judge the larger mitigation reef. These standards include, for example, the amount of rock that has to remain on top of the sand, and the abundance and diversity of fish, invertebrates and algae that the reefs must support. Second, monitoring data will be used to evaluate the performance of the eight reef designs relative to each other. Third, experiments will be done and additional data will be collected and used to predict which design(s) will most likely be successful if applied to the mitigation reef. These data will relate key physical and biological processes to specific aspects of kelp community development, and the degree of success in achieving the performance criteria.

The monitoring plan sets forth performance criteria for evaluating the experimental reef. In addition to these criteria, information on the performance of different designs



relative to each other and on the biological and physical processes that affect their performance will be used to evaluate their potential to meet the performance standards for the mitigation reef over the long term. The monitoring plan also cites the need for concurrent monitoring of natural reefs to help ensure that regional changes in oceanographic conditions affecting the experimental reef will be reflected in the performance criteria, and establishes the criteria for selecting the areas to be used as natural reference reefs. Methods for data collection and analysis and methods for evaluating the studies are also included in the plan.

The end product of the experimental reef monitoring program will be a final report to the Executive Director for Commission and public review. The final report will include a recommendation on the substrate types and coverages deemed most suitable for the mitigation reef. The final report and comments on it will form the basis for the Executive Director's decision on the type(s) and coverage(s) of substrate allowable for the mitigation reef.

### **Work Effort Required to Implement the Monitoring Program**

The majority of work involves SCUBA diving and small boat operations. In addition, contract field assistants will be responsible for processing and analyzing samples collected in the field, organizing and managing the collected data, preparing and maintaining field equipment, and scheduling and organizing dive trips.

The diving effort is divided into the two major categories: monitoring and process studies. Assumptions were made on the dive depth (50 ft.), average dive time (40 minutes), number of dives per day per diver (3), and number of divers per day (6). The total number of modules for the monitoring is 63, i.e., 56 experimental and 7 control. The process studies will be conducted on the 56 experimental modules only.

For each performance standard (kelp, fish, invertebrates, algae, substrate), the contract scientists identified the work to be done (e.g., tagging and counting number of kelp, counting fish, etc.) and the frequency for both the monitoring and process studies. The contract scientists then estimated the number of dives per module that are needed to accomplish the work and calculated the number of diving days (at six divers per day) based on that effort.

Using this method, the annual estimated work effort is 76 diving days for monitoring and 91 diving days for process studies, for a total annual estimate of 167 diving days (at six divers per day). There are about 248 work days per year. Of that, 167 days are allocated to diving and 15 days are allocated to vacation, leaving just 66 days for the non-diving tasks. The staff's best estimate of personnel needed to cover the entire work effort and allow for some contingencies (such as weather and sick leave) is a total of 6.5 field assistants. The number of field assistants required will be evaluated throughout the two-year budget period and any necessary adjustments made.

## Structure to Implement Monitoring Program

The Commission's contract scientists, Drs. Daniel Reed (50% time), Stephen Schroeter (100% time), and Henry M. Page (50% time), are employed as research biologists at the University of California, Santa Barbara. They are retained by the Commission under a contract with UCSB, and serve as project managers for the Commission's technical oversight and independent monitoring of the SONGS mitigation projects. Drs. Reed and Schroeter are the principal scientists for the reef mitigation project.

Implementation of the monitoring program requires both (1) contract scientists to serve as project managers to oversee the monitoring program and evaluate the results of the experiment and (2) contract technicians (i.e., divers) to conduct the monitoring and organize the data collection. The specific design of many of the process studies described in the monitoring plan will depend on which organisms colonize the artificial reef modules and when. Consequently, close collaboration between the scientists collecting the data and those analyzing them is needed to successfully implement the monitoring plan. With close collaboration and consistent staffing, the process studies can be tailored to obtain the information needed to meet the project's objectives within the five year study period. The staff believes the most effective way to achieve this close collaboration is to use the existing contract scientists in their role of project managers. Having prepared the monitoring plan approved by the Commission, Drs. Reed and Schroeter are the scientists most knowledgeable of its objectives and what is needed to insure that it is successfully implemented.

Moreover, by continuing the existing UCSB contract, the monitoring program bypasses additional layers of project management that would be needed under a new contract with either another university or private consultant. This would be necessary because this work cannot be done by rote. Adaptive management is necessary and Commission contract scientists would have to be closely and continuously involved in the monitoring even if the work were carried out by another entity. The proposed structure makes more effective use of the contract scientists' time and better enables them to ensure that the monitoring is carried out according to the plan approved by the Commission.

The majority of work on the monitoring program will involve SCUBA diving and small boat operations. All contract personnel will actively participate in these activities. In addition, the contract field assistants will have major responsibilities for laboratory processing and analysis of samples collected in the field, and data entry and database management. Specifically, the *Associate Specialist I* will be responsible for supervising the day to day operations of the project and will consult frequently with Commission contract scientists on all matters. His/her primary duties will be to direct and participate in the field work and organize and oversee the management of all data collected. The two *Staff Research Associates (III)* will be responsible for overseeing the logistics of field operations, including organizing dive trips (e.g., scheduling personnel, preparing supplies, equipment and data collection needs for the field), maintaining equipment (e.g., boats, vehicles, drills) in proper working order,

and supervising the processing and analysis of samples collected in the field. The four *Laboratory Assistants* (Staff Research Associates I) will assist in data collection in the field, laboratory processing and analyses of samples collected in the field, data entry, and other duties as assigned. The contract field assistants will work out of a rented office in Carlsbad, California, under the day-to-day supervision of Dr. Schroeter. Dr. Reed, who is a member of the UCSB Diving Safety Board, will be responsible for diving safety protocols.

### 5-Year Budget for Experimental Reef Monitoring Program

The staff developed the proposed budget based on the work effort needed to set up and monitor the experimental and reference reef sites. The budget in Table 1 is an estimate only, subject to change as the monitoring program proceeds over the next five years. Salaries were calculated using University of California salary projections for the fiscal years 2000-2004. Employee benefits and indirect costs were calculated on the basis of rates set by the U.C. Systemwide Administration. An annual 2.5% escalator is used for the other expense categories.

Table 1. Estimated Five-year Experimental Reef Monitoring Program Budget

	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004
<b>SALARIES</b>					
Associate Specialist I (100%)	43,731	46,167	48,660	51,432	54,282
Staff Research Associate III (100%)	35,649	36,897	38,190	39,522	40,902
Staff Research Associate III (100%)	35,649	36,897	38,190	39,522	40,902
Staff Research Associate I (100%)	29,295	31,380	33,612	36,000	38,556
Staff Research Associate I (100%)	29,295	31,380	33,612	36,000	38,556
Staff Research Associate I (100%)	29,295	31,380	33,612	36,000	38,556
Staff Research Associate I (50%)	14,648	15,690	16,807	18,001	19,279
	<u>217,562</u>	<u>229,791</u>	<u>242,683</u>	<u>256,477</u>	<u>271,033</u>
Indirect Costs @ 26%	<u>56,566</u>	<u>59,746</u>	<u>63,098</u>	<u>66,684</u>	<u>70,469</u>
<b>SALARIES SUBTOTAL</b>	<b>\$274,128</b>	<b>\$289,537</b>	<b>\$305,781</b>	<b>\$323,161</b>	<b>\$341,502</b>
<b>BENEFITS</b>					
Associate Specialist I	7,434	7,848	8,272	8,743	9,228
Staff Research Associate III	8,199	8,486	8,784	9,090	9,407
Staff Research Associate III	8,199	8,486	8,784	9,090	9,407
Staff Research Associate I	6,738	7,217	7,731	8,280	8,868
Staff Research Associate I	6,738	7,217	7,731	8,280	8,868
Staff Research Associate I	6,738	7,217	7,731	8,280	8,868
Staff Research Associate I	3,369	3,609	3,866	4,140	4,434
	<u>47,415</u>	<u>50,080</u>	<u>52,899</u>	<u>55,903</u>	<u>59,080</u>
Indirect Costs @ 26%	<u>12,328</u>	<u>13,021</u>	<u>13,754</u>	<u>14,535</u>	<u>15,361</u>
<b>BENEFITS SUBTOTAL</b>	<b>\$59,743</b>	<b>\$63,101</b>	<b>\$66,653</b>	<b>\$70,438</b>	<b>\$74,441</b>
<b>OPERATING EXPENSE</b>					
<b>Supplies</b>					
1. SCUBA airfills (2,715/year @ \$2/fill)	5,430	5,566	5,705	5,848	5,994
2. Misc. office, lab & field supplies, and equipment maintenance	18,000	18,450	18,911	19,384	19,869

	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004
<b>Travel</b>					
1. Travel to field sites, launch fees (306 trips/year @ 70 mi/trip @ \$.31/mi plus \$11 launch fee/trip)	10,006	10,256	10,512	10,775	11,044
<b>Other Operating Costs</b>					
1. Boat storage	2,400	2,460	2,522	2,585	2,650
2. Boat operating expense (fuel, maintenance) (306 trips/year, 2 hr running time/trip @ \$38/hr)	23,256	23,837	24,433	25,044	25,670
3. Insurance, registration & license fees for boats & vehicles	4,000	4,100	4,203	4,308	4,416
4. Dive physicals (9/year @ \$200/each)	1,800	1,845	1,891	1,938	1,986
	<u>64,892</u>	<u>66,514</u>	<u>68,177</u>	<u>69,882</u>	<u>71,629</u>
Indirect Costs @ 26%	16,872	17,294	17,726	18,169	18,624
<b>OPERATING COSTS SUBTOTAL</b>	<b>\$81,764</b>	<b>\$83,808</b>	<b>\$85,903</b>	<b>\$88,051</b>	<b>\$90,253</b>
<b>EQUIPMENT</b>					
	\$4,340	\$4,449	\$4,560	\$4,674	\$4,791
<b>TOTAL COSTS/YEAR</b>	<b>\$419,975</b>	<b>\$440,895</b>	<b>\$462,897</b>	<b>\$486,324</b>	<b>\$510,987</b>

### Cost Comparison

To perform the cost comparison, the staff used proposals from private consultants in response to a 1995 Request for Proposals for kelp reef field work. The scope of work included conducting a kelp recruitment experiment to determine the best method for establishing kelp on the mitigation reef and collecting data on physical and biological variables useful for designing a post construction monitoring plan. These are the same variables that will be used to evaluate the experimental reef. No contracts were executed at the time.

The staff received six proposals, three of which included the kelp reef tasks. All three of the kelp proposals were from private consultants. The consultants' cost data identified in these proposals are four years old and have not been adjusted to current dollars. Thus, their use in this comparison is conservative as consultant costs in 1995 dollars are compared to UCSB costs in 2000 dollars. Economic changes reflected in the Consumer Price Index (All Urban Consumers) show an increase of 13.92% for the San Francisco Bay Area and of 8.15% for the Los Angeles region since September 1995.

To compare costs, the staff looked at the "fully loaded" rates, i.e., hourly rates that include salary, benefits, and overhead, and the percentage of project time allocated to each level of personnel. The fully loaded rates ranged from \$20 for Research Assistant (listed "as needed" and not allocated any specific time for the work) to \$126 per hour for Director. The preponderance of effort was proposed at rates of \$65, \$70, and \$80 per hour. Table 2 below illustrates the range of rates and percentage of project time for each rate as listed in the three 1995 proposals for the kelp reef tasks.

Table 2. Comparison of Rates from 1995 Proposals for Kelp Reef Field Work

Proposal 1		Proposal 2		Proposal 3	
Hourly rate	Percentage of Project Time	Hourly rate	Percentage of Project Time	Hourly rate	Percentage of Project Time
\$65	45%	\$126	15%	\$100	10%
\$50	20%	\$80	56%	\$80	15%
\$35	35%	\$54	26%	\$70	45%
		\$48	3%	\$60	25%
				\$50	5%
				\$30	as needed
				\$20	as needed

In contrast, the fully loaded rates for UCSB-hired field assistants range from \$21 to \$32 per hour. The greatest workload is at the \$21 rate for Staff Research Associate I. Table 3 shows the breakdown of the rates and percentage of project time for monitoring program personnel hired under contract with UCSB.

Table 3. Reef Monitoring Personnel Under Contract with UCSB

Position	Hourly Rate	Percentage of Project Time
Associate Specialist I	\$32	15%
Staff Research Associate III	\$26	31%
Staff Research Associate I	\$21	54%

In addition to the hourly rates, the staff also looked at diving-related costs. Two of the private consulting proposals added a dive charge of \$75 per diver per day, an equipment charge of \$500 per day and a boat use fee of \$1,500 per day. (The third proposal acknowledged additional charges for use of boats and dive equipment but did not quote a price.) Assuming the six divers and two boats per day needed for the monitoring program (as estimated in the five-year UCSB budget), these costs would total \$3,950 per day of diving. At 167 days of diving per year, the added costs would exceed \$650,000 per year. In contrast, the annual diving-related costs estimated for the UCSB contract (i.e., SCUBA airfills, boat storage and operations, insurance, registration and license fees, dive physicals, and indirect costs, plus capital costs for two boats

and dive gear amortized over the five year program) total less than \$70,000. *At these costs, running the program through a contract with UCSB would save over \$2.9 million during the course of five years on diving-related costs alone.*

The staff recognizes that a lower price for diving-related costs could potentially be negotiated with a private consultant for a long-term contract. However, a large portion of diving costs are insurance premiums that cannot be avoided by consultants, whereas the University is self-insured. The staff believes that the nearly ninety percent reduction needed to make one of these private consultants competitive with the UCSB contract is beyond reasonable expectation. When taken together with the personnel cost data from firms willing and able to undertake the kelp reef monitoring, the cost comparison clearly shows that hiring field assistants under the UCSB contract costs substantially less than representative private consultants.

The staff carefully considered other alternatives as well. For example, other university rates are comparable to UCSB rates, and the project in fact draws on the expertise from other universities through members of the scientific advisory panel (UCLA and UCSC in addition to UCSB) and through extensive recruitment activities throughout the University of California system and beyond. Even though the contract is through UCSB, the program will maximize collaboration with other university scientists. However, setting up the monitoring program through another university would result in increased costs for project management since university policy dictates that at least one Ph.D. level scientist would need to serve as project manager for a contract such as this that hires field assistants. In the case of the UCSB contract, Drs. Reed and Schroeter act as project managers at no additional cost to the project. Thus, a contract with a university other than UCSB would not only increase costs but would also reduce the efficiency of the monitoring program by adding an unnecessary, duplicative layer of project management. Continuing the monitoring program under the UCSB contract also takes advantage of a contract that is already in place, ensuring that the monitoring is undertaken in a timely manner and carried out according to the monitoring plan prepared by Drs. Reed and Schroeter and approved by the Commission.

In conclusion, the staff believes that the cost comparison—based on factual, relevant cost data—demonstrates that implementing the monitoring program under contract with UCSB, with data collection done under the direction of the Commission's contract scientists, is the most efficient, cost-effective, and timely method of achieving the goals of the independent monitoring required by the SONGS permit.

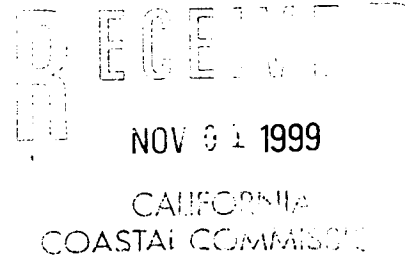


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**Michael M. Hertel, Ph.D.**  
President

October 22, 1999



Susan Hansch, Deputy Executive Director  
California Coastal Commission  
45 Fremont, Suite 2000  
San Francisco, CA 94105-5200

Dear Susan,

Jody Loeffler forwarded us a draft of the 2000-2001 SONGS Marine Mitigation Work Program and Budget for review and comment. We appreciate this opportunity to work with the Commission staff to finalize a program and budget that the Commission will find is reasonable in scope and structure, cost-effective, and provides the information the Commission will need to make future decisions about the adequacy of the SONGS mitigation program.

The SONGS permit stipulates that necessary mitigation studies and monitoring is to be done independently of the permittee, under the direction of the Executive Director. The permit also makes clear it is the objective of the Commission to undertake the necessary studies and monitoring in the most cost effective manner possible.

The draft work program proposes that the Commission employ the equivalent of 11 people, eight of whom are allocated full-time, to work on the SONGS mitigation projects during the next two years (5 years with the experimental reef project). In addition, two or three scientific advisors will be employed to assist in some undefined manner. The proposed budget of approximately \$1.13 million per year does not include 1998-99 budget augmentation of \$304,000 for "start-up costs" associated with the experimental reef project, which includes the purchase of two vehicles, three boats, diving and computer equipment and various miscellaneous items. In total, estimated costs for year 2000-01 monitoring and "process studies" amount to over \$2.5 million. Based on our experience with environmental consulting firms, this proposed organization, and operating budget is equivalent to that of a mid-sized environmental consulting firm.

We have consistently urged and urge again that a scope of work for these projects be set forth in a Request For Proposals (RFP) and that competitive bids be solicited. This will ensure that the best people are working on the project at the most competitive price. The 2000-01 work program proposes what is essentially a directed award to the University of California at Santa Barbara. The proposal argues that the UCSB approach is the most cost effective because the University charges low hourly rates and has reduced its overhead charge in an effort to win Commission support. While the UCSB charges may be reasonable, there is no way to tell whether they are competitive without going to bid. Appendix A of the work program entitled Experimental Reef Monitoring Program: Five-

Year Budget and Cost Comparison, compares the proposed budget with estimates obtained from contractor proposals the Commission Staff received in 1995 in an attempt to make the case that the proposed 2000-01 program and budget is the most cost-effective option. However, those cost estimates were based on a different scope of work, and certainly would in no way reflect what other qualified entities (universities or private consulting firms) might propose today. In our view, this comparison is simply not a valid way of determining whether the proposed work plan is the most cost-effective approach.

Based on our understanding of state contracting policies, when state funds are involved, a competitive bidding process is required. The obvious reason for this is that it offers the best opportunity for all qualified entities to "throw their hat in the ring", thus assuring that the state will be working with a qualified contractor at a competitive price. There is no valid reason why this process should be averted simply because state funds are not involved in the SONGS program. We do this as a matter of course in our own contracting process because it is good business practice and the Commission ought to follow the same practice to arrive at the most cost effective way of performing the monitoring aspects of the SONGS marine mitigation program.

We appreciate the opportunity to continue to work with the CCC staff as it moves forward in directing and overseeing reasonable, necessary, and cost-effective studies and monitoring efforts related to the SONGS Marine Mitigation Program.

Sincerely,



cc: Jody Loeffler