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Energy and Ocean Resources Unit

Staff: ZPH/SMH/MKH/JJL/AFR/RVB/ & SONGS Mitigation Program Scientific Team–SF

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STAFF RECOMMENDATION
PERMIT AMENDMENT AND CONDITION COMPLIANCE

APPLICANT: Southern California Edison Company (Edison) on behalf of Edison, San Diego Gas and Electric Company, and the Cities of Anaheim and Riverside, as Owners of San Onofre Nuclear Generating Station (SONGS) Units 2 and 3

PERMIT NO: 6-81-330-A (formerly 183-73)

PROJECT DESCRIPTION:

1) Permit Amendment: Request to amend 1991 permit conditions that require mitigation for adverse impacts to the marine environment caused by construction and operation of SONGS Units 2 and 3;

2) Condition Compliance: Request for approval of preliminary wetland restoration plans and plan for experimental artificial reef for kelp.

SUBSTANTIVE FILE DOCUMENTS: See Appendix A

EXECUTIVE SUMMARY

Southern California Edison (SCE) (the permittee) as majority owner and operating agent seeks to amend the coastal development permit for the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3. The proposed amendment package would significantly alter the mitigation conditions that were adopted by the Commission in 1991 to address the adverse impacts of the power plant on the marine environment. The submittal from the permittee also includes proposed plans for Commission review for compliance with Condition A–Wetland Mitigation and Condition C–Kelp Bed Mitigation.

STAFF RECOMMENDATION

The staff recommends that the Commission:

1) ***Adopt a resolution approving a package of amended conditions as revised by the staff, and***

2) ***Adopt a resolution: 1) approving the preliminary plan for San Dieguito Wetlands if revised; 2) approving Ormond Beach Wetlands as a site suitable for development of a preliminary plan for a wetland mitigation project as required by Condition A; and 3) approving the preliminary plan for the experimental kelp reef.***

The permittee's proposed amendment package as submitted does not fully mitigate impacts to the marine environment caused by the construction and operation of SONGS Unit 2 and 3, and is therefore not consistent with the Coastal Act. Some components of the permittee's amendment package do provide mitigation commensurate with the impacts and are therefore consistent with the Coastal Act. The staff has prepared and is recommending approval of a complete, revised package of conditions that address adverse impacts caused by the SONGS and takes into account, to the extent possible, the permittee's preferred method of mitigating the adverse impacts. The recommended revised conditions retain some elements of the 1991 conditions, include many of the permittee's proposed amendments, and include staff's revisions. Staff has also prepared conditions of approval and findings that address the plans submitted in compliance with Condition A—Wetland Mitigation and Condition C—Kelp Bed Mitigation.

The Summary Table in this Executive Summary provides a succinct compilation and comparison of the 1991 permit conditions, the permittee's requested amendments, key components of the staff recommendations, and the permittee's progress towards full condition compliance.

HISTORY AND BACKGROUND

In 1973, the California Coastal Zone Conservation Commission (CCZCC, now the California Coastal Commission) denied a permit for the construction of SONGS Units 2 and 3. In 1974, the Commission approved a permit for the construction of the SONGS Units 2 and 3 with conditions that: 1) established a three-member independent Marine Review Committee (MRC) comprised of members appointed by the Commission, the permittee, and an environmental coalition that had opposed the project, to carry out a comprehensive field study to predict and measure the impact of the SONGS on the marine environment; and 2) authorized the Commission to require the permittee to make future changes in the SONGS cooling system (as extensive as the installation of cooling towers) to address adverse impacts to the marine environment identified by the MRC.

The 1974 coastal development permit authorized the construction and operation of SONGS Units 2 and 3 prior to a complete analysis of, and mitigation for, marine resource impacts. In 1979, based on recommendations from the MRC, the Commission recognized that compensatory mitigation measures could be appropriate in addition to, or in-lieu of, changes to the SONGS cooling system (e.g., mitigation by avoidance).

In 1989 the MRC submitted its final report and recommendations. The recommendations in the MRC final report (concurred with by the permittee's representative) documented significant impacts to fish populations in the Southern California Bight, and to the San Onofre kelp bed community. The MRC's Final Report also included recommendations for mitigating adverse impacts to the marine environment caused by the SONGS.

The 1974 permit is still in full force and effect, and its conditions gave the Commission the authority in 1991 to further condition the coastal development permit to require the existing comprehensive mitigation package based on the findings and recommendations of the MRC.

The Commission's Adopted 1991 Conditions

The Coastal Commission staff presented its recommended mitigation package (based on the MRC's comprehensive study and final report) to the Commission at a public hearing on July 16, 1991. The Commission concluded that a compensatory mitigation program was the most cost-effective means of dealing with the impacts of the SONGS Units 2 and 3 because costs would be lower, and unlike the impact avoidance options considered but rejected, compensatory mitigation would not interfere with plant operations or result in reduced plant efficiency. The Commission therefore further conditioned the SONGS permit to require implementation of the following mitigation program elements:

- creation or substantial restoration of at least 150 acres of Southern California wetlands (Condition A);
- installation of fish barrier devices at the power plant (Condition B); and
- construction of a 300-acre kelp reef (Condition C).

The permit conditions adopted by the Commission also require the permittee to fund administrative oversight and independent monitoring of the mitigation program (Condition D), to be conducted by a small mitigation monitoring program team and necessary scientific contractors under the direction of the Commission's Executive Director. Condition E requires public availability of the MRC data.

In approving the 1991 permit conditions, the Commission found the mitigation, monitoring, and remediation program to be a ***minimum*** package, and that the only way the permittee should be allowed to mitigate adverse impacts through compensation rather than make extensive changes to the SONGS cooling system to prevent adverse impacts was through the full adopted mitigation package.

The Commission then directed the staff to consider the need for additional mitigation, identifying specifically that consideration be given to a fish hatchery program. On March 23, 1993, the Commission added a requirement (Condition F) for the permittee to partially fund construction of an experimental white seabass hatchery program ($1.2 million). Due to its experimental nature, the Commission did not assign mitigation credit for the hatchery.

In 1992, at the permittee's request, the Commission approved the San Dieguito wetlands as the site for 150 acres of wetland restoration.

COMMISSION STAFF REVIEW OF AMENDMENT APPLICATION

Criteria for Filing Amendment Application

The Commission's regulations governing permit amendments require that, in order to be accepted for processing, amendments to coastal development permits must not " lessen or avoid the intended effect of a ... conditioned permit" unless the applicant provides "newly discovered material information" that could not have been produced before the permit was granted (Section 13166(a)(1).

In 1995, the permittee submitted an amendment request that was rejected by the Executive Director as not meeting this standard. On a 6 to 6 vote the Commission chose not to overturn the Executive Director's determination. Therefore, the 1995 amendment application was rejected and the 1991 adopted conditions remained in full force and effect.

The staff reviewed the permittee's current amendment request for compliance with the regulations governing permit amendments and determined that although some components of the proposed amendments do not meet the criteria for acceptance, the overall package does. The amendment application before the Commission now is different in several ways from the rejected 1995 amendment request. The current amendment request includes a review of the permittee's new kelp data by the Independent Technical Review Panel (a three-member panel jointly selected by the permittee and the Commission staff) who reached the ***qualitative*** conclusion that "the impact of San Onofre

Nuclear Generating Stations (SONGS) on kelp abundance is much less than originally predicted by the MRC." The CCC staff accepts this conclusion by the independent scientists and believes this new information reviewed by a group of independent scientists warrants that the Commission accept the amendment for filing and review on its merits.

Commission Staff and Permittee Attempt to Develop a Consensus Alternative Mitigation Package

During the November 1995 hearing, the Executive Director stated his high priority objective of getting the mitigation implemented as soon as possible by working with the permittee to develop an alternative amendment package that could be accepted for filing and be brought to the Commission for a public hearing and decision. The Commission also gave the Commission staff and the permittee the charge to get the mitigation plan implemented as soon as possible.

Since November 1995, the staff has worked intensively with the permittee and others to try to develop an acceptable amendment package that is consistent with the Coastal Act. Numerous meetings with the permittee, staff from California Department of Fish and Game (CDFG), United States Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and other agencies, and outside scientists have been required to discuss the permittee's concerns relating to implementation of the 1991 permit conditions and the appropriateness of any amendments to the mitigation program. The permittee states the staff has required numerous studies and technical meetings above and beyond what is required by the current permit. However, these studies and meetings were necessary to allow informed decisions regarding appropriate changes based on the permittee's desire to reduce the mitigation package stipulated in the 1991 permit. Some of the staff's attempts to reach a compromise include:

Partial Credit for Enhancement

- The staff has compromised to meet the permittee's desire to satisfy some of the wetland mitigation obligation through partial credit for enhancement of existing functioning wetlands by inlet maintenance. The 1991 permit calls for creation or substantial restoration of at least 150 acres of coastal wetland, and the continued maintenance of tidal flushing. Thus, allowing partial credit for enhancement activities (e.g., inlet maintenance at San Dieguito Lagoon) requires a permit amendment. Through this compromise, the staff has offered to support the permittee in seeking Commission approval for an amendment to allow partial credit toward the 150-acre requirement for enhancement activities. However, Commission staff and the resource agencies do not agree with the permittee regarding the level of appropriate credit for inlet maintenance.

Interagency Wetland Advisory Panel's Recommendations

- As a way to reach an agreement on the amount of partial credit for inlet maintenance at San Dieguito Lagoon, the staff and the permittee sought the advice and recommendations of the Interagency Wetland Advisory Panel (IWAP) (Exhibit 3). However, the permittee's mitigation plan for San Dieguito Lagoon has not addressed the IWAP recommendations and requests substantially more credit for inlet maintenance than either the IWAP or staff can support. Commission staff used the majority of the IWAP recommendations in framing the staff recommendation.

Independent Review Panel for Kelp Studies

- The permittee collected additional data on the San Onofre kelp bed after the MRC field studies were terminated. The permittee used some of the same contractors that the MRC used. The permittee's contractors used the same methods as the MRC, but did not study all the same parameters measured by the MRC. The permittee's contractors confined their work to documenting changes in kelp abundance. The MRC's work was more comprehensive and included measurements of the influence of sea urchins, light levels, and turbidity.

- Commission staff compromised on its first choice of having the MRC scientists review the permittee's new kelp data (based on the 1993 Commission resolution regarding MRC dissolution), by agreeing with the permittee's proposal to establish a three member Independent Review Panel. The permittee and the Commission staff jointly selected the three member scientific panel and jointly framed the questions for the panel to consider.

- The staff agrees with the Independent Panel's ***qualitative*** results that the adverse impacts to the San Onofre kelp bed from the SONGS operation are less than originally estimated by the MRC. The staff also used the Panel's suggested methods to ***quantitatively*** determine the level of impact.

General Agreement on Design of Experimental Kelp Reef

- The staff has worked diligently with the permittee to develop a mutually acceptable design for the experimental artificial reef through meetings with the permittee, Department of Fish and Game staff, and potential construction contractors. The permittee's proposed experimental reef plan reflects this work.

Alternative Materials for Kelp Reef Construction

- The staff has compromised by considering the possible use of concrete as a construction material for the kelp mitigation reef. Concrete is cheaper than quarry rock (the material stipulated in the 1991 permit). The staff suggested the

incorporation of concrete into the design of the experimental kelp reef to determine whether it would be a suitable building material for the larger kelp mitigation reef. Use of concrete to construct the artificial reef requires a permit amendment. Through this compromise, the staff has agreed to support the permittee in seeking Commission approval for an amendment to allow for the use of concrete in construction of the artificial reef and thereby reduce mitigation costs.

Monitoring

- The staff has offered numerous compromises on the intensity and breadth of the required monitoring programs. The staff has also suggested numerous monitoring strategies that uphold the spirit and intent of the 1991 permit, but do so at a lower overall cost to the permittee.

Trust Fund

- For the last several years the Commission staff has been discussing with the permittee the concept of using a trust fund approach to implement the wetland and kelp reef components of the mitigation program and to fund the independent monitoring, oversight, and remediation. The permittee has always been willing to discuss the trust fund concept, but no agreement on terms or funding has been reached.

The staff recommendation includes two obligatory trust funds and the option for a third trust fund. These funds are:

1. **Optional Trust Fund for Wetland Mitigation (Condition A)**

- ♦ As proposed, the permittee would construct the San Dieguito portion of the wetland mitigation requirements. The staff recommendation gives the permittee the option of paying into a trust fund and having others plan and construct the San Dieguito wetland project.

2. **Trust Fund for Kelp Bed Mitigation (Condition C)**

- ♦ As proposed, the permittee would construct the smaller experimental reef. This trust fund would include funds for the design, permitting, and construction of the larger kelp bed mitigation reef. The permittee has the option of using a trust fund for the experimental reef as well.

3. **Trust Fund for Monitoring and Remediation (Condition D)**

- ♦ This trust fund would provide all funds necessary for program oversight, and independent monitoring and remediation. Once the funds are supplied

the permittee would have no further responsibilities for monitoring and remediation.

A trust fund approach has numerous advantages. Once the trust funds are fully funded, the permittee would have no continuing responsibility for the major components of the mitigation program. Utilization of the trust funds would provide the permittee with certainty with respect to the overall cost of the mitigation program. In particular, certain costs of the program, such as the remediation requirements for the wetland and kelp reef projects, are currently open-ended. The trust funds would establish a cap on the remediation costs for which the permittee would be responsible, as well as limit the permittee's financial responsibility for the overall project, to a specified monetary amount.

In adopting a trust fund approach, the risk to the implementing entities, the Coastal Commission, and the public is that there could be unanticipated costs, and the resulting shortfall of funds would preclude full replacement of the lost resources. However, there are costs and delays associated with the permittee's continuing disagreement with the Commission and others on condition interpretation and implementation that do not translate into public benefits. On balance, the staff believes that the benefits to all parties outweigh the risks of a trust fund approach.

The staff recommendation includes details on costs used to determine the trust fund amounts and the proposed structure for implementation.

Standard of Review: Coastal Act and the Original 1974 Coastal Development Permit

The Commission's standard review for amendments is "whether the proposed development with the proposed amendment is consistent with the requirements of the Coastal Act of 1976" (Commission regulations section 13166(4)). In this case the "proposed development"—the SONGS Units 2 and 3—already exists and through its construction and operation has been causing unmitigated impacts to the marine environment since the early 1980s.

The original 1974 coastal development permit (and later additions), which authorized the construction and operation of the SONGS Units 2 and 3, is in full force and effect. The Commission approved the permit with the clear and comprehensive requirement that significant adverse impacts to the marine environment would be eliminated or mitigated through compensation when they were identified. The 1991 mitigation package provides for full mitigation of the adverse marine resource impacts caused by the SONGS, thereby keeping the original approval of the SONGS Units 2 and 3 consistent with the Coastal Act.

For the Commission to approve any amendments to the existing, adopted 1991 mitigation program, the Commission must find that the changes continue to fully mitigate all identified impacts to the marine environment caused by the construction and operation of SONGS

Units 2 and 3. Then, and only then, can the amendments be found consistent with the Coastal Act and with the underlying original permit.

Guide to Reading this Staff Report

This is a complex permit and a complicated amendment package involving a project with a long and complex history. All this makes for a large and detailed staff report. In order to make reading this report a manageable task we suggest the following steps in this order:

1. Read the Executive Summary.
2. Focus on the **Summary Table** in this Executive Summary. This Table provides a succinct summary of:
   - The 1991 Commission conditions—the existing mitigation package.
   - The permittee's proposed amendments.
   - Staff's recommended package of conditions.
   - Permittee's progress on condition compliance.
3. The Table of Contents provides a guide to locating the recommended conditions, the findings, and the appendices.

SUMMARY TABLE

Existing Commission Conditions (1991), Permittee's Proposed Amendments and Proposed Plans for Condition Compliance, and Staff's Recommended Revised Conditions.♦

CONDITIONS IN THE COMMISSION'S 1991 SONGS PERMIT ACTION	PERMITTEE'S PROPOSED AMENDMENTS TO PERMIT CONDITIONS AND CONDITION COMPLIANCE	STAFF'S RECOMMENDED REVISED CONDITIONS
Condition A: Wetland Restoration Mitigation		
1991 Permit Condition: Permittee shall create or substantially restore 150 acres of coastal wetland habitat and maintain tidal flushing. No credit for enhancement of existing wetland. Condition includes detailed performance standards and independent monitoring to evaluate success and need for remediation for full operating life of the SONGS. Permittee to select mitigation site from specific list with approval of Commission. The Commission approved the San Dieguito site in June 1992.	***Proposed Amendments:*** Amendment proposes: 1) payment of costs up to $3 million to fund wetland restoration at Ormond Beach to provide mitigation that permittee states is in excess of the required 150 acres; 2) the addition of an uncontrollable forces clause; 3) reductions in the size of buffer zones; 4) permittee to self-monitor and evaluate success; 5) reduce monitoring and remediation to 10 years; 6) would delete or change most performance standards; and 7) would change most reporting deadlines.	***Recommended Revised Condition:*** Staff recommends revision of Condition A to: 1) allow funding of costs to develop and implement a plan to restore wetlands at Ormond Beach in partial fulfillment of the 150-acre mitigation requirement, 2) reduce monitoring to ten years, plus limited extended monitoring if remediation is necessary, 3) allow partial credit for wetland enhancement, and 4) changes to deadlines. Staff recommends retention of independent monitoring, no addition of an uncontrollable forces clause, no change to the buffer requirements, and remediation for the full operating life of SONGS.
Basis for 1991 Condition: The MRC Final Report documents significant ongoing fish losses caused by the operations of SONGS Units 2 and 3. Data available ***after*** the MRC completed its studies suggest fish losses may be higher than calculated by the MRC. The wetland mitigation component of the 1991 Commission-approved conditions is designed to provide valuable and balanced wetland ecosystem	***Permittee's Basis for Proposed Amendments:*** The permittee proposed these amendments to address cost and design constraints it identified during the development of a preliminary wetland mitigation plan for the initially selected site, San Dieguito Lagoon. Amendment does not request credit for enhancement of existing wetland because the permittee contends that enhancement is the same as substantial restoration.	***Staff's Basis for Revised Condition:*** Several aspects of the proposed amendment do not affect the project's consistency with the Coastal Act and therefore have been incorporated into a revision of Condition A. If revised, the permittee's proposed projects at San Dieguito Lagoon together with development and implementation of a restoration plan for Ormond Beach Wetland can satisfy the 150 acre wetland mitigation requirement. Both wetland mitigation projects are required to make the SONGS project consistent with the Coastal Act. However,

♦ On August 19, 1996, the permittee submitted for Commission consideration a 3-volume combined package of proposed permit amendments and two plans (Experimental Kelp Reef and San Dieguito Wetlands) as condition compliance. The staff has analyzed the submittal as a package, but has separately developed findings and conditions: 1) for the proposed amendments; and 2) for approval of the plans and findings as condition compliance. The staff's approach to analyzing this submittal is necessary because the standard of review for the condition amendments is the Coastal Act, while the standard of review for condition compliance (i.e., plan approval) is the wording of the adopted conditions.

CONDITIONS IN THE COMMISSION'S 1991 SONGS PERMIT ACTION	PERMITTEE'S PROPOSED AMENDMENTS TO PERMIT CONDITIONS AND CONDITION COMPLIANCE	STAFF'S RECOMMENDED REVISED CONDITIONS
that compensates for bight-wide losses in marine fish standing stocks due to the SONGS operation.	The permittee's analysis of the San Dieguito project is that the 225-acre project yields 150 acres of newly created or substantially restored wetlands. Commission staff and the IWAP members dispute this analysis. To end this long-standing dispute, the permittee is proposing to augment the San Dieguito project with the additional obligations at Ormond Beach. ***Condition Compliance: Wetland Mitigation Plan*** The permittee submitted a preliminary mitigation plan for San Dieguito, which the permittee evaluates as creating or substantially restoring at least 150 acres of wetland. The staff's evaluation—based in part on a recommendation from Interagency Wetland Advisory Panel (DFG, USFWS, NMFS, ACOE, Coastal Conservancy)—of the permittee's plan shows the proposed project creates, or substantially restores approximately 92 acres of wetland. To address this dispute and the approximately 58-acre mitigation deficit, the permittee proposes to amend Condition A to provide up to $3 million for the Coastal Conservancy to implement a mitigation project at Ormond Beach wetland.	other aspects of the requested amendment would have rendered the project inconsistent with the Coastal Act and therefore have not been included in a revised Condition A. ***Condition Compliance: Wetland Mitigation Plan*** Staff recommends approval of the major components of the permittee's wetland plan for San Dieguito Lagoon, but only with several significant revisions to clarify the proposed project and to maximize fish habitat. The permittee's 1995 San Dieguito plan provided more fish habitat than the current 1996 plan. The 1995 plan provides approximately 100 acres of mitigation credit. The staff recommendation requires revision of the plan to be consistent with the plan. The proposed Ormond Beach wetland site could serve to satisfy the permittee's remaining wetland mitigation obligation. The next step required by Condition A is development of a preliminary plan for Ormond Beach wetland restoration that results in approximately 58 acres of mitigation credit. The project must include connection to Mugu Lagoon to provide fish habitat and provide tidal flushing.
Condition B: Fish Behavioral Mitigation		
1991 Permit Condition: Permittee responsible to install fish behavioral barrier devices within the power plant in order to reduce fish losses due to impingement, and monitor effectiveness; and retention or change of devices	***Proposed Amendments:*** No requested amendments.	***Recommended Revised Condition:*** No changes. Conditions in 1991 permit remain as is. Progress towards compliance with this condition

CONDITIONS IN THE COMMISSION'S 1991 SONGS PERMIT ACTION	PERMITTEE'S PROPOSED AMENDMENTS TO PERMIT CONDITIONS AND CONDITION COMPLIANCE	STAFF'S RECOMMENDED REVISED CONDITIONS
determined by the Executive Director.		continues.
Condition C: Kelp Reef Mitigation		
1991 Permit Condition: Permittee required to construct 300-acre artificial reef designed to grow kelp and establish a productive kelp bed ecosystem. Reef to be built in two phases. Information obtained from the smaller 1st phase shall be used to test designs for the larger 2nd phase. Conditions include detailed performance standards and independent monitoring with Coastal Commission oversight to evaluate success and need for remediation for full operating life of the SONGS. Permittee to select site within specific area with approval of Commission. ***Basis for 1991 Condition:*** The MRC Final Report (1989) estimated that the area of medium to high density kelp in the San Onofre kelp bed is reduced on average by 200 acres as long as the SONGS continues to operate. The Commission required a 1.5 ratio for mitigation because of the uncertainty involved with re-creating a kelp bed community with resource values similar to a natural kelp bed community and the fact that kelp does not completely cover a rocky reef. Therefore, the total requirement in the 1991 permit conditions is for the construction of 300-acre kelp reef.	***Proposed Amendments:*** Amendment request would replace requirement to construct a 300-acre kelp reef with an experimental 16.8-acre reef. Eliminates all performance standards, independent monitoring and remediation. All studies of experimental reef would be completed by permittee. ***Permittee's Basis for Amendment Request:*** Kelp studies prepared by the permittee's own contractors and completed after the MRC studies support an estimate of 48–110 acres of kelp bed impacts. An Independent Panel of three scientists (jointly selected by permittee and Commission staff) came to the **qualitative** conclusion that the "impact of SONGS on kelp abundance is much less than originally predicted by the MRC." The permittee believes that the adverse impacts to San Onofre kelp bed is decreasing to a level of insignificance.	***Recommended Revised Condition:*** Staff recommends amendment of this Condition C to: 1) accept the 16.8-acre experimental reef and pay costs of creating an additional mitigation reef that will produce a total of 122 acres of kelp and associated biota to compensate for adverse impacts caused by the SONGS operation; 2) require independent monitoring with Commission staff oversight; and 3) establish a trust fund and cap on permittee's funding responsibilities for all reef acreage above the 16.8-acre artificial reef. Information obtained from the experimental reef shall be used to design the larger (105.2 acre) mitigation reef. ***Staff's Basis for Revised Condition:*** Although the Independent Panel did not make a **quantitative** determination of the level of impact to the kelp bed caused by SONGS, the Panel recommended an approach to determine the number of acres of kelp bed lost as a result of operations of SONGS. Following the recommendations of the Independent Panel, Commission staff scientists calculated the acreage of reduction in the size of the San Onofre kelp bed based on the MRC data and the permittee's data collected after the MRC was terminated. This calculation shows the area of medium to high density kelp in the San Onofre kelp bed is reduced on average by 122 acres as long as the SONGS continues to operate. (see Appendix C). Neither the permittee's own studies nor staff's

CONDITIONS IN THE COMMISSION'S 1991 SONGS PERMIT ACTION	PERMITTEE'S PROPOSED AMENDMENTS TO PERMIT CONDITIONS AND CONDITION COMPLIANCE	STAFF'S RECOMMENDED REVISED CONDITIONS
		estimates using the Independent Panel approach support an estimate of 16.8 acres of kelp bed impact, or the conclusion that the averse impact is decreasing to a level of insignificance.
	Condition Compliance: Experimental Kelp Reef The staff worked with the permittee to develop an experimental reef plan that would satisfy the 1991 experimental reef requirement. The permittee now requests that the 16.8 acre experimental reef be considered as complete condition compliance to offset all kelp bed impacts.	***Condition Compliance: experimental Kelp Reef*** Commission staff recommends acceptance of the permittee's current design for the 16.8 acre experimental reef as meeting the 1991 permit conditions requiring the experimental reef. The Commission staff's calculation shows that the impact to the kelp bed is well above 16.8 acres (at least 122 acres). Therefore, the 16.8-acre reef ***only provides partial compliance*** with Condition C.
Condition D: Administrative Structure		
1991 Permit Condition: Permittee must pay for Commission retention of independent scientists to oversee and monitor the wetland and artificial reef mitigation projects; and public opportunity to review and comment on progress of mitigation projects. No specific cap on costs. Budgets require Commission approval. ***Basis for 1991 Condition:*** In its findings for 1991 resolution, the Commission stated "[t]he most effective and reliable means of achieving the compensation objectives described in this permit is through independent, third party monitoring and adaptive management."	***Proposed Amendment:*** Permittee's amendment would delete the administrative structure and replace independent monitoring of the entire mitigation program with self-monitoring. No funds would be provided for Commission oversight or technical advice. All monitoring to determine success in meeting performance standards and whether remediation is necessary would be completed by the permittee. ***Permittee's Basis for Amendment Request:*** Permittee states that it should be treated as other permittees carrying out similar mitigation projects. Permittee believes that self-monitoring with Commission review (without any funding from permittee) is adequate. Permittee believes independent monitoring would be too expensive.	***Recommended Revised Condition:*** Staff recommends amendment of Condition D to require permittee to pay lump sum to designated entity to fund independent monitoring and oversight, and remediation of mitigation project. ***Staff's Basis for Revised Condition:*** Independent monitoring removes all doubts and concerns about objectivity in judging the success of the mitigation program and is no more costly than self-monitoring. Further, the permittee fully embraced and supported the requirement for monitoring and remediation independent of the permittee at 1991 permit hearing. Permittee has already obtained the benefits of the

CONDITIONS IN THE COMMISSION'S 1991 SONGS PERMIT ACTION	PERMITTEE'S PROPOSED AMENDMENTS TO PERMIT CONDITIONS AND CONDITION COMPLIANCE	STAFF'S RECOMMENDED REVISED CONDITIONS
		original 1974 permit by the construction and operation of SONGS since the early 1980s. To address permittee cost containment concerns the staff is recommending that the permittee pay an established lump sum into a trust fund to cap the costs and satisfy the permittee's responsibility for independent monitoring, remediation, and Commission oversight. The staff is recommending a process that gives funding flexibility to the permittee and avoids a large one-time payment of funds.
Condition E: MRC Data Maintenance		
1991 Permit Condition: Condition E requires that the permittee provide adequate funding to make MRC's valuable scientific data available for public use.	***Proposed Amendments:*** No proposed amendments.	***Recommended Revised Condition:*** Permittee is in compliance with this condition.
Condition F: Marine Fish Hatchery*		
1991 Permit Condition: In November 1991 when the Commission adopted the mitigation package (Conditions A–E above) the Commission directed the staff to "explore and bring back to the Commission the possibility of a fish hatchery program for ocean release." On May 13, 1992, the Commission required the permittee to provide $1.2 million toward the construction of a marine fish hatchery. On March 17, 1993, the Commission adopted Condition F: Marine Fish Hatchery which includes a detailed description of how the $1.2 million in funds will be paid and spent and specifies a required	***Proposed Amendments:*** No requested amendments.	***Recommended Revised Condition:*** No Changes. Permittee has paid the full $1.2 million and therefore, is in full compliance with this condition. The marine fish hatchery has been constructed (in part with funds from the permittee) and has begun operations.

* The Marine Fish Hatchery condition was mislabeled as Condition E when approved. The Marine Fish Hatchery condition should actually be Condition F.

CONDITIONS IN THE COMMISSION'S 1991 SONGS PERMIT ACTION	PERMITTEE'S PROPOSED AMENDMENTS TO PERMIT CONDITIONS AND CONDITION COMPLIANCE	STAFF'S RECOMMENDED REVISED CONDITIONS
memorandum of agreement with Department of Fish and Game and others to assure that important protocols for the marine fish hatchery are implemented. The Commission found that a marine hatchery cannot serve as "stand-alone mitigation" because of insufficient scientific evidence regarding the effectiveness of a fish hatchery in enhancing marine fish populations.		

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STAFF RECOMMENDATION

The staff recommends that the Commission adopt the following **four** resolutions:

I. RESOLUTIONS

A. APPROVAL OF THE AMENDED COASTAL DEVELOPMENT PERMIT 6-81-330-A WITH CONDITIONS

The Commission hereby grants, subject to the standard and special conditions below, a permit amendment for 6-81-330 to revise Special Conditions A, C, and D on the grounds that the proposed development with the proposed amendments, as conditioned, conforms with the provisions of the California Coastal Act of 1976 and conforms with the California Environmental Quality Act.

B. APPROVAL OF THE SAN DIEGUITO LAGOON PRELIMINARY WETLANDS RESTORATION PLAN WITH REVISIONS

The Commission hereby finds that, if revised as set forth below, the San Dieguito Lagoon Preliminary Wetlands Mitigation Plan conforms with the requirements of Special Condition A (as amended herein according to Resolution I-A).

C. APPROVAL OF ORMOND BEACH WETLAND SITE

The Commission hereby finds that the Ormond Beach Wetlands is a suitable site for development of a preliminary plan for a wetland mitigation project, on the grounds that the site conforms with the requirements of Special Condition A (as amended herein according to Resolution I-A).

D. APPROVAL OF THE EXPERIMENTAL ARTIFICIAL KELP REEF PLAN WITH REVISIONS

The Commission hereby finds that, if revised as set forth below, the Experimental Artificial Reef Plan as the Preliminary Plan for the experimental artificial reef conforms with the requirements of Special Condition C (as amended herein according to Resolution I-A).

II. STANDARD CONDITIONS (SEE ATTACHMENT 1)

III. SPECIAL CONDITIONS

The Commission approves the amendment of permit 6-81-330 only if Conditions A, C, and D of permit 6-81-330 are amended as forth below.[1] Condition A describes the requirements for a wetland mitigation project that compensates for past, present and future fish impacts from the SONGS Units 2 and 3. Condition C describes requirements for artificial reefs necessary to mitigate for adverse impacts to the San Onofre Kelp bed community caused by the discharge of water used to cool the SONGS Units 2 and 3. Condition D describes an administrative structure necessary to ensure monitoring and remediation of the required mitigation projects. (Appendix H provides mark-up versions of the permittee's proposed condition amendments.)

A. CONDITION A: WETLAND MITIGATION

1.0 SITE SELECTION AND PRELIMINARY PLAN

In consultation with Commission staff, the permittee shall select a wetland mitigation site or sites and develop a preliminary plan in accordance with the following process and terms. Within nine months of the effective date of this permit, the permittee shall submit the proposed site and preliminary wetland mitigation plan to the Commission for its review and approval.

1.1 Site Selection

The location of any wetland mitigation project undertaken for the purposes of satisfying this permit condition will be within the Southern California Bight. The permittee shall evaluate and select from sites including, but not limited to, the following eight sites: Tijuana Estuary in San Diego County, San Dieguito River Valley in San Diego County, Huntington Beach Wetland in Orange County, Anaheim Bay in Orange County, Santa Ana River in Orange County, Los Cerritos Wetland in Los Angeles County, Ballona Wetland in Los Angeles County, and Ormond Beach in Ventura County. Other sites proposed by the permittee may be added to this list with the Executive Director's approval.

The basis for the selection shall be an evaluation of the sites against the minimum standards and objectives set forth in subsections 1.3 and 1.4 below. The permittee shall take into account and give serious consideration to the advice and recommendations of an Interagency Wetland Advisory Panel, established and convened by the Executive Director. The permittee shall select the site that meets the applicable minimum standards and best meets the objectives.

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[1] No amendments to Special Conditions B, E, and F were requested by the permittee, so these conditions apply as originally stated. Appendix B includes the original text for Special Conditions B, E, and F.

1.2 Preliminary Mitigation Plan

In consultation with Commission staff, the permittee shall develop a preliminary wetland mitigation plan for each wetland site identified through the site selection process. The preliminary wetland mitigation plan shall meet the minimum standards and incorporate as many of the objectives in subsections 1.3 and 1.4 as possible.

Each preliminary wetland mitigation plan shall include the following elements:

a. Review of existing physical, biological, and hydrological conditions; review of ownership, land use and regulations.

b. Site-specific and regional restoration goals and compatibility with the goal of mitigating for the SONGS impact to fish.

c. Identification of site opportunities and constraints.

d. Conceptual mitigation design, including:

   1. Proposed grading and excavation; water control structures; planting; integration of public access, if feasible; buffers and transition areas; management and maintenance requirements.

   2. Proposed habitat types (including approximate size and location).

   3. Preliminary assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits.

   4. Evaluation of steps for implementation (e.g., permits and approvals, development agreements, acquisition of property interests).

   5. A graphic depiction of proposed plan.

1.3 Minimum Standards

Each wetland mitigation project site and preliminary plan must meet the following minimum standards:

a. Location within Southern California Bight.

b. Potential for restoration as tidal wetland, with extensive intertidal and subtidal areas.

c. Creates or substantially restores a minimum of 150 acres (60 hectares) of wetland, excluding buffer zones and upland transition areas. In some cases the Commission may allow up to 50 percent of the acreage requirement to be satisfied through enhancement of existing wetlands. However, enhancement of an acre of wetland does not provide as great a degree of benefit as the creation or substantial

restoration of an acre of wetland. Therefore, when the Commission allows enhancement to satisfy part of the 150 minimum acreage requirement, the permittee will be awarded credit for the enhancement based on the percentage by which the resources on the site are enhanced, rather than on the number of acres enhanced. The following definitions shall apply for the purpose of meeting this standard: 1) wetland creation is an activity that results in the formation of new wetland habitat in an upland area; 2) substantially restore means to return an area from a disturbed condition to a previously existing natural condition or the equivalent (i.e., to restore) and by so doing to make a significant change in the area (i.e., a substantial difference); and 3) wetland enhancement is an activity that incrementally improves the habitats and functions of an existing functioning wetland area.

d. Any wetland created or substantially restored shall be surrounded by a buffer zone of a size adequate to ensure protection of wetland values, and not less than at least 100 feet wide, as measured from the upland edge of the transition area.

e. Any existing site contamination problems shall be controlled or remediated, such that mitigation will not be hindered.

f. Site preservation is guaranteed in perpetuity (through appropriate public agency or nonprofit ownership, or other means approved by the Executive Director), to protect against future degradation or incompatible land use.

g. Feasible methods are available to protect the long-term wetland values on the site, in perpetuity.

h. Any wetland mitigation project shall minimize the loss of existing wetlands and there shall be no net loss of existing wetlands. To the extent that any existing, fully functional wetland is converted to a different wetland type, it shall not be considered to be a created, substantially restored or enhanced wetland for purposes of meeting the acreage required in subsection 1.3.c.

i. Does not result in impacts on endangered species unless authorized by the appropriate resource and regulatory agencies.

1.4 Objectives

The following objectives represent the factors that will contribute to the overall value of each wetland mitigation site. Each selected site shall be that with the best potential to achieve these objectives. These objectives shall also guide preparation of the mitigation plan.

a. Provides maximum overall ecosystem benefits (e.g., maximize upland buffer, enhances downstream fish values, provides regionally scarce habitat, provides potential for increasing local ecosystem diversity).

b. Provides substantial fish habitat compatible with other wetland values at the site.

c. Provides a buffer zone of an average of at least 300 feet wide, and not less than 100 feet wide, as measured from the upland edge of the transition area.

d. Provides maximum upland transition areas (in addition to buffer zones).

e. Mitigation involves minimum adverse impacts on existing functioning wetlands and other sensitive habitats consistent with the goal of optimizing tidally influenced wetland habitat.

f. Site selection and mitigation plan reflect a consideration of site specific and regional wetland restoration goals.

g. Mitigation design is that most likely to produce and support wetland-dependent resources.

h. Provides rare or endangered species habitat.

i. Provides for restoration of reproductively-isolated populations of native California species.

j. Results in an increase in the aggregate acreage of wetland habitat in Southern California.

k. Requires minimum maintenance.

l. The mitigation project can be accomplished in a timely fashion.

m. Site is in proximity to the SONGS.

1.5 Restrictions

(a) The permittee may propose a wetland restoration mitigation project larger than the minimum necessary size specified in subsection 1.3.c above, if biologically appropriate for the site, but the additional acreage must: 1) be clearly identified; and 2) must not be the portion of the project best satisfying the standards and objectives listed above.

(b) If the permittee jointly enters into a restoration mitigation project with another party: 1) the portion of the project satisfying this condition must be clearly specified; 2) any other party involved cannot gain mitigation credit for the portion of the project satisfying this condition; and 3) the permittee may not receive mitigation credit for the other party's portion of the project.

(c) The permittee may propose to divide the mitigation requirement between a maximum of two wetland mitigation sites, unless there is a compelling argument, approved by the Executive Director, that the standards and objectives of subsections 1.3 and 1.4 will be better met at more than two sites.

2.0 FINAL PLAN AND PLAN IMPLEMENTATION

This section describes the process and standards for development and implementation of a final mitigation plan.

2.1 Final Mitigation Plan

Within 24 months following the Commission's approval of a site selection and preliminary mitigation plan, the permittee shall submit a final mitigation plan along with the requisite CEQA environmental impact analysis generated in connection with local, state, or other agency approvals, to the Coastal Commission. This submittal shall be in the form of a coastal development permit application for the Commission's review and approval. The final mitigation plan shall substantially conform to the approved preliminary restoration plan as originally submitted or as amended by the Commission pursuant to a request by the permittee. The final mitigation plan shall include, but not be limited to, the following elements:

a. Detailed review of existing physical, biological, and hydrological conditions; detailed review of ownership, land use and regulation.

b. Evaluation of site-specific and regional restoration goals and compatibility with the goal of mitigating for the SONGS impacts to fish.

c. Identification of site opportunities and constraints.

d. Schematic restoration design, including:

    1. Proposed cut and fill, water control structures, control measures for stormwater, buffer zones and transition areas, management and maintenance requirements.

    2. Planting Program, including removal of exotic species, sources of plants and/or seeds (local, if possible), protection of existing salt marsh plants, methods for preserving top soil and augmenting soils with nitrogen and other necessary soil amendments before planting, timing of planting, plans for irrigation until established, and location of planting and elevations on the topographic drawings.

    3. Proposed habitat types (including approximate size and location).

    4. Assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits.

    5. Location, alignment and specifications for public access facilities, if feasible.

    6. Evaluation of steps for implementation (e.g., permits and approvals, development agreements, acquisition of property rights).

    7. Cost estimates.

8. Topographic drawings for final restoration plan at 1 inch = 100 foot scale, one foot contour interval.

9. Drawings shall be directly translatable into final working drawings.

2.2 Wetland Construction Phase

Within six months of approval of each final mitigation plan, subject to the permittee obtaining and complying with all necessary permits including a coastal development permit, the permittee shall commence the construction phase of the wetland mitigation project. The permittee shall be responsible for ensuring that construction is carried out in accordance with the specifications and within the time frames specified in the approved final mitigation plan and shall be responsible for any remedial work or other intervention necessary to comply with final plan requirements.

2.3 Time Frame for Resubmittal of Project Elements

If the Commission does not approve any element of the project (i.e., site selection, preliminary mitigation plan, or final mitigation plan), the Commission will specify the time limits for compliance relative to selection of another site or revisions to the mitigation plan.

3.0 WETLAND MONITORING, MANAGEMENT AND REMEDIATION

Monitoring shall be conducted independent of the permittee for a minimum of 10 years. Management (including maintenance) and remediation shall be conducted over the "full operating" life of the SONGS Units 2 and 3. "Full operating life" as defined in this permit includes past and future years of operation of the SONGS Units 2 and 3 including the decommissioning period to the extent there are continuing discharges. The number of past operating years at the time the wetland is ultimately constructed shall be added to the number of future operating years and decommission period to determine the length of the management and remediation requirement.

The following sections describe the basic tasks that will be included in the monitoring, management and remediation of any wetland mitigation project completed pursuant to Condition A. Condition D specifies that the permittee shall provide funds to an entity designated by the Executive Director for the purpose of funding the required monitoring, management (including maintenance) and remediation set forth in this Section.

3.1 Monitoring and Management Plan

A monitoring and management plan will be developed by the Commission staff (pursuant to funding specified in Condition D) in consultation with appropriate resource agencies, within six months of approval of a coastal development permit for the project proposed in the final plan. The monitoring and management plan shall provide an overall framework to guide the monitoring and management work. The monitoring and management plan shall

describe the sampling methodology, analytical techniques, and methods for measuring attainment of the performance standards identified in subsection 3.4. The plan will also include detailed descriptions of management tasks that are anticipated, such as trash removal or removal of exotic plants. The goal of the monitoring and management plan shall be to assess and maintain the success of the wetland mitigation, as described in the final mitigation plan.

3.2 Pre-Construction Monitoring

Pre-construction monitoring shall be conducted to collect baseline data on the wetland attributes to be monitored. This information will be incorporated into and may result in modification to the overall monitoring plan.

3.3 Construction Monitoring

Monitoring shall be conducted during and immediately after each stage of construction of the wetland mitigation project to ensure that the work is conducted according to plan.

3.4 Post- Construction Monitoring

Upon completion of construction of a wetland mitigation project, monitoring independent of the permittee shall be conducted with funds provided through Condition D to ensure the wetland achieves the performance standards specified below. Upon determining that the goals or standards are not achieved, the Executive Director shall prescribe remedial measures necessary to attain the performance standards.

Monitoring independent of the permittee shall occur for ten years after the completion of construction of the wetland mitigation project. The independent monitoring program shall be designed to assess whether the performance standards listed below have been met, with the overall success of a wetland mitigation project to be determined at the end of the monitoring period.

Successful achievement of the performance standards shall (in some cases) be measured relative to approximately four concurrently monitored reference sites, which shall be relatively undisturbed, natural tidal wetlands within the Southern California Bight. The Executive Director shall select the reference sites. The standard of comparison, i.e., the measure of similarity to be used (e.g., within the range, or within the 95 percent confidence interval) shall be specified in the Monitoring and Management Plan.

In measuring the performance of the wetland project, the following physical and biological performance standards will be used:

a. Long-term Physical Standards. The following long-term standards shall be maintained over the full operational life of the SONGS Units 2 and 3.

1. Topography. The wetland shall not undergo major topographic degradation (such as excessive erosion or sedimentation).

2. Water Quality. Water quality variables (to be specified) shall be similar to reference wetlands.

3. Tidal Prism. The designed tidal prism shall be maintained, and tidal flushing shall not be interrupted.

4. Habitat Areas. The area of different habitats shall not vary by more than 10 percent from the areas indicated in the final mitigation plan.

b. Biological Performance Standards. The following biological performance standards shall be used to determine whether the mitigation project is successful. Table 1 (below) indicates suggested sampling locations for each of the following biological attributes; actual locations will be specified in the monitoring and management plan.

1. Biological Communities. The total densities and number of species of fish, macroinvertebrates and birds (see Table 1, below) shall be similar to the densities and number of species in similar habitats in the reference wetlands.

2. Vegetation. The proportion of total vegetation cover and open space in the wetland shall be similar to those proportions found in the reference sites. The percent cover of algae shall be similar to the percent cover found in the reference sites.

3. Spartina Canopy Architecture. The mitigation wetland shall have a canopy architecture that is similar in distribution to the reference sites, with an equivalent proportion of stems over three feet tall.

4. Reproductive Success. Certain plant species, as specified in the Monitoring and Management Plan, shall have demonstrated reproduction (i.e., seed set) at least once in three years.

5. Food Chain Support. The food chain support provided to birds shall be similar to that provided by the reference sites, as determined by feeding activity of the birds.

6. Exotics. The important functions of the wetland shall not be impaired by exotic species. The abundances of exotic species shall be similar to the abundances found in the reference sites.

Table 1: Suggested Sampling Habitats and Variables to be Measured.

	Salt Marsh			Open Water		Tidal	Tidal
Variable	Spartina	Salicornia	Upper	Lagoon	Eelgrass	Mudflat	Creeks
1) Density/spp:							
Fish				X	X	X	X
Macroinverts				X	X	X	X
Birds	X	X	X	X		X	X
2) % Cover							
Vegetation	X	X	X		X		
Algae	X	X				X	
3) Spartina architecture	X						
4) Reproductive success	X	X	X				
5) Bird feeding				X		X	X
6) Exotics	X	X	X	X	X	X	X

If the performance standards listed above are not met within ten years after wetland mitigation project construction, then remediation funds provided by the permittee shall be used for the corrective action that the Executive Director in consultation with resource agencies and based on the scientific advice of the monitoring team deems necessary to result in attainment of the performance standards.

3.5 Remediation

It is intended that the performance standards set forth in this condition be met for at least the length of time equivalent to the full operational life of the SONGS Units 2 and 3, as defined in subsection 3.0. Upon completion of the independent monitoring program (10 years), remediation funds shall be used to complete an annual site inspection, which will serve to identify noncompliance with the performance standards. The Executive Director may also use any other information available to determine whether the performance standards are being met. If information from the site inspection or any other source suggests the performance standards are not being met, funds set aside by the permittee for remediation (as required by Condition D) may be used to collect information to determine what remediation is needed, and to determine the success of the required remediation. The Executive Director will solicit bids for implementation of any required remediation pursuant to the requirements set forth in Condition D.

4.0 FUNDING OPTION

The permittee has the option of satisfying the requirements of Sections 1 and 2 of Condition A by paying a specified amount of money to an agency or organization designated by the Executive Director to enable that designated entity to carry out the requirements of Sections 1 and 2 of Condition A. If the permittee chooses to restore wetlands at two different sites pursuant to Section 1.5.c of Condition A, the permittee can either provide funds to an entity designated by the Executive Director for implementation of both wetland mitigation projects or implement one wetland mitigation project and pay a specified amount of money to an entity designated by the Executive Director for implementation of the second mitigation project. If the permittee elects to satisfy Condition A through payment to a designated entity, the permittee must inform the Executive Director within 30 days of the effective date of this permit amendment, CDP No. 6-81-330-A.

Upon the permittee's election of this funding option, the Executive Director will develop one or more implementation proposals (e.g., memorandum of agreement, or contract). The implementation proposal shall set forth the process for the administration and transfer of funds paid by the permittee. The implementation proposal shall stipulate that the implementing entity accepting these funds shall use the monies to implement a wetland project in accordance with the requirements of Sections 1 and 2 of Condition A.

Within six months of the permittee's election of this option, the Executive Director shall present completed proposals for implementing any wetland mitigation projects developed pursuant to this condition to the Commission for review and approval. Within 30 days of the Commission's designation of an implementing entity, the permittee shall pay the full amount to the implementing agency.

4.1 San Dieguito

If the permittee elects the funding option as the method to implement a wetland mitigation project at San Dieguito Lagoon consistent with the Preliminary Plan for the San Dieguito Wetland Restoration Project, dated August 16, 1996, as revised by the Commission, then the permittee shall pay $27.76 million to the implementing entity.

If the implementing entity accepting these funds cannot obtain all governmental approvals including a coastal development permit for a final plan that is in substantial conformance with the Preliminary Plan for the San Dieguito Wetland Restoration Project dated August 9, 1996, or if the coastal development permit is subsequently invalidated by a court following litigation, the implementing entity shall develop and carry out an alternative wetland mitigation plan that complies with sections 1 and 2 of Condition A. However, the alternative wetland mitigation plan need only result in the creation or substantial restoration of a total of 92 acres of wetlands.

Upon development of a preliminary plan in accordance with Condition A, the implementing agency shall develop an estimate of the cost of development and implementation of the alternative wetland mitigation plan, subject to the review and approval of the Coastal Commission. Within 30 days of the Commission's approval of the cost estimate, the permittee shall pay the approved amount, minus any unspent monies in the implementing entity's San Dieguito account, to the implementing entity.

4.2 Ormond Beach

If the permittee elects the funding option as the method to develop preliminary and final plans and implement a wetland mitigation project at Ormond Beach wetlands, then the permittee shall pay $3 million to the designated implementing entity (State Coastal Conservancy or other approved entity).

If the implementing entity accepting these funds cannot obtain all governmental approvals including a coastal development permit for a final plan that is in substantial conformance with the conceptual plan for the South Ormond Beach wetland restoration site, including providing for a permanent link to tidal flow, or if the coastal development permit is subsequently invalidated by a court following litigation, the implementing entity shall develop and implement an alternative wetland mitigation plan that complies with sections 1 and 2 of Condition A, except that it need only result in the creation or substantial restoration of a total of approximately 58 acres of wetlands. Upon development of a preliminary plan in accordance with Condition A, the implementing agency shall estimate the cost of development and implementation of the alternative wetland mitigation plan. Based upon the implementing entity's cost estimate, the Coastal Commission shall approve a cost estimate for development and implementation of the alternative wetland mitigation plan. Within 30 days of the Commission's approval of cost estimate, the permittee shall pay the full amount, minus any unspent monies in the implementing entity's Ormond Beach account, to the implementing entity.

B. CONDITION C: KELP REEF MITIGATION

Mitigation for losses to kelp bed resources will occur in two phases, an initial experimental phase followed by a mitigation phase.

1.0 EXPERIMENTAL KELP REEF

The permittee shall, using qualified professionals and in consultation with the Executive Director, select a site and construct an experimental artificial reef for kelp to determine the optimal reef design for mitigating resource losses at the San Onofre Kelp Bed (SOK) caused by the SONGS. The experimental reef shall test the design parameters necessary to provide a persistent giant kelp forest and associated ecosystem.

1.1 Site Assessment

The permittee shall select at least three potential sites and conduct pre-construction site assessments at these potential sites.

The permittee shall obtain sufficient information about each potential experimental reef site to allow the permittee to determine which site best meets the final site selection criteria described below. This information shall be used in both the site selection and design of the experimental reef. Necessary information shall include: (1) a description of existing biota at the site, (2) a reasonable prediction of the likelihood that a healthy kelp bed will be established and persist at the site, (3) a reasonable prediction of the extent of rock burial due to sediment deposition and/or sinking into soft sediment that could be expected at the site, and (4) a prediction of the effect of the proposed reef on local sand transport and local beach profiles.

1.2 Final Site Selection

Selection of the actual experimental reef site from among the potential sites shall be based on, but not limited to, the following criteria:

1. Location as close as possible to the SOK, and preferably between Dana Point (Orange Co.) and Carlsbad (San Diego Co.), but outside the influence of the SONGS discharge plume and water intake, and away from Camp Pendleton.
2. Minimal disruption of natural reef or cobble habitats and sensitive or rare biotic communities.
3. Suitable substrate with low mud and/or silt content (e.g. hard-packed fine to coarse grain sand, exposed cobble or bedrock without a persistent kelp biological community, or cobble or bedrock covered with a thin layer of sand).
4. Location at a depth locally suitable for kelp growth and recruitment.
5. Location near a persistent natural kelp bed.
6. Location away from sites of major sediment deposition.
7. Minimal interference with uses such as vessel traffic, vessel anchorages, commercial fishing, mariculture, mineral resource extraction, cable or pipeline corridors.
8. Location away from power plant discharges, waste discharges, dredge spoil deposition sites, and activities of the U. S. Marine Corps.
9. Location that will not interfere with or adversely affect resources of historical or cultural significance such as shipwrecks and archeological sites.

1.3 Experimental Reef Design and Final Plan

Following the site selection process, but no later than June 30, 1997, the permittee shall apply for a coastal development permit for construction of an experimental reef for kelp. The coastal development permit application shall include an experimental reef plan that specifies the design and construction methods of the experimental kelp reef. The design of the reef shall allow for identification of those parameters important to the establishment of a persistent, healthy giant kelp forest and associated ecosystem.

The primary goal of the experimental reef shall be to test several promising substrate surfaces and configurations to determine which of these can best provide: a) adequate conditions for giant kelp recruitment, growth, and reproduction and b) adequate conditions to establish a community of reef-associated biota.

The total areal extent (as measured at the ocean bottom and equal to the surface area within the perimeter of the reef's outermost hard substrate/sand interface area, as installed by the permittee) of the experimental kelp reef shall be a minimum of 16.8 acres.

1.4 Kelp Reef Construction

The experimental artificial reef shall be constructed within 12 months of approval of the coastal development permit. A post-construction survey shall be carried out by the permittee to demonstrate that the experimental reef was built to approved specifications.

1.5 Monitoring

The experimental artificial reef shall be monitored independent of the permittee for 10 years (as per Condition D). A monitoring and management plan will be developed by the Commission staff retained under Condition D, in consultation with appropriate resource agencies, within six months of approval of a coastal development permit for the experimental kelp reef. The independent monitoring program for the experimental reef shall be designed to assess the effectiveness of alternative reef designs, materials and management techniques. Monitoring and management shall be conducted with funds provided through Condition D and shall include the monitoring and management of any additional experiments deemed necessary by the Executive Director. Information obtained from the independent monitoring shall be used to design the larger mitigation kelp reef (see below).

2.0 MITIGATION KELP REEF

In addition to construction of the 16.8-acre experimental reef, the permittee shall fund the construction of at least 105.2 acres of artificial reef (a total of 122 acres of artificial reef) that meet the performance standards listed below as mitigation for the resource losses at the San Onofre Kelp Bed (SOK) caused by operation of the SONGS. The reef(s) may be

an expansion of the experimental reef or may be established in a different location, provided that the reef(s) shall be located in the vicinity of the SONGS, but outside the influence of the SONGS discharge plume and water intake. The selection of a site for any mitigation reef shall be based on the final site selection criteria stated in subsection 1.2. This total of 122 acres of kelp reef shall be referred to as the "mitigation reef." The mitigation reef shall be designed to replace the lost and damaged resources at the SOK and produce a persistent giant kelp forest and associated ecosystem.

To meet this mitigation obligation the permittee shall pay $19.27 million to an agency or organization designated by the Executive Director for purposes of funding the planning and construction of the mitigation kelp reef. Upon approval of this condition, the Executive Director shall develop one or more implementation proposals (e.g., memorandum of agreement, or contract). The implementation proposal shall establish a process for the administration and transfer of the payment.

The implementation proposal shall stipulate that the implementing entity accepting these funds shall hold the money for the purpose of funding the requirements set forth in subsection 2.3. Within six months of approval of coastal development permit 6-81-330-A, the Executive Director shall present completed proposals for implementing the mitigation kelp reef to the Commission for review and approval.

Within 30 days of the Commission's approval of an implementing entity, the permittee shall pay the $19.27 million to such entity. Upon payment of the $19.27 million, the permittee shall be determined to have fully complied with this condition.

2.1 Mitigation Kelp Reef Design and Planning

Within six months after completion of independent monitoring of the experimental kelp reef, the implementing agency shall submit a preliminary plan for the location and design of the mitigation kelp reef to the Executive Director for review and approval. Independent monitoring results from the experimental kelp reef along with all relevant site selection information shall be used to design the mitigation kelp reef.

The purpose of the mitigation kelp reef is to provide replacement kelp bed community resources for the resources lost due to the operation of the SONGS Units 2 and 3. The preliminary plan shall describe the location and design of the mitigation kelp reef.

The Executive Director will consult with the Coastal Commission scientific staff, the Scientific Advisory Panel, and resource agencies to evaluate whether the preliminary plan meets the goals set forth in subsection 2.2 below. If the Executive Director determines that specific information above and beyond that which the implementing entity has provided is needed to evaluate whether the mitigation kelp reef design meets criteria set forth in this condition, the Executive Director may direct the implementing entity to provide this information. The implementing entity shall use comments on the preliminary plan and any additional information required by the Executive Director to develop a final plan for the

mitigation kelp reef. The preliminary plan will not constitute Commission approval of a coastal development permit for the final project.

Within one month following the Commission's determination that the preliminary plan meets the specified criteria, the implementing entity shall initiate development of a final mitigation plan along with appropriate CEQA and/or NEPA environmental impact analyses necessary in connection with local, State or other agency approvals.

Within twelve months of the Executive Director's approval of a preliminary plan for the mitigation reef, the implementing agency shall submit a final mitigation plan to the Coastal Commission in the form of a coastal development permit application. The final mitigation plan shall substantially conform to the approved preliminary mitigation plan as approved by the Executive Director.

2.2 Mitigation Reef Goals

The primary goals of the mitigation kelp reef shall be to provide: (1) stable hard substrate surfaces and configurations that provide for the sustained production of a community of algae, invertebrates and fish similar in composition, diversity and abundance to the SOK; (2) adequate conditions for giant kelp recruitment, growth, and reproduction; and (3) adequate conditions for a community of reef-associated biota similar in composition, diversity and abundance to the SOK.

2.3 Mitigation Kelp Reef Construction

The reef shall be constructed in accordance with the final plan in the approved coastal development permit, which will specify location, depth, overall hard substrate coverage, size and dispersion of reef materials, and reef relief. A post-construction survey shall be completed to demonstrate that the reef was built to approved specifications. If the Executive Director determines that the reef was not built to specifications, the reef shall be modified to meet the approved specifications within 90 days of the post-construction survey.

2.4 Monitoring, Management, and Remediation

After construction of the mitigation kelp reef is completed, the reef will be monitored, managed, and, if necessary, remediated. The following sections describe the basic tasks required for monitoring, management and remediation of the mitigation kelp reef completed pursuant to this Condition. Condition D specifies that the permittee shall provide funds to an entity designated by the Executive Director for the purpose of funding the monitoring, management, and remediation as specified below.

A monitoring and management plan for the mitigation reef will be developed by the Commission staff retained under Condition D, in consultation with appropriate resource

agencies, within six months of approval of a coastal development permit for the mitigation kelp reef proposed in a final plan developed pursuant to this condition. The monitoring and management plan shall provide an overall framework to guide the monitoring work. The monitoring and management plan shall describe the sampling methodology, analytical techniques, and methods for measuring attainment with the performance standards identified in below.

Monitoring independent of the permittee shall be implemented in accordance with Condition D to: (1) ensure that the performance standards of this condition are met, (2) determine if the mitigation successfully replaces the lost and damaged resources in the San Onofre Kelp Bed Reef, and if necessary, (3) determine the reasons why performance standards have not been met to facilitate development of appropriate remediation measures.

The mitigation kelp reef shall be monitored for ten years. The independent monitoring program for the mitigation kelp reef shall be designed to assess whether the performance standards have been met. In measuring the performance of the mitigation reef(s), the following performance standards will be used:

a. Substrate

1. The reefs shall be constructed of rock, concrete, or a combination of these materials, as determined from results of the experimental kelp reef to be suitable for sustaining a kelp forest and a community of reef-associated biota similar in composition, diversity and abundance to the SOK. Additional devices may also be used to anchor kelp.

2. The total areal extent of the mitigation reef (including the experimental kelp reef and all mitigation kelp reefs) shall be no less than 122 acres.

3. At least two-thirds of the 122-acre reef area shall be covered by exposed hard substrate. Should the results from the experimental reef show that a different coverage of hard substrate is necessary or adequate to meet this goal, the Executive Director may change the coverage requirement.

4. At least 90 percent of the hard substrate must remain available for attachment by reef biota. If, at any time, more than 10 percent of the reef substrate should become covered by sediment, or become unsuitable for growth of attached biota due to scouring, and there is no sign of recovery within three years, as determined by the Executive Director, sufficient additional substrate shall be added to the reef to replace the substrate lost. Surveys to monitor exposed hard substrate shall begin immediately after construction is complete and continue for the entire monitoring period.

b. Kelp bed

The reef(s) shall sustain an aggregate coverage of medium-to-high density giant kelp equal to 122 acres. For purposes of this condition, medium-to-high density giant kelp is defined as more than 4 adult plants per 100 m^2 of substrate, as determined by down-looking sonar surveys or equivalent monitoring techniques. If the average coverage of giant kelp falls below this standard, the reason for this failure shall be determined, and appropriate remediation shall be recommended for the Executive Director's approval.

Remediation funds provided by the permittee as part of Condition D shall be used to undertake studies necessary to determine the reasons for lack of kelp coverage as well as feasible corrective action, as determined by the Executive Director. If the failure is due to insufficient hard substrate, the corrective action may entail adding more hard substrate to the reef(s).

If sufficient hard substrate appears to be available but kelp recruitment is low, corrective action could include conducting kelp recruitment studies to determine the best method of establishing kelp on the reef(s).

The method determined by the Executive Director most likely to be a successful and reliable corrective action shall be employed until kelp coverage meets this standard; however, kelp establishment or augmentation methods shall not be required for more than a total of five years. If oceanographic conditions are unfavorable to kelp during part of this period, the Executive Director may defer the effort to establish kelp.

c. Fish

The standing stock of fish at the mitigation reef shall be at least 28 tons. The MRC determined that operation of the SONGS caused a reduction in the biomass of kelp bed fish of 28 tons. To compensate for this loss, the standing stock of fish at the mitigation reef shall be at least 28 tons and the following conditions shall hold:

1. The resident fish assemblage shall have a total density and number of species similar to natural reefs within the region.
2. Fish reproductive rates shall be similar to natural reefs within the region.
3. The total density and number of species of young-of-year fish (fish less than 1 year old) shall be similar to natural reefs within the region.
4. Fish production shall be similar to natural reefs within the region.

d. Benthos

1. The benthic community (both algae and macroinvertebrates) shall have density or coverage and number of species similar to natural reefs within the region.

2. The benthic community shall provide food-chain support for fish similar to natural reefs within the region.

3. The important functions of the reef shall not be impaired by undesirable or invasive benthic species (e.g., sea urchins or *Cryptoarachnidium*).

Samples taken concurrently at natural kelp reef reference sites shall be used to determine the similarity of each variable listed above for natural reefs within the region. The standard of comparison (i.e., the measure of similarity to be used and the method for determining the statistical significance of differences) shall be specified in the Monitoring and Management Plan. If the standards listed above are not met within ten years after reef construction, then remediation funds provided by the permittee shall be used for any corrective action the Executive Director deems appropriate and feasible.

It is intended that the performance standards and goals set forth in this condition will be met for at least the length of time equivalent to the full operational years of the SONGS Units 2 and 3, as defined in Condition A, section 3.0. Upon completion of the independent monitoring program (10 years), remediation funds shall be used to complete an annual site inspection, which will serve to identify any noncompliance with the performance standards. The Executive Director may also use any other information available to determine whether the performance standards are being met. If information from the site inspection or other sources suggests that the performance standards are not being met, funds set aside by the permittee for remediation (as required by Condition D) may be used to collect information to determine what remediation is needed, to implement any necessary remediation, and to determine the success of the required remediation.

C. CONDITION D: ADMINISTRATIVE STRUCTURE

1.0 MONITORING, REMEDIATION, AND TECHNICAL OVERSIGHT FUND

Within thirty (30) days of Commission approval of this amended package (CDP 6-81-330-A), the permittee shall provide evidence of establishment of an internal interest-bearing account in the amount of $28 million. Interest shall begin accruing upon establishment of the internal account. Interest rates shall be tied to the rate provided by major financial institutions on 90-day certificates of deposit, and shall be adjusted quarterly in accordance with the current rate. Interest shall be compounded monthly.

Monies from the permittee's internal account shall be paid into an external interest-bearing Monitoring, Remediation and Technical Oversight Fund (hereinafter "Fund") which shall be held and administered by a trustee agency or organization selected by the Executive

Director in accordance with state administrative requirements and approved by the Coastal Commission. The permittee shall make payments from the permittee's internal account to the Fund as follows: (a) principal shall be paid out quarterly in equal installments over ten years; (b) accrued interest shall be paid out at the end of each calendar year. The first payment shall be made within thirty (30) days after the Fund is established, and quarterly payments thereafter shall be due on the first day of the months of January, April, July, and October, commencing with the next payable month after the first payment is made.

The permittee may satisfy this condition at any time by depositing the entire unpaid amount ($28 million or balance remaining plus accrued interest) into the Fund. Sixty (60) days prior to cessation or transfer of ownership, management, or operation of the SONGS Units 2 and 3, the permittee shall transfer any unspent balance with accrued interest from its internal account into the Fund.

1.1 Purpose of Fund

The Fund shall be used to pay for:

a. oversight and management costs incurred by technical personnel retained by the Executive Director of the Commission to oversee independent monitoring and remediation of the mitigation projects, including periodic public reviews on the status of the mitigation projects;

b. implementing the independent monitoring and remediation components of both the wetland restoration mitigation project (Condition A) and the artificial reef mitigation project (Condition C);

c. such additional monitoring as may be necessary to evaluate the success of any remediation that may be required.

IV. FINDINGS AND DECLARATIONS IN SUPPORT OF AMENDMENTS TO CONDITIONS

A. BACKGROUND ON COASTAL COMMISSION ACTIONS RELATING TO THE SONGS

This section provides an overview of: 1) the project (i.e., the San Onofre Nuclear Generating Station (SONGS)); 2) the affected habitat and resources; and 3) the major events and decisions affecting the SONGS, which involved the California Coastal Commission or its predecessor the California Coastal Zone Conservation Commission (CCZCC). For a more complete description of the background on the SONGS see the findings for permit 6-81-330 (formerly 183-73).

1.0 THE PROJECT

The San Onofre Nuclear Generating Station (SONGS) is located in north San Diego County (see Exhibit 1). SONGS Unit 1, which generates up to 436 megawatts of electric power, began operation in 1968 and stopped operating in the early 1990s. Construction of SONGS Units 2 and 3 began in 1974 and was completed in 1981. Operation of Units 2 and 3 began in 1983. Each unit can generate 1,100 MW of electric power, and draws in seawater at a rate of 830,000 gallons per minute. Seawater intake is thus an estimated flow of almost 700 billion gallons per year. The intake pipes for Units 2 and 3 are each 18 feet in diameter and originate 3,400 feet offshore.

The discharge pipe for Unit 2 terminates 8,500 feet offshore, while the discharge pipe for Unit 3 terminates 6,150 feet offshore (see Exhibit 2).The last 2,500 feet of the discharge pipes for Units 2 and 3 each consist of a multiport diffuser that rapidly mixes the cooling water with the surrounding water. The diffusers contain 63 discharge ports angled offshore that increase the velocity of the discharge. The discharge water is approximately 19°F warmer than the intake water temperature. To cool the discharge water, the diffusers draw in ambient seawater at a rate about ten times the discharge flow and mix it with the discharge water. The surrounding water is swept up along with sediments and organisms and transported offshore at various distances, depending on the prevailing currents.

2.0 PERMIT HISTORY

In 1973, Southern California Edison (SCE) and San Diego Gas and Electric (SDG&E) submitted a coastal development permit application to construct Units 2 and 3 of the SONGS. On December 5, 1973, the California Coastal Zone Conservation Commission (CCZCC) denied the SONGS permit application. Adverse impacts to the marine environment constituted one of the Commission's grounds for denial. SCE and SDG&E

filed suit and the Commission stipulated in court to accept the permit on remand, thereby scheduling a new vote on the project.[2]

On February 28, 1974, the CCZCC approved a permit for the construction of the SONGS Units 2 and 3. At that time, there was considerable debate concerning the potential adverse effects the SONGS would have on the marine environment. In public hearings, SCE scientists testified that the new generating units would have little effect on the marine environment, while opponents testified there would be devastating consequences. Little reliable scientific information was available. The probability of any decision ending up in court again was high, and the costs of delay to SCE and SDG&E were substantial.

It was in this context that the CCZCC approved coastal permit 183-73 to construct Units 2 and 3 of the SONGS, subject to conditions which: 1) established a three-member independent Marine Review Committee (MRC), comprised of individuals appointed by the Commission, the permittees, and an environmental coalition that had opposed the project; 2) authorized the Commission to require the permittees to make future changes in the SONGS cooling system (as extensive as the installation of cooling towers) to address adverse impacts to the marine environment identified by the MRC; and 3) required the Commission to forward recommendations to the San Diego Regional Water Quality Control Board and the State Water Resources Control Board based on the findings of the MRC regarding water quality and NPDES permit monitoring.

2.1 Mandate to the Marine Review Committee

The CCZCC directed the MRC, formed through Condition One, to carry out a comprehensive and continuing study of the marine environment offshore from the SONGS to predict, and later to measure, the effects of the SONGS Units 2 and 3 on the marine environment. Coastal development permit 183-73 specifically directed the MRC to: (1) determine the effects of the cooling system of the SONGS Unit 1 on the adjacent marine ecosystem; (2) predict the effects of the SONGS Units 2 and 3; and (3) monitor the effects of Units 2 and 3. The aim was to obtain information that would allow the CCZCC to decide whether or not changes in the cooling system should be required to prevent or reduce any significant adverse impacts on the marine environment caused by operation of Units 2 and 3.

In November 1979, after a public hearing to review the status of the MRC studies, the Commission recognized that some effects might be mitigated without requiring changes in the cooling system. The Commission found that,

> ...Changes such as requiring cooling towers, extended diffusers or single point discharges could cost hundreds of millions of dollars and result in unit shutdown for a period of time. ...The Commission also recognizes that operational changes or

[2] The court remanded the decision on a technicality, finding that the Commission had exceeded its authority by basing its decision in part on nuclear safety considerations.

mitigation measures might adequately compensate for any marine life damages resulting from the operation of Units 2 and 3. The Commission, therefore, requests the MRC to study the feasibility and effects of selected promising mitigation measures, including construction of an artificial reef, as suggested by Southern California Edison. The MRC should recommend what measures might be taken to assure there would be no net adverse effect on the marine environment from operation of SONGS Units 2 and 3.

2.2 MRC Submits Results and Recommendations for Mitigation

In August 1989, the MRC submitted its Final Report to the Commission, which concluded that the operation of the SONGS was causing substantial adverse effects to the organisms in the San Onofre kelp bed, the fish stocks in the Southern California Bight, and to local midwater fish populations, kelp bed fish, kelp, and kelp bed biota.[3] These effects are summarized below.

San Onofre Kelp Bed:

- The discharge plume from SONGS Units 2 and 3 results in a substantial reduction in the abundance and density of kelp plants.
- The discharge plume results in a substantial reduction in the abundance and biomass (total weight) of most of the kelp bed fish species that the MRC studied.
- The discharge plume results in a substantial reduction in the abundance of large invertebrates inhabiting the kelp reef.

Fish stocks in the Southern California Bight:

- Intake loss of immature fish is projected to cause substantial reductions in Bight-wide adult fish populations.

Local midwater fish populations:

- Substantial reductions in local abundance of midwater fish populations were measured out to a distance of 3 km from SONGS.

The MRC recommended options for mitigation based on its analysis of the effects of SONGS on the marine environment. The MRC considered an array of techniques to mitigate for the adverse impacts of operating the SONGS including: (1) creating a kelp bed artificial reef, (2) upgrading the existing systems at SONGS that are designed to exclude fish from the plant or to return fish to the ocean, and (3) restoration of a wetland.

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[3] Marine Review Committee. 1989. *Final Report of the Marine Review Committee to the California Coastal Commission*. MRC Document No. 89-02.

Although the MRC studies were comprehensive and used state-of-the-art techniques, there is always some measure of uncertainty in quantifying the extent of adverse impacts where impacts are on-going and far reaching, and where environmental conditions are dynamic. The MRC could have, at considerable additional cost and time, continued its studies to more definitively determine the extent of the SONGS impacts on the marine environment. However, the Commission, **with the strong urging of the permittee**, decided to terminate the field work of the MRC in 1988 and to specify, based on the MRC recommendations, the mitigation measures required to offset the adverse impacts of the SONGS.

2.3 MRC Costs in Perspective

In its summary of costs[4] spent to date on mitigation for the SONGS Units 2 and 3, the permittee includes the cost ($48 million) of funding the MRC's work. The Commission recognizes that the MRC costs were substantial, but finds these costs are separate and distinct from the costs of mitigating the adverse impacts of the SONGS. The MRC costs represented the cost of determining the impacts of the SONGS Units 2 and 3 after construction. The MRC's results were used by the Commission to determine necessary and appropriate mitigation. The Commission has never considered the work completed by the MRC as compensatory mitigation.

The costs of the MRC were justified based on the circumstances surrounding the application to construct the SONGS Units 2 and 3. When the application came before the Commission, there was a great deal of controversy surrounding the question of whether the once-through ocean water cooling system should be permitted at all, given expected adverse impacts to the marine environment. The MRC was conceived as a way of dealing with this conflict, and as a way to avoid costly and time-consuming project delays and litigation.

In a 1973 letter to the Executive Director of the CCZCC, the permittee estimated that delays in construction of the power plant would cost the utility $1.5 million per week. If, instead of setting up the MRC, the Commission had required the permittee to avoid adverse impacts by constructing cooling towers, the permittee's costs would have been significantly higher, ranging from $500 million to $2 billion.[5]

Given its comprehensive mandate, the MRC costs were reasonable. The MRC evaluated the effect of the SONGS on all major components of the marine environment at an average annual cost of $3 million. To put this cost in perspective, Southern California

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[4] Volume I, Section G, page 6, Table 1. In: *Submittal to Amend and Fulfill Certain Conditions of Coastal Development Permit No. 6-81-330 (SONGS Units 2 & 3).* August 16, 1996 Submitted by Southern California Edison.

[5] Ambrose R.F. 1990. *Technical Report to the California Coastal Commission: H. Mitigation.* Marine Review Committee, Inc.

Edison currently spends $12 million annually on contributions to the Electric Power Research Institute (R. Kinosian, personal communication).[6]

2.4 Use of the MRC Results and Recommendations

Following issuance of the MRC's Final Report in 1989, the Commission staff worked extensively with the MRC scientists, the permittee, environmental groups, fish and wildlife agencies, the Coastal Conservancy, the San Diego Regional Water Quality Control Board, the State Water Resources Control Board, wetland and kelp scientists, and others to develop a mitigation package for recommendation to the Commission. The goal of the staff was to develop a set of findings and conditions for the Commission's consideration that followed the MRC's recommendations and addressed existing Coastal Commission and wildlife agencies practices and policies. The permittee agreed that the mitigation options recommended by the MRC and adopted by the Commission were the most cost-effective means of dealing with the impacts reported by the MRC.[7]

2.5 1991 Coastal Commission Hearing

The staff presented its recommended mitigation package to the Commission at a public hearing on July 16, 1991. The Commission concluded that a compensatory mitigation program was the most cost-effective means of dealing with the adverse impacts caused by operation of the SONGS Units 2 and 3 because costs would be lower and, unlike the prevention options considered but rejected, compensatory mitigation would not interfere with plant operations or reduce plant efficiency. The Commission therefore further conditioned permit 6-81-330 (formerly 183-73) to require implementation of the following mitigation program elements:

- creation or substantial restoration of at least 150 acres of Southern California wetlands, as compensatory mitigation for Bight-wide fish losses;
- installation of fish behavioral barrier devices at the power plant as avoidance mitigation for losses of local midwater fish; and
- construction of a 300-acre artificial reef, as compensatory mitigation for adverse impacts to the SOK community.

The permit conditions adopted by the Commission also required the permittee to provide the funds necessary to implement a specific administrative structure, which includes Commission staff oversight and independent monitoring of the wetland and artificial reef mitigation elements. The permit conditions require program oversight and monitoring to be conducted by a small mitigation monitoring program team and necessary scientific

[6] Robert Kinosian. California Public Utilities Commission, Division of Ratepayer Advocates. Personal communication September 10, 1996.
[7] Permittee's comments on CCC Staff Recommendation to further condition Permit No. 183-73, July 10, 1991.

contractors under the direction of the Commission's Executive Director. This administrative structure was included because of the uncertainties associated with the use of compensatory mitigation to fully offset the adverse impacts of the SONGS. The Commission found that the required administrative structure "addresses this uncertainty by providing information on the success of mitigation projects, and by providing a mechanism for 'adaptive management' of the created resource."

In adopting this mitigation package the Commission found:

> The adopted conditions which set up a mitigation, monitoring, and remediation program is viewed as a minimum package. The Commission believes that the only way that Edison should be allowed to mitigate impacts rather than make extensive SONGS cooling system and operational changes to prevent impacts is through the fully adopted mitigation package... A lesser mitigation package would not fully address the impacts caused by SONGS and would not be in compliance with the coastal permit conditions. (July 1991 adopted Commission findings.)

The Commission then directed the staff to consider the need for additional mitigation, identifying specifically that consideration be given to a fish hatchery program. On March 23, 1993, the Commission added a requirement for the permittee to partially fund ($1.2 million) construction of an experimental white seabass hatchery. Due to its experimental nature, the Commission did not assign mitigation credit to this requirement.

2.6 NPDES Compliance and Earth Island Institute Lawsuit Settlement

In a separate action, the San Diego Regional Water Quality Control Board, which issues and administers the Federal Clean Water Act National Pollutant Discharge Elimination System (NPDES) permit for the SONGS, began proceedings to review the MRC's 1989 findings that the SONGS might not be in compliance with the NPDES permit conditions. Earth Island Institute intervened in these proceedings to encourage the Regional Board to take enforcement action against the permittee. Earth Island Institute also filed action in Federal District Court, alleging violations of the Clean Water Act as a result of the SONGS operations. The Regional Board held a hearing in October 1991, after the Coastal Commission had acted to further condition permit 6-81-330.

In early 1992 the Board concluded that the evidence did not clearly indicate any NPDES permit violations and thus terminated the proceeding. Earth Island subsequently filed Petitions for Review with the State Board and prepared its case for trial. In June 1993, before the case went to trial, the permittee settled the matter with the Earth Island Institute. The resultant settlement agreement, approved by the District Court, includes the following obligations agreed to by the SONGS' owners:

- restoration of wetland acreage in addition to that required by the Coastal Commission near or adjacent to the San Dieguito wetlands project;

- funding for wetlands restoration research; and
- inclusion of a Marine Science Education Center and ongoing education program targeted for disadvantaged youths at SCE's existing marine laboratory at Redondo Generating Station.

2.7 Termination of the MRC

On December 15, 1993, the Commission adopted the following resolution to authorize termination of the MRC:

> The Marine Review Committee for the San Onofre Nuclear Generating Station has completely and fully accomplished the mandate given to it under Permit No. 183-73 in an admirable and responsible manner. Accordingly, the California Coastal Commission (Coastal Commission) hereby authorizes the Marine Review Committee to terminate its existence. Although the Marine Review Committee will no longer exist as an entity, the Coastal Commission will maintain the ability to consult with its former members, consultants and staff to seek clarification or interpretation of any of its findings. Southern California Edison Company (Edison) shall fund such consultation. Should Edison propose a modification to Permit No. 183-73, Edison shall also fund the Coastal Commission's consultation with technical experts the Commission believes is necessary to evaluate such a proposal.

2.8 Implementation of the Adopted Mitigation Conditions

From 1992 to 1995 Commission staff worked with the permittee to implement the mitigation conditions adopted by the Commission and agreed to by the permittee. Initially, staff efforts focused on implementation of Condition D, Administrative Structure, including establishing the mitigation monitoring program team, and establishment of various advisory panels such as the Interagency Wetland Advisory Panel (IWAP).

Staff also worked intensively with the permittee during the site selection processes for both the wetland mitigation and artificial reef projects. Staff attended numerous permittee-sponsored meetings to discuss design plans for the mitigation projects. Over time, however, much of the discussion initiated by the permittee began to focus on permit condition interpretation rather than condition implementation. The staff's efforts became primarily devoted to reviewing technical information supplied by the permittee or requested by staff in support of the permittee's interpretations to lessen the intended permit requirements.

By 1994, implementation of the wetland and artificial reef conditions stalled. With the exception of Conditions B and F, none of the mitigation required in the 1991 permit had entered the implementation phase by 1995. Condition F required the permittee to

contribute $1.2 million to the construction of a marine fish hatchery. The permittee satisfied this obligation through a transfer of funds in 1994.

2.9 The 1995 Amendment Request

On September 11, 1995, the permittee submitted a request to amend certain conditions of Permit 6-81-330. This request proposed to amend four of the six conditions agreed to in the 1991 permit for the SONGS. The table below shows how some of the proposed amendments would have changed the original 1991 permit conditions.

Table 2: Comparison of 1995 Amendment Requests with the 1991 Permit

Conditions in the 1991 SONGS Permit	Permittee's proposed 1995 amendments (not accepted for filing)
Condition A: Create or substantially restore 150 acres of coastal wetland habitat. Independently monitor to evaluate success and need for remediation for full operating life of the SONGS (expected to approximately 30 years).	Create or substantially restore approximately 65 acres at San Dieguito Lagoon. Remaining mitigation obligation (i.e., approximately 85 acres), provided through enhancement (e.g., maintenance of the lagoon inlet). Delete or change several performance standards, objectives, and design criteria. Permittee monitors at various times to evaluate success and need for remediation over a period of 10 years .
Condition B: Install fish behavioral barrier devices within the power plant with effectiveness and retention determined by the Executive Director.	Install fish behavioral barrier devices within the power plant with the permittee having sole discretion over effectiveness and retention of the devices.
Condition C: Construction of a 300 acre artificial reef. Independently monitor to evaluate success and need for remediation for full operating life of the SONGS.	Construct a 12 acre experimental reef, with the permittee's obligation terminated after 10 years of experimental evaluation. Deletion of all performance standards, and all obligations to ensure success or remediate the constructed reef.
Condition D: Implementation of a specific administrative structure, which includes Executive Director oversight and independent monitoring of the wetland and artificial reef mitigation elements.	Delete the administrative structure and replace independent monitoring of the entire mitigation program with self monitoring.

The Commission's regulations (section 13166(a)(1)) provide that the Executive Director use the following standard to determine whether or not an application for an amendment to a previously approved coastal development permit shall be accepted for Coastal Commission review:

> An application for an amendment shall be rejected if, in the opinion of the executive director, the proposed amendment would lessen or avoid the intended effect of a partially approved or conditioned permit unless the applicant presents newly

discovered material information, which he could not, with reasonable diligence, have discovered and produced before the permit was granted.

The amendment request was evaluated against these criteria. Ultimately, the Executive Director determined that the proposed amendment to the permit would drastically reduce the mitigation requirements, which the Commission found to be the minimum necessary to address the adverse impacts of operating the SONGS. The amendments would have lessened or avoided the intended effect of the Commission's decision.

Since the Executive Director's determination was not overturned by the Commission, all of the 1991 permit conditions remain in full force. However, the Commission directed the staff to work with the permittee to develop a mutually acceptable amendment package for Commission consideration.

2.10 The 1996 Amendment Request

Since November 1995 the staff has worked intensively with the permittee to try to develop a mutually acceptable amendment package. Numerous meetings with the permittee, staff from the CDFG, USFWS, NMFS, and other agencies, and outside scientists have been required to discuss the permittee's concerns relating to implementation of the 1991 permit mitigation conditions and the appropriateness of any amendments. The permittee claims the staff has required numerous studies and technical meetings above and beyond what is required by the current permit. However, these studies and meetings were necessary to allow informed decisions regarding appropriate changes based on the permittee's desire to reduce the mitigation package stipulated in the 1991 permit. Some of the compromises reached include:

- The staff has compromised to meet the permittee's desire to satisfy some of the wetland mitigation obligation through partial credit for the enhancement of existing wetlands that will result from inlet maintenance. The 1991 permit calls for creation or substantial restoration of at least 150 acres of coastal wetland, and the continued maintenance of tidal flushing. Thus, allowing satisfaction of the requirement to create or substantially restore 150 acres by enhancement activities (e.g., inlet maintenance at San Dieguito Lagoon) requires a permit amendment. Through this compromise, the staff has offered to support the permittee in seeking Commission approval for an amendment to allow partial credit for inlet maintenance.

- As a way to reach a compromise on the amount of partial credit for inlet maintenance at San Dieguito Lagoon, the staff and the permittee sought the advice and recommendations of the Interagency Wetland Advisory Panel (IWAP) (Exhibit 3). However, the permittee's mitigation plan for San Dieguito Lagoon has ignored the IWAP recommendations and requests substantially more credit for inlet maintenance than either the IWAP or staff have recommended

- The staff has worked diligently with the permittee to develop a mutually acceptable design for the experimental artificial reef. This work has entailed meetings with

Commission staff, the permittee, Department of Fish and Game staff, and potential construction contractors.

- The staff has compromised by considering the possible use of concrete as a construction material for the kelp mitigation requirement reef. Concrete is cheaper than quarry rock (the material stipulated in the 1991 permit). The staff suggested that concrete be incorporated into the design of the experimental kelp reef to determine whether it would be a suitable building material for the larger kelp mitigation reef. Use of concrete to construct the artificial reef requires a permit amendment. Through this compromise, the staff has agreed to support the permittee in seeking Commission approval for an amendment to allow for the use of concrete in construction of the artificial reef and thereby reduce mitigation costs.

- The staff has offered numerous compromises on the intensity and breadth of the required monitoring programs. The staff has also suggested numerous monitoring strategies that uphold the spirit and intent of the 1991 permit, but do so at a lower overall cost to the permittee.

2.11 Independent Review Panel for Kelp Studies

In addition to the above examples, the Commission staff has worked with the permittee to resolve concerns about the implications of further kelp studies conducted by the permittee.

The Commission's resolution authorizing the dissolution of the MRC (1993) requires the permittee to fund former MRC scientists to review any new data collected after the MRC studies, which the permittee chooses to submit to revise the mitigation requirements. The permittee objected to the MRC scientists fully evaluating the new kelp data the permittee had collected post-MRC studies. The permittee offered an alternative that it believed was quicker and cost effective—establishment of a three-member scientific panel to review the permittee's kelp data.

The Commission staff believed that the MRC scientists were more qualified to evaluate the new data because of their in-depth understanding of the methods and analysis used on the existing data. Nevertheless, in the spirit of compromise and to move forward with the mitigation, the staff agreed to jointly select a three-member panel with the permittee and form the questions for the panel to consider.

As illustrated by the examples above, the staff's work with the permittee has focused on developing amendments for Condition A (wetland mitigation), Condition C (kelp reef mitigation), and (administrative structure). This has been a difficult task with mixed results, and culminated in the submittal of the permittee's current amendment proposal. In the end, the staff was able to reach agreement with the permittee on major components of Condition A, and specific amendments to Conditions C. However, agreement could not be reached on an overall package.

Throughout this process, Commission staff has relied on the work of the MRC as the basis for developing a mitigation package that would bring the SONGS into conformance with the Coastal Act. In fact, with the exception of the kelp reef mitigation condition, none of the MRC's results regarding adverse impacts or recommendations regarding mitigation options are at issue in the proposed amendment. In the case of the kelp reef mitigation, an independent review of data collected after completion of the MRC studies concluded that the adverse impacts to giant kelp within the San Onofre kelp bed are less than originally determined by the MRC. Most of the MRC's work still remains the technical basis for developing an amended mitigation package that keeps the SONGS in conformance with the Coastal Act.

2.12 The SONGS Owners Settle with the CPUC

The SONGS owners and other utilities began negotiations with the California Public Utilities Commission (CPUC) several years ago to protect their "stranded" nuclear power plant investments in the face of industry deregulation. (See Appendix G for settlement cost details.) Concerns have mounted that nuclear power plants cannot generate power inexpensively enough to compete with other sources of energy in a fully deregulated market. Early this year, the CPUC settled with Southern California Edison (January 11, 1996, CPUC Decision 96-01-011), and separately with the other SONGS owners, in the first test case to address this problem.

By means of the resultant settlements, the CPUC has protected the investment of the SONGS owners for the next eight-year period in two ways: first, by allowing the owners to depreciate their "sunk costs" (previous investment) in the SONGS at an accelerated rate and second, by shielding the SONGS from open market competition through the year 2003 by providing the means for the investors to recover operating costs through a formula called "incremental costs incentive pricing" (ICIP).

This second component, ICIP, functions on the basis of a formula that combines Southern California Edison's (Edison) forecasts of operating costs with an assumption that the SONGS will operate at an average 78 percent efficiency rate each year. As the result, a rate for sales of the SONGS power was determined that would allow the investors to break even on the operating costs of the SONGS. This rate is set through the year 2003 at approximately 4 cents per kilowatt-hour. To increase profits, the SONGS owners may run the plant at a higher efficiency rate than the assumed 78 percent efficiency and thus, more power, reduce operating costs below the amounts contained in the forecast, or both.

As stated, the power plant may generate increased profits by operating at a higher than 78 percent efficiency rate. This is feasible. According to the records of the CPUC, the average efficiency rate of the SONGS generally exceeds 80 percent, and has even set a world record recently for a 98 percent annual efficiency rate. Therefore, 78 percent is considered by the CPUC to be a very conservative assumption in the owner's favor. The CPUC considered raising the ICIP efficiency assumption to 80 percent earlier this year, but Edison opposed this and the proposal was dropped. Edison has stated that past utility

performance and conditions predict the future with a high level of confidence; therefore, it seems likely that the plant may generate significant profits by this means.

The second way the SONGS owners can increase profits is to reduce their operating costs by any means at their disposal. In the case of the SONGS environmental mitigation costs associated with coastal development permit compliance, Edison estimated to the CPUC that such costs would exceed $126 million dollars. The CPUC settlement allowed the SONGS owners to place $22 million of these costs into the "sunk costs" category, thereby earning a virtually guaranteed 7.78 percent total return on investment (unless the plant is abandoned during the settlement period), and to place $104 million of these costs into the ICIP category. The ICIP costs are scheduled to be recovered by the SONGS owners through actual sales of the SONGS power. Thus, the settlement's ICIP formula "locked in" the permittee's ability to recover its SONGS mitigation costs at the forecast levels as a function of pre-set electricity rates through 2003.

With the SONGS settlement negotiations concluded, the permittee now seeks to amend its coastal development permit for the SONGS Units 2 and 3 to reduce the mitigation obligations presently required to comply with the conditions of the permit. Cost savings associated with mitigation reductions would be categorized within the second means of generating additional profits set forth above because the CPUC settlement does not require any savings on operating costs to be returned to the ratepayers. The ICIP formula means that the ratepayers will pay for the forecast amount of mitigation, whether that amount is actually spent or not. The CPUC settlement does not require the permittee to disclose to the CPUC the amounts actually spent on mitigation in the future, largely because there is no provision in the settlement to return any savings to the ratepayers.

The CPUC's Division of Ratepayer Advocates (DRA) argued for a mechanism to return such savings to the ratepayers, as Edison had already disclosed its intention to seek reductions from the Coastal Commission in the mitigation obligations upon which its ICIP forecasts were based. Edison counter-argued that retaining a business profit incentive was in keeping with changing utility industry trends and that it would also bear the risk that costs could increase without any means to recover higher-than-forecast operating costs from the ratepayers. The CPUC decided in Edison's favor; therefore, any savings on mitigation costs realized by the permittee will be retained as shareholder profit (assuming Edison operates SONGS as efficiently in the future as it has in the past, and does not abandon the plant prematurely).

B. COASTAL ACT POLICIES AND PROVISIONS

The Commission finds, for the purpose of reviewing the proposed amendment, that applicable sections of the Coastal Act include:

Coastal Act Section 30230:

> Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Coastal Act Section 30231:

> The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Coastal Act Section 30233:

Coastal Act Section 30233 states in pertinent part:

> (a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:
>
> (1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities. ...
>
> (7) Restoration purposes

Coastal Act Section 30240:

> (a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.
>
> (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which

would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Coastal Act Section 30107.5:

"Environmentally sensitive area" means any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.

Coastal Act Section 30108:

"Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

C. FINDINGS FOR AMENDMENTS TO CONDITIONS

In its 1991 adoption of conditions to the 1973 coastal development permit for the SONGS Units 2 and 3, the Commission found the required compensatory mitigation, monitoring, and remediation program to be a **minimum package**. The Commission found that full implementation of the minimum package was the only way that the permittee could mitigate the adverse impacts other than avoidance or minimization of the impacts altogether, which would require making extensive changes to the structure of the SONGS.

The permittee proposes to amend three conditions of the existing permit. The permittee believes the amendments are necessary to reflect information obtained since adoption of the conditions, to clarify various provisions of the conditions, and to extend various missed deadlines. Amendments are proposed to Condition A, the wetland mitigation condition, Condition C, the kelp reef mitigation condition, and Condition D, the administrative structure condition.[8]

D. FINDINGS FOR AMENDMENT OF CONDITION A: WETLAND MITIGATION

This section presents the Commission's findings in support of amending Condition A, as set forth in the Special Conditions to this permit amendment. Condition A describes the first element of the compensatory mitigation program required to offset the substantial adverse effects of the SONGS Units 2 and 3 on the marine environment.

[8] No amendments to Condition B, Behavioral Barrier Mitigation; Condition E, MRC Data Maintenance; or Condition F, Hatchery Program were submitted by the permittee. Thus, these conditions are not discussed in this staff report, and still apply as originally described. A copy of the adopted text of Conditions B, E, and F appears in Appendix B.

1.0 PURPOSE OF CONDITION A

Complete findings for the purpose of Condition A are described in the findings for permit 6-81-330 (formerly 183-73) and incorporated here by reference. A summary of the key points of these findings is presented below.

The overall goal of the wetland mitigation program is to compensate for Bight-wide losses in marine fish standing stocks due to the SONGS operation. The Coastal Act Section 30230 states "[m]arine resources shall be maintained, enhanced, and where feasible, restored." The SONGS Units 2 and 3 are consistent with the Coastal Act only if the significant adverse impacts to fish loss are fully mitigated. Condition A sets forth a process for site selection, mitigation plan development, plan implementation, and project monitoring, management, and remediation. This comprehensive process was required to ensure the wetland mitigation project would compensate for the fish losses over the long-term.

The Commission selected the option of coastal wetland mitigation for several reasons. Coastal wetlands provide valuable habitat for fish, including many of the species affected by the SONGS and other economically important species, such as halibut. Coastal wetland mitigation provides numerous other estuarine, marine and coastal resource benefits in addition to offsetting the adverse impacts to fish from the SONGS operation. Finally, coastal wetlands currently comprise a rare habitat type. Less than 25 percent of the original coastal wetland area remains in Southern California, and much of the remaining wetlands are degraded.

2.0 AMENDMENT OF CONDITION A PROPOSED BY THE PERMITTEE

The permittee is proposing more than 26 amendments to Condition A: Wetland Mitigation. The significant proposed amendments fall into the following nine categories:

1. Extension of various deadlines;
2. Addition of a provision that requires the permittee to pay a maximum of $3 million to implement a plan for restoration of wetlands at Ormond Beach;
3. Addition of provisions that allow the requirement to substantially restore wetlands to be satisfied by enhancement of existing wetlands;
4. Reduction of the wetland buffer requirements, so that the buffer between the restored wetland and existing development can be less than 100 feet;
5. Elimination of the provision that the permittee fund monitoring conducted by an independent entity;
6. Reduction of the duration of post-construction monitoring of the restored wetland from "the full operating life" of the SONGS to 10 years;

7. Reduction of the duration of remediation of the restored wetland from "the full operating life" of the SONGS to 10 years;

8. Elimination of the requirement that success of the restored wetland be based upon a comparison to concurrently monitored reference sites that are relatively undisturbed, natural tidal wetlands within the Southern California Bight; and

9. Addition of an uncontrollable forces clause, which negates the requirement to remediate should the mitigation fail to meet a performance standard due to an uncontrollable force, such as a major flood.

2.1 Changes to the Permit Deadlines

The permittee is proposing several extensions to condition compliance deadlines contained in Condition A. Many of the originally scheduled deadlines have passed, so these changes are necessary to provide realistic deadlines. The Commission finds the permittee's proposed deadline extensions will not cause the SONGS development to be inconsistent with the Coastal Act.

2.2 Mitigation at Ormond Beach Wetland

The permittee proposes to amend Condition A to provide that the permittee will pay up to $3 million to the State Coastal Conservancy or the City of Ormond Beach to fund restoration of wetlands at Ormond Beach. Specifically, the proposed amendment provides that the permittee would establish an internal interest-bearing account. The permittee would then enter into an agreement with the Conservancy or City, depending upon which entity agrees to implement the restoration project, for expenditure of money from the account. The permittee would release money from the account when requested and to the extent the request is consistent with the agreement. The proposed amendment does not provide for alternative restoration should restoration at Ormond Beach prove infeasible.

The permittee proposes this amendment of Condition A in conjunction with its preliminary plan for restoration at San Dieguito Lagoon. The permittee asserts that the Condition A requirement for creation or substantial restoration of 150 acres of wetlands to mitigate for the adverse fish impacts of the SONGS Units 2 and 3 will be satisfied by implementation of its preliminary plan for restoration at San Dieguito. The permittee further asserts that the payment of up to $3 million for restoration at Ormond Beach is intended to resolve the dispute with Commission staff over whether the San Dieguito Lagoon preliminary plan describes a project that provides 150 acres of created or restored wetlands, as required by Condition A.

As discussed in more detail below, the Commission finds that the project described in the permittee's San Dieguito Lagoon Preliminary Plan provides only about 92 acres of created, substantially restored, and/or enhanced wetlands. Thus, to satisfy Condition A, the permittee must create or substantially restore an additional approximately 58 acres of

wetlands at San Dieguito or another site. Also as discussed further below, the Commission finds that if the Ormond Beach wetlands can be restored, including establishment of a tidal inlet through Mugu Lagoon, the restoration could satisfy the requirement for an additional approximately 58 acres of created or substantially restored wetlands. When the Commission adopted Condition A in 1991, it found Ormond Beach to be one of several existing degraded wetland sites that if restored could mitigate, to some extent, the substantial adverse impacts of the SONGS on fish stocks. In its amendment proposal, the permittee submitted the South Ormond Beach Wetlands Restoration and Management Plan to demonstrate that successful restoration of the Ormond Beach wetlands, with a tidal connection through Mugu Lagoon, can mitigate the adverse impacts of the SONGS. Although the Commission cannot accept the South Ormond Beach wetland plan as a preliminary plan in conformance with Condition A, the Commission can accept the site to allow for development of a preliminary plan.

In addition, it appears that restoration of the Ormond Beach wetlands could be consistent with the policies of Chapter Three of the Coastal Act. Section 30230 of the Coastal Act promotes the enhancement of existing wetlands. Section 20233 allows filling or dredging of wetlands for purposes of wetlands restoration (if the filling or dredging is the least environmentally damaging alternative and is mitigated). A restoration project at Ormond Beach would include dredging of wetlands to create a tidal connection for purposes of restoring the degraded wetlands at Ormond Beach. This dredging would be consistent with the Coastal Act. Further, the plan does not include significant adverse impacts to public access or recreational opportunities at Ormond Beach.

The Ormond Beach wetland is suitable for development and implementation of a plan for restoration to provide at least 58 acres of wetlands that mitigate for the fish losses caused by the SONGS. Restoration at Ormond Beach could be consistent with the Coastal Act and therefore qualify for a coastal development permit. For these reasons, the Commission finds that revising Condition A to include provisions allowing for selection of Ormond Beach wetland as a second mitigation site for the SONGS impacts, as well as providing the permittee the option of funding a third party to develop and implement a plan for mitigation at Ormond Beach wetland would be consistent with the Coastal Act.

The Commission finds, however, that the permittee's proposal to amend Condition A is inconsistent with the Coastal Act as submitted. Although it appears that restoration at Ormond Beach can mitigate, to some extent, the adverse impacts of the SONGS and that the restoration activities would be consistent with the Coastal Act, these are not definite conclusions. The Commission is not at this time approving a preliminary plan or a coastal development permit for restoration at Ormond Beach. The Ormond Beach site requires further review of the physical, biological, and hydrological conditions, an evaluation of the feasibility of the tidal connection, identification of site opportunities and constraints, detailed review of environmental impacts, and a coastal development permit. Although not likely, further study and environmental review of restoration at Ormond Beach could reveal that the restoration is infeasible or has adverse environmental impacts that cannot be

mitigated. In that case, the restoration at Ormond Beach would not occur and the fish losses caused by the SONGS would not be mitigated.

The proposed amendment allows the permittee to simply pay $3 million regardless of whether restoration at Ormond Beach actually occurs. The Commission found that its permit allowing development of the SONGS Units 2 and 3 is consistent with the Coastal Act only if the adverse impacts to marine resources are fully mitigated. The Commission also found that the adverse impacts to marine resources are fully mitigated only if, among other things, 150 acres of wetlands are created or substantially restored. Thus, an amendment that allows the permittee to pay $3 million to restore at least 58 acres of wetlands without guaranteeing that the restoration will actually occur, or that an alternative restoration plan will be carried out in the event that the Ormond Beach plan fails to ensure mitigation of the adverse impacts of the SONGS, is inconsistent with the Coastal Act. Further, the amendment would be inconsistent with the California Environmental Quality Act (CEQA) since it would result in the Commission's having approved a development that has an adverse impact without having fully mitigated that impact.

The Commission finds that Condition A can be amended consistent with the Coastal Act to provide for the funding of development and implementation of a plan for wetland mitigation at Ormond Beach if Condition A is revised to also provide that should restoration at Ormond Beach not occur because of unmitigatable adverse effects or infeasibility, the permittee will develop an alternative wetlands mitigation plan that creates or substantially restores at least approximately 58 acres of wetlands consistent with all of the criteria of Condition A. In addition, to insure that the $3 million is paid, Condition A must be revised to require the payment of the money into an external account as soon as the Commission has entered into a memorandum of agreement (or contract) with the implementing entity. The amendment of Condition A is consistent with the Coastal Act only if the $3 million is paid in one sum, with expenditures regulated by the Commission rather than the permittee. This is necessary to ensure the timely expenditure of required funds.

Finally, the Commission also finds that $3 million provides the estimated amount needed to accomplish development and implementation of a plan for wetland mitigation at Ormond Beach, as specified in the Coastal Conservancy's existing plan. The allocation of the money is identified in Appendix D.

2.3 Partial Credit for Enhancement

Condition A requires the permittee to **create** or **substantially restore** at least 150 acres of wetlands. For the purposes of this permit the creation of wetlands is defined as an activity that results in the formation of new wetland habitat in an upland area. To substantially restore means to return an area from a disturbed condition to a previously existing natural condition or the equivalent (i.e., to restore), and by so doing to make a significant change in the area (i.e., a substantial difference).

In order to substantially restore a wetland the site must (a) have been a wetland in the past (in contrast with wetland creation, in which an area is created from upland), and (b) currently be severely degraded. After restoration the site should have wetland values that are similar to those of natural, undisturbed wetlands in the southern California Bight (December 14, 1994 letter from Coastal Commission staff to SCE regarding substantial restoration). The enhancement of wetlands is an activity that incrementally improves the habitats and functions of an existing functioning wetland area.

The Commission finds that each acre of wetland created or substantially restored by the permittee can be "credited" as one of the required 150 acres.

However, there are some activities that the permittee plans to conduct at San Dieguito Lagoon and Ormond Beach that result in only **enhancement** of existing wetlands. For example, maintenance of the inlet of San Dieguito Lagoon to provide continual tidal flow throughout the lagoon will not create new wetland habitat, but will instead enhance existing wetland habitat currently affected by tidal action. The Commission finds that the existing permit does not allow enhancement of existing resources to be treated as creation or substantial restoration of wetlands. However, the Commission recognizes that the enhancement of existing wetlands can result in a more biologically productive wetland. Thus, to some extent enhancement can mitigate for the fish losses caused by the SONGS. The Commission finds after consultation with the permittee and the Interagency Wetlands Advisory Panel, that the appropriate credit is equal to the estimated amount of resource improvement. Thus, enhancement credit must be calculated on a case-by-case basis, but the appropriate credit will always be less than one-to-one (1:1). That is, credit for enhancement will always be partial credit. For example, if the staff, in consultation with its scientific team and the Interagency Advisory Panel estimate that all of the existing tidal and subtidal wetland area at or below mean higher high water in San Dieguito Lagoon will be enhanced by 28.1 percent then the credit to be awarded will be: 28.1% x 126 acres of existing wetlands = 35.4 acres.

The purpose of the wetland project is to mitigate for fish losses caused by the operation of the SONGS Units 2 and 3 to ensure that the power plant is consistent with the Coastal Act. The enhancement of wetlands can improve fish habitat (for example, by providing nursery areas, and shelter for juvenile fish, such as halibut), leading to greater fish numbers. Therefore, amending Condition A to allow enhancement of wetlands to count toward the requirement to create or substantially restore 150 acres of wetland is consistent with the Coastal Act provided that such enhanced wetlands are "credited" only to the degree the existing wetland is improved. Further, the Coastal Commission finds that up to 50 percent of the required 150 acres can be satisfied through enhancement activities; the remainder (at least 75 acres) must be created or substantially restored, pursuant to the requirements of Condition A.

The permittee's proposed amendment to Condition A does not include a change to allow enhancement to satisfy the substantial restoration requirement. The permittee asserts that such a change is unnecessary because enhancement **is** substantial restoration. The

permittee seeks Commission approval of its preliminary plan for a wetland mitigation project at San Dieguito Lagoon. The plan provides primarily for enhancement of existing wetlands. Since the Commission finds that enhancement of existing wetlands does **not** qualify as "substantial restoration," Condition A must be amended to reflect the Commission finding that the preliminary plan complies with the Condition A requirements.

2.4 Reduction in buffer requirements

The permittee's proposed amendments would replace the requirement for a buffer of at least 100 feet with a requirement to provide a buffer of at least 100 feet "except in those areas where a smaller buffer is functionally adequate or otherwise appropriate (e.g., near existing development)." The effect of this change is to allow for elimination or substantial reduction in the buffer requirements. This amendment would allow construction of wetlands directly adjacent to existing urban development without transitional upland habitat necessary to buffer the adverse impacts of adjacent development.

The permit recognizes that a wetland created close to an existing structure, such as a freeway, will be a less valuable wetland when compared to a wetland further removed from the adverse affects of human activity. For instance, polluted runoff from a freeway next to a wetland is likely to degrade the water quality of the wetland, while noise and vehicle movements may disturb some animals. Human disturbance may cause nesting birds to take flight and even abandon nests. Buffers not only protect wetland habitat from nearby human activity, they also provide transitional habitat to species escaping very high tides or floods.

In prior actions, the Commission has found that a buffer of at least 100 feet is necessary to ensure that the biological productivity of the wetland is adequately maintained. Section 30240 mandates that development adjacent to environmentally sensitive habitat areas, such as wetlands, be sited and designed to prevent adverse impacts. Also, Section 30231 requires that biological productivity and the quality of coastal wetlands be maintained. In addition, the Commission's Statewide Interpretive Guidelines for Wetlands suggest a minimum of a 100 foot buffer between new development and a coastal wetland.

Thus, for the restored wetlands to be biologically productive, they must be surrounded by an upland buffer of at least 100 feet. Therefore, to reduce the requirement for a 100-foot buffer in Condition A, as the permittee's amendment requests, would result in a less productive wetland that would not fully mitigate for the fish loss caused by the SONGS Units 2 and 3. Accordingly, the recommended revisions to Condition A do not include any changes to the 1991 permit with regard to the buffer requirements, since the 100-foot standard is the minimum buffer requirement necessary for the SONGS project to be consistent with the Coastal Act.

2.5 Independent Monitoring

The permittee's proposed amendment shifts the responsibility for management and monitoring of the restored wetlands from the Commission to the permittee.

The Commission finds that it must maintain responsibility to implement independent monitoring to ensure objective data collection and interpretation. The need for monitoring to be conducted independent of influence from the permittee was repeatedly stated by the Commission (e.g. p. 46 of the Permit) and by the permittee (testimony by M. Hertel to the Commission on July 16, 1991). The requirement of independent monitoring was first suggested to the Commission by the MRC because it is a powerful mechanism that reduces the chance that bias will enter into the collection, analysis, and interpretation of the data used to assess compliance with the permit. The need for independent monitoring is discussed further in the findings for Condition D.

The recommended revisions to Condition A do not include the permittee's proposed changes to shift responsibility from independent monitoring to self-monitoring. The revisions do clarify that monitoring will be conducted independent of the permittee.

2.6 Length of Monitoring

The permittee's proposed amendments reduce the length of monitoring from "the full operating life of SONGS" (approximately 30 years) to 10 years.

The purpose of monitoring is to evaluate the success of the restored wetlands. Condition A sets forth a series of performance standards that if met, indicate the wetland is biologically productive. Monitoring enables the measurement of these performance standards. The permittee is proposing to amend Condition A to reduce the duration of monitoring from the life of the SONGS Units 2 and 3 to a 10-year period. The proposed amendment presumes that within 10 years of construction, the wetland project will meet the performance standards and the project will be considered a success.

The Commission finds that achieving successful wetland mitigation within 10 years is possible. However, the Commission is concerned that the mitigation projects could fail to meet performance standards after year 10. To assure that the biological productivity and quality of wetlands are maintained so that fish habitat is provided over the full duration of the adverse impacts to fish, some form of monitoring should occur for the full operating life of the SONGS. The permittee asserts that the Commission has not required monitoring of a wetland mitigation projects for more than 10 years. However, this project is unique in that it is intended to mitigate for large scale fish losses—not wetland losses—that will occur over the operating life of the SONGS Units 2 and 3. Therefore, the Commission finds that for the adverse impacts of SONGS to be mitigated so that the development is consistent with the Coastal Act, that annual site visits must occur after year 10, and that further monitoring must occur, using remediation funds, should an annual site visit suggest

that the project has fallen out of compliance. See Condition D for further discussion of the monitoring activities.

Thus, the revisions to Condition A include a reduction in the length of detailed monitoring to 10 years, with annual site inspections thereafter. The revisions to Condition D include the annual site visits and the requirements for further monitoring should remediation be needed.

2.7 Length of Remediation

The permittee's proposed amendments reduce the length of time remediation will occur from "the full operating life of SONGS" (~30 years) to 10 years.

Wetland construction and restoration is in its infancy. Those restoration projects that have been appropriately monitored have shown that problems are common.[9] Some of these problems become apparent immediately whereas other problems become obvious only after several years. Problems that could become apparent only after many years include those relating to the effects of rare storm events on the constructed wetlands. For instance, a 1-in-30-year storm event could produce extensive scour or burial of the restored wetlands resulting in extensive habitat degradation. Because of the uncertainties about the sustainability of constructed wetlands over the long-term, remediation funds must be available over the long-term to ensure continued success. (Such is the case for the Batiquitos Lagoon enhancement project where two trust accounts have been set up to allow for remediation in perpetuity.)

The permit required remedial action for "the full operating life of SONGS" (~30 years) to ensure that if the mitigation project failed to meet performance standards set anytime during the period of SONGS-caused adverse impacts, remedial action would be undertaken. The Commission finds that only in this way can full compensatory mitigation be achieved. Under the permittee's proposed amendment if the mitigation project falls out of compliance after 10 years no remedial action would be undertaken and therefore full mitigation over the term of adverse impacts would not be achieved. Therefore to assure that the biological productivity and quality of mitigation wetlands are maintained (Section 30231), the Commission finds therefore, that remediation should occur throughout the full operating life of the plant.

The permittee asserts that the Commission does not typically require remediation of a wetland mitigation project for the entire life of the development that triggered the need for the mitigation. However, the SONGS development differs from most typical development projects. The SONGS project will adversely impact significant levels of fish. The permittee proposed and the Commission agreed to mitigate these impacts not by changing the

[9] Zedler, Joy B., Principal Author. 1996. Tidal Wetland Restoration: A Scientific Perspective and Southern California Focus. Published by the California Sea Grant College System, University of California, La Jolla, California. Report No. T-038.

cooling towers to avoid the fish losses but by creating or substantially restoring wetlands to provide for increased production of fish. Wetland mitigation projects that mitigate fill of wetlands are not remediated forever, even though wetlands are filled forever, because arguably the filled wetlands might not have survived forever. However, the fish losses will occur for a known period of time—the operating period of SONGS Units 2 and 3. For these losses to be mitigated, the wetland mitigation intended to increase fish stocks must be successful for the entire operating period.

Thus, the Commission finds that the permittee's proposal to amend Condition A to reduce remediation to 10 years is inconsistent with the Coastal Act. Accordingly, the revisions to Condition A do not include any significant changes to the 1991 permit with regard to the length of remediation.

2.8 Changes to Performance Standards

The permittee's proposed amendment would revise the performance standards for wetland mitigation so that success of the wetland restoration project would be based upon comparison of the newly restored wetland with existing data from any site, instead of with concurrently obtained data from relatively undisturbed, natural, tidal wetlands. There are therefore two parts to this amendment change: (a) the change to using any wetland in Southern California as a reference site rather than using only relatively undisturbed, natural, tidal wetlands as reference sites, and (b) the change to a fixed standard derived from existing data rather than using concurrently obtained data.

The permittee states that it "will use over 450 wetland literature references and existing data from 20–25 wetland sites in Southern California to develop a means to measure attainment of the performance standards." But using existing data to assess compliance of the wetland mitigation project is acceptable only if all of the following criteria are met:

1. the data are from relatively undisturbed tidal wetlands in Southern California exist for the variables listed as performance standards in the Permit;
2. the data were collected using methods that allow for comparison of results;
3. the data exist for multiple years encompassing a wide range of environmental conditions; and
4. the values of the variables listed in the Permit do not vary unpredictably over time.

After extensive review of the over 450 references from southern California wetlands cited by the permittee, the staff found that in no case did the existing data meet all four of the above criteria; frequently the data did not meet any of the criteria. These problems with the existing data were presented to the permittee during several meetings regarding the use of existing data.

However, the permittee proposes to "use over 450 wetland literature references and existing data from 20–25 wetland sites in Southern California to develop a means to measure attainment of the performance standards." Because most of these 20–25 sites are degraded, frequently non-tidal wetlands, the standards the permittee would develop would be substantially lower than those obtained from the "relatively undisturbed, natural tidal wetlands" as stipulated in the permit. Therefore, to assure that the biological productivity and quality of the mitigation wetlands are maintained so that fish habitat is provided over the full duration of the adverse impact to fish, the monitoring data must be obtained from relatively undisturbed, natural tidal wetlands.

Furthermore, the permittee proposes to change to a fixed standard derived from existing data rather than using concurrently obtained data. A major advantage of using concurrent sampling (i.e. simultaneous sampling) of reference and mitigation sites over existing data for determining whether performance standards are met, is that fluctuations in the restored wetland that are caused by regional changes in the environment (e.g., an unusually wet year that influences water quality and the abundances of invertebrates, fish and salt marsh plants), would also be expected to occur in the reference sites. Thus, for example, if environmental forces cause the variables of interest to decrease in value in the mitigation wetland, the wetland would still be in compliance, because the values of these variables would have also decreased in the reference wetland. In this way the permittee could be spared the expense of unnecessary mitigation. This approach assumes that the restored and reference sites will respond in similar ways to given changes in the environment. Available information indicates that natural coastal communities in southern California (including wetlands and reefs) do indeed respond similarly to regional changes in the environment.

Monitoring programs that use concurrent sampling are generally advocated by experts in experimental design and the Commission concurs that monitoring the restoration and mitigation sites concurrently is the most scientifically defensible method for assessing compliance of the SONGS mitigation projects. This type of monitoring program ensures that the first three criteria listed above are met. Furthermore, since compliance is assessed using the present day condition of reference sites rather than conditions that existed in the past, it is not necessary for the values of performance standards to remain constant (criterion four).

Many other changes to the performance standards have been suggested by the permittee but in each case these would greatly reduce the current standard, e.g., the suggested amendments to Sections 3.4.b.1 through 3.4.b.5. Therefore, these suggested changes have not been included in the revisions.

Thus, the Commission finds that the permittee's proposal to amend Condition A by changing the performance standards is inconsistent with the Coastal Act. Accordingly, revisions to Condition A do not include any significant changes to the 1991 permit with regard to the performance standards.

2.9 Addition of an "Uncontrollable Forces" Clause

The permittee proposes to include an uncontrollable forces clause which will obviate the need for the permittee to remediate should failure to meet a performance standard occur due to an uncontrollable force, such as a major flood. In its rationale for this amendment, the permittee states "[a]s indicated in the Permit, the restoration design will take into account normal, expected natural occurrences, but catastrophic conditions should not cause remedial measures to be imposed upon the Permittee." However, by using reference sites in the evaluation of project performance, the original permit condition provides the flexibility necessary to account for changes at the mitigation site due to uncontrollable events. This is because compliance with performance standards is always determined relative to the performance of the reference sites. Thus, environmental variation due to many uncontrollable forces is accounted for through concurrent monitoring of reference sites. For example, many southern California wetlands were subjected to heavy flooding in 1993 and 1995. If subsequent monitoring of the mitigation site showed fish abundance declined after such a flood, similar concurrent information from the reference wetlands would be used to determine how changes at the mitigation wetland compare to other wetlands. If fish abundances declined at all the wetlands (as would be expected in major regional flooding) then the mitigation wetland would still be performing similar to the reference wetlands and no remediation would be necessary.

As long as the SONGS is operational, resources are being lost. Therefore, as long as the permittee's obligations consist of compensatory mitigation, the permittee must be responsible for providing full mitigation (including remediation) for the operating life of the SONGS, even in the event of an "uncontrollable force", unless this force also removes the source of the impacts (i.e. shuts down the SONGS). By operating the SONGS the permittee is, in effect, "borrowing" resources from the public and the Commission finds that the public has a right to expect that the permittee fully repays its debt, under all circumstances.

To assure that the biological productivity and quality of the mitigation wetlands are maintained so that fish habitat is provided for the duration of the adverse impacts to fish, no uncontrollable forces clause should be added to the conditions. Thus, the recommended revisions to Condition A do not include any significant changes to the 1991 permit with regard to uncontrollable forces.

2.10 Other Minor Changes

The permittee has proposed to make minor changes to the 1991 permit. These revisions are to Sections 1.3(l), and 1.4(d). These amendments address impacts to endangered species and existing functional wetlands. On the whole, most existing endangered species habitat or existing functioning wetlands habitat affected by the permittee's mitigation projects will be enhanced; however, some small areas may be adversely impacted during the restoration. The minor changes proposed would allow the permittee to implement the restoration plan if the regulatory agencies, including the Coastal Commission in review of

a coastal development permit application for a restoration project, believe the impacts are acceptable.

3.0 FUNDING OPTION FOR SAN DIEGUITO LAGOON PROJECT

Although not proposed by the permittee, the Commission finds that Condition A must be revised to provide the permittee the option to pay $27.76 million to fund planning and implementation of a mitigation project at San Dieguito Lagoon. The Commission found that its permit allowing development of the SONGS Units 2 and 3 is consistent with the Coastal Act only if the adverse impacts to marine resources are fully mitigated. The Commission also found that the adverse impacts to marine resources are fully mitigated only if, among other things, 150 acres of wetlands are created or substantially restored. Thus, an amendment that allows the permittee to pay $27.76 million to restore at least 92 acres of wetlands without guaranteeing that the restoration will actually occur, or that an alternative restoration plan will be carried out in the event that the Ormond Beach plan fails to ensure mitigation of the adverse impacts of the SONGS is inconsistent with the Coastal Act. Further, the amendment would be inconsistent with the California Environmental Quality Act (CEQA) since it would result in the Commission's having approved a development that has an adverse impact without having fully mitigated that impact.

The Commission finds that Condition A can be amended consistent with the Coastal Act to provide for the funding of development and implementation of a plan for wetland mitigation at San Dieguito Lagoon if Condition A is revised to also provide that should restoration at San Dieguito Lagoon not occur because of unmitigatable adverse effects or infeasibility, the permittee will develop an alternative wetlands mitigation plan that creates or substantially restores at least 92 acres of wetlands consistent with all of the criteria of Condition A. In addition, to insure that the $27.76 million is paid, Condition requires the payment of the money into an external account as soon as the Commission has entered into a memorandum of agreement (or contract) with the implementing entity. The amendment of Condition A is consistent with the Coastal Act only if the $27.76 million is paid in one sum, with expenditures regulated by the Commission rather than the permittee. This is necessary to ensure the timely expenditure of required funds.

Finally, the Commission also finds that $27.76 million provides the amount needed to accomplish development and implementation of a plan for wetland mitigation at San Dieguito Lagoon. The allocation of the money is identified in Appendix D.

E. FINDINGS FOR AMENDMENT OF CONDITION C: KELP REEF MITIGATION

This section presents the Commission's findings in support of amending Condition C, as conditioned. Condition C describes the second element of the compensatory mitigation program required to offset the substantial adverse effects of SONGS Units 2 and 3 on the marine environment.

1.0 PURPOSE OF CONDITION C

Complete findings for the purpose of Condition C are described in the findings for permit 6-81-330 (formerly 183-73). A summary of the key points of these findings is presented below.

- The MRC studies found that excess turbidity generated through cooling water discharges adversely affected the kelp bed community at SOK causing losses to giant kelp, kelp-bed fish, and kelp-bed invertebrates
- The MRC recommended and the Commission found that compensation for the kelp bed community losses, in the form of an artificial reef, is preferable to redesigning the cooling tower to avoid the impacts because: 1) it is likely to replace the lost resources; and 2) the cooling system changes will cause additional impacts, have engineering problems, and are costly.
- Condition C requires the permittee to construct a 300 acre artificial reef that develops and maintains a kelp bed community, and has a physical structure as similar as practicable to SOK.
- The performance standards, monitoring, and remediation provisions set forth in Condition C are designed to ensure that the artificial reef will to the fullest extent possible replace the kelp bed community resources lost at SOK.

2.0 AMENDMENTS TO CONDITION C PROPOSED BY PERMITTEE

The permittee proposes to eliminate the requirement that it create a 300 acre artificial reef as compensatory mitigation for the SONGS' adverse impacts to the San Onofre Kelp bed (SOK) community. Instead, the permittee proposes to construct a 16.8 acre "experimental artificial reef for kelp as mitigation for possible resource losses at SOK." In addition, the permittee proposes to eliminate the performance standards, independent monitoring program, and remediation requirements, which hold the permittee responsible for providing a successful kelp bed community reef for the full operating life of the SONGS. Instead the permittee proposes to "make scientific observations of the experimental reef over a 10-year period." The permittee would submit a report "that includes recommendations for future reef construction designs to the Commission" at the end of the observation period.

3.0 ANALYSIS OF KELP IMPACTS AND MITIGATION

3.1 Effects of the Once-Through Cooling System Discharges Were Identified by MRC

The MRC study concluded that a turbid plume produced by SONGS once through cooling water discharges caused substantial adverse effects to giant kelp, kelp-bed fish, and kelp-bed invertebrates within the San Onofre kelp bed reef (SOK). The MRC estimated that the

area of medium to high density kelp in SOK would be on average 200 acres smaller than it would have been had SONGS not been operating. The MRC concluded that this reduction in the area of giant kelp in SOK (relative to the control site—San Mateo kelp bed—hereafter referred to as SMK) resulted from increased turbidity and sedimentation that cause a decrease in the production of new plants. The MRC also concluded that the turbid plume did not increase the death rate of existing adult plants in SOK. The reduction in giant kelp as well as increased turbidity and sedimentation, were implicated as the major factors contributing to the relative loss of kelp-bed fish and kelp-bed invertebrates.

The MRC's studies used a innovative research design called BACIP (Before-After/Control-Impact Paired) which was developed by the MRC. Most impact studies estimate effects by comparing the impact site to a control site or by comparing the impact site before and after the impact has occurred. The BACIP method combines both of these techniques and compared the change in abundance, **before** and **after** SONGS began operating between a **control** and **impact** site.[10] This design allowed the MRC to ask the question: **Did the average difference in kelp abundance between the control (SMK) and impact (SOK) sites change after SONGS began operating**? Where possible, the MRC used experimental studies to determine the mechanisms that lead to adverse effects.

3.2 Effects Were Reanalyzed by the Permittee Using Additional Data

The MRC's findings on giant kelp were based on data collected between 1982 and 1988. During this period the MRC also collected data on a kelp bed invertebrates, kelp-bed fish, and the physical variables that were most likely to influence these organisms (e.g., light, ocean temperature, nutrient concentrations, and rates of sedimentation). Moreover the MRC conducted experiments to identify the specific mechanisms by which SONGS caused changes to the kelp bed community. As part of its water quality compliance monitoring, the permittee has continued to collect data on giant kelp abundance using the same data collection methods employed by the MRC. The permittee, however, has not collected similar data for kelp-bed fish, kelp-bed invertebrates, temperature, light, nutrients, and sedimentation, nor have they continued the types of experimental studies that the MRC conducted).

In September, 1995 the permittee submitted a report to the CCC staff that used this new information in addition to the MRC's data to create an extended data set on giant kelp (a revised version of this report, hereafter referred to as Dean and Deysher 1996, was submitted in April 1996). Dean and Deysher (1996) used a BACIP analysis on data collected through July 1995 that was similar, though not identical, to the one used by the MRC. The authors concluded that the average loss of medium to high density kelp at SOK over the operating life of SONGS was between 48 and 110 acres (the size of the impact varied depending on whether kelp abundance was calculated using downlooking or sidescanning sonar and on the assumptions used concerning changes in potentially

[10] For a complete description of BACIP see MRC Interim Technical Report 2, Sampling Design and Analytical Procedures (BACIP).

confounding factors such as sea urchin grazing and the amount of rocky substrate). These estimates are less than the 200 acres estimated by the MRC using data collected through 1988. Because the permittee did not conduct experimental studies or collect data on other physical and biological components of the kelp bed, Dean and Deysher (1996) could only speculate on the potential causes that could lead to a lessening of SONGS' impact on giant kelp as indicated by the extended data set.

Dean and Deysher (1996) was reviewed by an independent panel consisting of three scientists chosen jointly by the permittee and the Commission staff. The panel generally agreed with the approach used by Dean and Deysher and the MRC for estimating the size of SONGS impacts. Although the panel criticized specific parts of Dean and Deysher's analyses, they agreed with their qualitative conclusion that the effects of SONGS' discharges on giant kelp were much less than those estimated by the MRC. The panel was not asked to provide a quantitative estimate of SONGS' impact on giant kelp; however, they made recommendations for future analyses aimed at quantifying the area of kelp lost at SOK (relative to SMK) as a result of SONGS turbid discharge plume.

The permittee cites the panel's review as evidence for "[The] lack of SONGS significant adverse impact on kelp" and proposes a 16.8 acre experimental reef (which the permittee's consultants estimate will cost approximately $1 million to construct) "as more than adequate mitigation for any kelp impacts caused by SONGS" [11]. This assertion by the permittee is flawed because: (1) Dean and Deysher's study found the average area of kelp loss was between 48 to 110 acres, (2) the review never claimed that there is a lack of SONGS significant adverse impact on kelp, (3) the size of permittee's proposed kelp mitigation project is not based on any scientific analyses that estimate the extent of SONGS impact on kelp, and (4) the permittee provides no documentation that the proposed 16.8 acre experimental reef will fully compensate for the kelp-bed resources (including fish and invertebrates) lost by SONGS' operation.

3.3 Long Term Impacts to the San Onofre Kelp Reef Based on New Information

The staff has reanalyzed the permittee's extended data set on giant kelp abundance incorporating recommendations made by the independent panel and assumptions made by Dean and Deysher concerning confounding effects of sea urchin grazing (see Appendix C-1 for details on these analyses). Results of these analyses indicate that 122 acres of medium to high density kelp will be lost at SOK as long as the SONGS is operating at current levels.

[11]Volume I, Section F, page 6,: *Submittal to Amend and Fulfill Certain Conditions of Coastal Development Permit No. 6-81-330 (SONGS Units 2 & 3).* August 16, 1996 Submitted by Southern California Edison

3.4 Mitigation for Impacts to the San Onofre Kelp Reef

Condition II-C requires the permittee to fund construction of an artificial reef that develops and maintains a kelp bed community that has a physical structure as similar as practical to 97

SOK's. The artificial reef is intended to replace losses of kelp, kelp-bed fish and kelp-bed invertebrate at SOK caused by the operation of SONGS' Units 2 and 3. The MRC based its mitigation requirement for these losses on the average relative loss in the area of medium to high density giant kelp at SOK (defined as greater than 4 plants per 100 m^2). Due to the risks inherent in replacing a natural ecosystem with a designed ecosystem and because it was unlikely that kelp on average would cover the entire reef, the MRC recommended and the Commission approved a mitigation reef that was 50 % larger that the estimated area of relative kelp loss.

The amended Condition II-C requires the construction of a 16.8 acre experimental kelp reef, and funds to construct a 105.2-acre mitigation kelp reef for a total of 122 acres that compensates for losses to the kelp bed community at SOK. Information gained from studies of the experimental reef will be used to design the mitigation reef. The mitigation kelp reef (which may include portions of the experimental kelp reef) shall support, on average, 122 acres of medium to high density kelp, 28 tons of fish, and invertebrate and fish assemblages that are similar to natural reference reefs. If the mitigation kelp reef does not fully compensate for the impacts to the kelp bed community, then remediation shall occur (most likely by increasing the total area of reef) until the biological performance standards are met. A 122-acre artificial reef with two thirds cover of rock should be sufficient to replace losses to kelp-bed fish, and kelp-bed invertebrates at SOK.

However, the average area of medium to high density kelp produced by a 122-acre reef will, in all probability, be less than 122 acres. This is because typically only a fraction of the area of a reef (whether artificial or natural) supports a sustained population of medium to high density kelp. For example, on average only about 50% of the hard substrate in the control site SMK, supports medium to high density kelp. Rather than require a mitigation kelp reef that is larger than the area of estimated kelp loss based on a predetermined level of resource enhancement (as previously required by the Commission), the permittee's mitigation requirement in the Commission's revised Condition II-C is based solely on the extent of estimated impacts to the kelp bed.

4.0 PORTIONS OF THE PROPOSED AMENDMENT THAT ARE CONSISTENT WITH THE COASTAL ACT

In the rationale for the proposed amendment the permittee claims that "[t]he proposed amendments are based largely on a reduction in the estimated impacts of SONGS on kelp, made as a result of analysis of newly obtained data. Given that the estimates of impact are substantially reduced, and that any estimates of significant impact are uncertain, this new plan should serve as mitigation for any possible impacts." The

Commission agrees that new data collected since the MRC studies indicate that the estimated adverse effects of the SONGS on SOK are less than previously estimated by the MRC.

In approving the coastal development permit for SONGS Units 2 and 3, the Commission found that the construction and operation of the SONGS would be inconsistent with the Coastal Act unless the adverse effects of SONGS on SOK were mitigated. A kelp reef substantially greater than that proposed by the permittee in this amendment proposal is needed to mitigate the adverse impacts of SONGS Units 2 and 3. Without proper mitigation for the adverse impacts to the San Onofre Kelp bed community, past and continued operation of the SONGS is inconsistent with the Coastal Act.

Applicable policies and provisions of the Coastal Act require mitigation to fully compensate for the adverse impacts of SONGS on the marine environment. Specifically, Coastal Act Section 30230 requires that marine resources be maintained, enhanced, and where feasible, restored, and that special protection be given to species of special biological or economic importance. Coastal Act Section 30231 requires the maintenance of optimum populations of marine organisms, and Coastal Act Section 30233 (a) requires that qualifying development (such as SONGS) may only fill open coastal waters where, among other requirements, feasible mitigation measures have been provided to minimize adverse environmental effects.

Giant kelp is a species of special biological and economic importance, subject therefore to the special protection afforded by Coastal Act Section 30230. The harvest of giant kelp (*Macrocystis*) is a multi-million dollar industry in California. Moreover, giant kelp provides habitat and food for a diverse assemblage of animals, many of which also have high biological and economic importance. For example the red sea urchin fishery is one of the largest fisheries in California and is critically dependent on abundant kelp, which is the primary food of red sea urchins.

The MRC studies predicted that over its operating life SONGS would cause the San Onofre kelp bed to be 200 acres smaller per year than it would have been without the adverse effects of the plant. Re-analysis by the Commission's consulting scientists of data collected since the MRC studies, conducted according to the approach recommended by an independent panel of scientists, has determined that the revised kelp effect size is 122 acres per year over the operating life of SONGS. The Commission finds, therefore, that Condition C can be amended to address the permittee's additional data regarding the impact of SONGS on SOK. However, for the amendment to be consistent with the Coastal Act, the revised Condition C must provide for the creation of 122 acres of artificial reef for the purpose of growing kelp and establishing a healthy kelp bed ecosystem to compensate for the adverse affects of SONGS Units 2 and 3.

For the reasons cited above, the Commission finds that only if Condition C is revised as set forth in the Special Condition C would the adverse effects caused by the operation of

SONGS Units 2 and 3 since 1981 be adequately mitigated consistent with the applicable policies and provisions of Coastal Act Sections 30230, 30231 and 30233.

F. FINDINGS FOR AMENDMENT OF CONDITION D: ADMINISTRATIVE STRUCTURE

1.0 PURPOSE OF CONDITION D

Condition D provides the administrative structure to fund the monitoring, management, and remediation of Conditions A through C. The text of existing Condition D is contained in Appendix B. Specifically, the condition:

- Enables the Commission to retain scientists and support staff charged with the oversight and monitoring required by Conditions II-A through C;
- Provides for a scientific advisory panel to advise the Commission on the design, implementation, monitoring, and remediation of the mitigation projects;
- Assigns financial responsibility for permit compliance to the permittee and sets forth associated administrative guidelines; and
- Provides for periodic public workshops on the performance of the mitigation projects.

Condition D, as revised by the Commission, retains all of the above provisions, but **caps the permittee's financial liability for long-term monitoring, oversight, and remediation at a total amount of $28 million, by means of a trust fund to be established as described below**. This change responds to the permittee's concerns about the uncertainty of potential increases in project costs in the future while providing the financial and administrative means for the Commission to ensure that full permit compliance is achieved.

Condition D establishes an administrative structure to provide independent monitoring, oversight, including public reviews on the status of the mitigation projects, and remediation for the SONGS mitigation program (see Appendix D for costs). The Commission would continue to have responsibility to support the salaries of its existing staff members that work on this project. A scientific advisory panel and a small team of consulting technical professionals funded by Condition D provide expert advise and assistance to the Commission and its staff. Present panel members include William Murdoch, PhD, Professor, UC Santa Barbara, Richard F. Ambrose, PhD, Associate Professor, UCLA , and Peter Raimondi, PhD, Assistant Professor, UC Santa Cruz. The science team includes John Boland, PhD, wetlands ecologist, Daniel Reed, PhD (half-time), kelp forest ecologist, and Steven Schroeter, PhD (half-time), invertebrate ecologist. Reliance on independent, qualified professionals eliminates any potential for, or appearance of, partiality that can result when a permittee is forced to make choices between cost containment and complete mitigation.

2.0 EFFECT OF PERMITTEE'S PROPOSED CHANGES

The permittee's application for the proposed amendment to Condition D states:

> "[T]here is no justification to conclude that Edison is any less committed to implementing a fair and logical monitoring effort using professional consultants..."

The permittee therefore proposes to amend Condition D to:

1. Eliminate independent monitoring of the performance of wetland and marine mitigation projects and replace with self-monitoring;
2. Substantially reduce the Commission's oversight and management role relative to the existing 1991 conditions, and provides review-only or advisory roles for other state and federal agencies;
3. Eliminate funding for Commission oversight functions, which includes cutting funding for the Commission's small technical team and for members of the Scientific Advisory Panel;
4. Shift annual project performance review responsibilities from Commission staff to the permittee;
5. Eliminate requirement that performance standards be met for three (3) consecutive years to achieve successful condition compliance; and
6. Reduce long-term monitoring requirements.

2.1 Shift Substantially Higher Permit Compliance Costs to State Taxpayers

These changes would severely reduce Commission oversight and management, and leave Commission staff to review permit compliance and the performance (based on monitoring data collected and interpreted by the permittee) of unusually complex wetland and marine mitigation projects without the benefit of necessary technical advice. These demands on Commission staff would be borne exclusively by state taxpayers under the permittee's amendment proposal. Since the original permit was granted in 1974, the regular staff of the Coastal Commission (paid by the State with no permittee reimbursement) has spent a substantial amount of staff time monitoring this project. Since the early 1990s Commission staff time has intensified and undoubtedly more staff time of regular Commission staff members has been spent on this project than any other individual project ever before the Commission.

The permittee states that the necessary technical advice can be obtained from various resource agencies. However, these agencies operate under financial and staffing constraints similar to those of the Coastal Commission and could not be expected to fill the gap that would be created by the permittee's proposed amendment.

2.2 Permittee Asserts that Self-Monitoring and Remediation is Cheaper

The permittee claims that self-monitoring will "provide assurance of permit compliance in a cost-effective fashion" and suggests that eliminating the Commission's responsibility for monitoring and management of the mitigation program will relieve the Commission and its staff of the "burden" of preparing budgets and work programs as required by Condition D. The permittee does not explain, however, that the economic "burden" for the proposed review role of the Commission staff would not be eliminated, but would instead be completely shifted from the permittee to the state's taxpayers. The permittee would no longer fund the Scientific Advisory Panel or the small team of technical staff presently overseeing permit implementation and condition compliance. The Commission is already absorbing the ongoing costs of its regular staff to oversee this project and co-ordinate the scientific team.

The permittee claims that the Commission could rely on the expertise and advice of other resource agencies to replace the Commission's independent scientific consultants. While the staff currently uses other resource agencies for technical advice and assistance for many issues, the permittee's proposal is unrealistic. Other public agencies cannot be expected to fill the gap that would be created by the loss of the Commission's scientific team. Other state and federal agencies operate under the same constraints that the Coastal Commission and its staff experience: limited budgets, staffing, and time. These agencies cannot be expected to provide, in addition to their existing functions, the scientific services necessary to objectively assess the permittee's monitoring program or remediation proposals, or take on the Commission's responsibility for determining permit compliance.

The permittee also contends that eliminating funding for Commission oversight is necessary to reduce condition compliance costs and to provide equitable treatment for the permittee as compared to other permittees. The Commission notes that, although the permittee states that the requirement for independent oversight is inconsistent with standard Commission practice, the Commission **has** required other permittees to reimburse the Coastal Commission for the costs of permit compliance and enforcement (for example, Permit No. A-4-STB-92-16, Point Arguello Partners; Permit E-92-6, Gaviota Marine Terminal). These permits were conditioned in accordance with emerging trends toward independent oversight of large mitigation projects. Santa Barbara County for example, requires independent mitigation project monitoring at the permittee's expense for all large energy projects.

Independent monitoring is not inherently more expensive than self-monitoring. In both cases the actual monitoring is typically conducted by contractors who have bid competitively on a proposed monitoring program. The principal difference involves who has control over data collection and interpretation. In addition, with self-monitoring the contractor's "client," the entity the contractor aims to serve, is the permittee, who has a stake in the outcome, whereas in independent monitoring the contractor's client is an

independent public body with no stake in a particular outcome, other than to ensure that adverse effects on marine resources are fully mitigated.

3.0 THIS PERMIT IS UNIQUE

The permittee states that the proposed amendments to Condition D to exchange self-monitoring and mitigation management for the presently-required Commission oversight is necessary to conform to "standard Commission practice" and that "there is no justification to conclude that Edison is any less committed to implementing a fair and logical monitoring effort using professional consultants." The permittee claims that other coastal development projects of similar scale approved by the Commission since 1991 do not similarly provide for independent monitoring, and that this seemingly inequitable treatment since 1991 constitutes "new information" as the basis for the proposed amendments to Condition D.

In fact, few mitigation projects of similar scope and magnitude have been approved by the Commission since 1991. However, for the few that have, independent monitoring has been contemplated for Ballona wetland and implemented through a trust fund for Batiquitos Lagoon. Public agencies are currently pursuing acquisition and restoration of Bolsa Chica wetland. That proposed project includes establishment of a trust fund for independent monitoring, management, and remediation. Nevertheless, this permit is different from others:

1. Mitigation After-the-Fact: The potential adverse environmental impacts of proposed developments are typically reviewed, and mitigation measures imposed, **before** the development occurs. In the case of SONGS Units 2 & 3, a permit was granted, and the development—and associated adverse affects on marine resources—occurred first as a concession to the enormous costs of delays to the plant's construction. These delays were estimated by Edison to cost as much as $1.5 million per week. To reduce these costs, the permit was granted, and mitigation was imposed **after-the-fact** by the Coastal Commission in 1991. This sequence is rare, particularly for a project of this magnitude.

2. Unusual, complex mitigation program: The mitigation for the adverse effects of the SONGS is unique in other ways. The plant destroys millions of fish and fish larvae and adversely affects a large kelp bed community offshore of San Onofre. The innovative out-of-kind and in-kind compensatory mitigation program required by the Coastal Commission will restore wetland habitat and construct an artificial reef to mitigate these impacts. These projects are more complex and subject to greater uncertainty than some of the other projects cited by the permittee.

The entire history of the SONGS project is unique. The structure established by Condition D is consistent with the approach the Commission took in 1974 when it established an independent body, the MRC, to study the effects of SONGS. Although the Commission

often relies on information developed by a permit applicant, in the case of the SONGS the Commission found it was important to have an independent body, not the permittee, conduct the studies of effects. The situation with respect to the mitigation program is similar. Although the Commission has relied on monitoring by a permittee, in this case the projects are more complex and the outcome less certain. More importantly, if the amendment was implemented as the permittee proposes, monitoring results generated by the permittee will determine whether the permittee must implement additional, potentially costly, remediation measures. Thus, the Commission finds that the administrative structure of Condition D must remain in place if the SONGS mitigation project monitoring is to be independent, objective, and if the results are to be accurately analyzed. The Commission further finds that the monitoring and oversight program provided for in Condition D will best provide for optimal adaptive management, and thus the full mitigation.

4.0 ANALYSIS OF PROPOSED AMENDMENT'S CONSISTENCY WITH THE COASTAL ACT

Applicable policies and provisions include Coastal Act Sections 30230, 30231 and 30233 set forth in their entirety above. In addition, Coastal Act Section 30108 defines "feasibility":

> "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

4.1 Independent Monitoring and Remediation is Protective of Wetland and Marine Resources

The special conditions applicable to Coastal Development Permit 6-81-330 provide for the mitigation of the adverse impacts to marine resources—particularly to fisheries and kelp beds—that are caused by the operation of the SONGS Units 2 and 3. Coastal Act Sections 30230 and 30231 require the protection, enhancement, and feasible restoration of marine resources; Coastal Act Section 30233 requires that adverse environmental effects be minimized by the application of feasible mitigation measures, pursuant to the requirements of Coastal Act Section 30108.

The concept of "adaptive management" is built into the mitigation package for the SONGS to address the high degree of uncertainty inherent in this complex program. Oversight and management of the mitigation program by independent, qualified professionals accountable to the Coastal Commission is the core of the adaptive management approach. The expertise and independence of technical advisors and consultants ensures that the performance uncertainties of complex, large-scale mitigation projects are adequately monitored and that the results are used to make informed management decisions. Adaptive management (remediation) based on independent monitoring results and directed by objective scientific consultants has been endorsed in the past by the Commission and the permittee, and other agencies as the best way to implement this

mitigation package. The Commission finds implementation of this mitigation package to be commensurate with the level of impacts to the marine environment caused by SONGS and necessary for the SONGS development to be consistent with the applicable requirements of the Coastal Act.

4.2 Importance of Independent Monitoring, Technical Oversight, and Remediation

The Commission finds no new information to justify the applicant's proposed elimination of independent monitoring and remediation. To the contrary, the Commission finds that successful mitigation, consistent with the requirements of Coastal Act Sections 30230, 30231 and 30233 is best ensured by independent, technical oversight of the mitigation program, including monitoring and remediation.

The Commission has found in past decisions that the SONGS Units 2 and 3 project is unique in the Commission's permit issuance history and warrants a distinctive package of mitigation measures, including independent oversight, monitoring, and remediation. The Marine Review Committee (MRC) identified the need for independent project management in 1991. The Commission concurred, and conditioned coastal development permit 6-81-330 in 1991 to incorporate the Condition D administrative structure. The Commission found that permit compliance could best be achieved if the results of independent monitoring were used to implement any required remediation. This approach, known as "adaptive management," relies on accurate monitoring and objective, informed decision-making.

The SONGS mitigation package was designed to be cutting-edge. When the Commission imposed the applicable special conditions in 1991, particularly the requirement for independent monitoring, the permittee understood that this was a unique package. The Commission notes that the permittee did not simply **accept** the permit conditions—the permittee **endorsed** these provisions. As Michael Hertel, Edison's Manager of Environmental Affairs, testified to the Commission on July 16, 1991:

> [I] think it is incumbent upon us, as part of our duty and our commitment that we made some seventeen years ago to follow through and implement the recommendations of the staff today. And so we strongly support, strongly support the staff's recommendations to you with respect to mitigation and **especially with respect to the innovative mitigation monitoring which will be completely independent and uninfluenced by Southern California Edison and its partners.** (emphasis added)

Moreover, the Commission and the permittee have mutually supported independent review of the SONGS mitigation package in the past. The Interagency Wetlands Advisory Panel (IWAP) has convened regularly to offer analysis and guidance as to various aspects of the permit conditions related to wetlands restoration. In May, 1996, the Commission staff and the permittee jointly sought an independent assessment of kelp monitoring data via an Independent Review Panel (IRP).

4.3 Past History of SONGS Self-Monitoring

The public record on past permittee self-monitoring at SONGS shows several circumstances that support the finding that independent monitoring is more protective of coastal resources than self-monitoring.

For example: on November 9, 1979, then-Coastal Commission Executive Director Michael L. Fischer reported to the Commission that radiological discharge monitoring for the applicant's existing Coastal Development Permit was inadequate:

> [F]ollowing their August 15, 1979 public hearing on the findings of the San Onofre Marine Review Committee (MRC), the Commission asked the MRC to evaluate the radiological discharge monitoring program at the San Onofre Nuclear Generating Station (SONGS). The MRC reports the program, conducted by Southern California Edison, is *"**grossly inadequate**"* and **"makes it impossible to determine with accuracy the amounts of radioactive material being released by SONGS."** Staff therefore recommends that the Commission inform the Nuclear Regulatory Commission (NRC) of the **inadequacy of the design and implementation of SCE's monitoring program and ask Edison to immediately develop an independent and accurate monitoring program.** (emphasis added)

Subsequently, the independent MRC studies identified impacts to the marine environment that were not detected in the self-monitoring the permittee conducted pursuant to the requirements of its National Pollution Discharge Elimination System (NPDES) permit, as required by the San Diego Regional Water Quality Control Board. The MRC used different techniques and a more rigorous scientific approach than did the permittee. Comparisons between the MRC's collection of data and associated statistical analyses, and the representations of data presented by the permittee, led the San Diego Regional Board staff to advise in 1992[12] that independent monitoring of the plant was imperative:

> **[T]o ensure that a new RWM (receiving water monitoring) program will provide a balanced, scientific approach, and be perceived to be unbiased by the public, staff recommends that any new RWM be developed and implemented by an independent agency or person.** (emphasis added)

A comparable development project in California is the Diablo Canyon Nuclear Power Plant, near Avila, in San Luis Obispo County. Due to the vested rights of the plant owner, PG&E, which predate the Coastal Act, most of that project is not subject to the Commission's permit authority. There is recent evidence, however, that other regulatory agencies have expressed a heightened awareness of problems with permittee self-monitoring at Diablo Canyon. Specifically, the Regional Water Quality Control Board has raised concerns about the plant's thermal effects monitoring program. In a letter dated

[12]Summary staff report dated January 31, 1992, prepared for California Regional Water Quality Control Board, San Diego Region, for consideration of issuance of a cease and desist order for SONGS Units 2 & 3.

September 3, 1996, Central Coast Region Executive Officer Roger W. Briggs refers to potential problems with the historical monitoring program, including unbalanced designs, data gaps, and station changes over the past twenty years (see Appendix A). The Diablo Canyon example supports concerns that independent monitoring is essential to protect the integrity of marine resources where compensatory mitigation is required.

Therefore, for the reasons set forth above, the Commission finds that independent monitoring, oversight, and remediation pursuant to the administrative structure of amended Condition D, as revised, remains necessary to ensure the full mitigation of marine resources adversely affected by the operation of SONGS Units 2 and 3.

5.0 CONDITION D: COSTS

5.1 Finding the Balance: Objectivity and Cost Containment:

The permittee proposes to substitute self-monitoring and remediation for independent monitoring by scientific consultants accountable to the Commission, and to limit the Commission's role mostly to that of reviewer. Condition D, as revised, eliminates potential questions of permittee bias, while recognizing the permittee's legitimate business interest in capping total program costs. The SONGS owners have expressed concern about the unpredictability and potential escalation of future costs for the marine mitigation program. The Commission has addressed this issue by incorporating a $28 million cap for mitigation monitoring, oversight and remediation into Condition D. In this way, the Commission retains the objectivity of the Condition D structure and provides for full mitigation while also providing the permittee with cost certainty.

5.2 Conflict Resolution Achieves Efficiency

The Commission's innovative approach has the potential to resolve long standing, costly, time consuming disputes between staff, other resource agencies, and the permittee as to permit interpretation, monitoring, analysis of results, and likely future conflicts over remediation. The Commission's revised Condition D sets reasonable limits on total costs within the budget set forth in the permittee's own forecasts to the CPUC. This package eliminates the potential conflict of interest that may arise for the permittee if faced with the decision of whether to minimize costs (e.g., downplay monitoring results) or provide full remediation.

5.3 The Permittee's Changing Business Climate: California Public Utilities Commission Settlement

5.3.a The SONGS Owners' Settlement with the CPUC

Traditional ratemaking procedures regulated by the CPUC have changed recently for the owners of the nuclear power plants in California. Utilities previously sought annual

recovery of operating costs for plant operation and maintenance (generally including such costs as marine mitigation) through traditional ratemaking procedures overseen by the CPUC. In this way, utilities could be virtually certain of reimbursement from the ratepayers for such costs. It was under this traditional ratemaking system that the SONGS owners agreed in 1991 to the SONGS mitigation requirements.

Widely discussed, nationwide initiatives to "deregulate" the utility industry are presently taking shape. It is not deregulation per se, however, that has led to the changed business environment the SONGS owners now find themselves in. Rather, anticipating eventual deregulation, and in consideration of investor concern that nuclear power assets will become "white elephants"—unable to compete with more economical forms of power in a deregulated business environment where consumers have a choice of suppliers—the CPUC provided an 8-year protective "cushion" for SONGS that is to be the model for other nuclear assets in California. By so doing, the CPUC has provided for the profitable recovery of nuclear power investments before these plants face market rate competition after the year 2003.

Protracted negotiations between the CPUC, the SONGS owners, and the CPUC's Division of Ratepayer Advocates were initiated within approximately one year of the permittee's acceptance of the terms and conditions of the 1991 coastal development permit. These negotiations concluded early this year, soon after the permittee's first attempt to amend the permit. The details of the settlements are explained below.

5.3.b SONGS Owners Receive $126 Million Consideration for SONGS Mitigation

The settlements allow the SONGS Units 2 and 3 owners, Southern California Edison, San Diego Gas & Electric, and the Cities of Anaheim and Riverside, collectively, to recover the costs of mitigating the plant's adverse environmental effects in two categories: "sunk costs," which are amounts theoretically already spent ($22 million), and "incremental costs incentive pricing (ICIP)" ($104 million).

Sunk costs will be recovered through an 8-year accelerated depreciation schedule, earning the permittee an overall 7.78% return on investment in this category. Incremental costs, the second category, are recovered as the plant operates during the 8-year term through pre-set electricity sales rates of about 4 cents per kilowatt-hour.

Incremental costs were forecast by the SONGS owners as the anticipated costs of running SONGS Unit 2 and 3 through 2003. The CPUC determined that, using the permittee's forecasts of operating costs (including the costs of mitigation), and assuming a 78% operating efficiency for SONGS, the plant would break even with electricity sales set at 4 cents per kilowatt-hour. The CPUC states that 78% is a very conservative estimate because the plant typically averages over 80% and within the past few years has achieved a world-record 98% efficiency.

Therefore, the settlement allows the permittee to increase profits in two ways: 1) by operating SONGS Units 2 & 3 at greater than 78% efficiency rates, and 2) by reducing operating costs. This second method of reducing costs explains why the permittee has a new interest in cost containment: the CPUC settlement does not require the permittee to return cost savings to the ratepayers, nor does the settlement allow the permittee to seek reimbursement of higher-than-anticipated costs from the ratepayers. Thus, the structure of the settlement provides that if the permittee can reduce SONGS mitigation costs, these reductions will be retained as shareholder profit.

The permittee has testified to the CPUC that its forecast of mitigation costs through 2003 is a reliable prediction of actual future costs. The finalized settlements do not require the SONGS owners to account to the CPUC for actual mitigation expenditures. As there are no rebate-to-ratepayer provisions, the difference in mitigation costs between what the CPUC has allowed the permittee to recover from ratepayers ($104 million) and the amount the permittee will actually spend (based on the Coastal Commission's actions) may be retained as profit. The permittee is not seeking Commission approval to increase its marine mitigation obligations, but were it to do so, such increased costs could not be passed on to ratepayers under the terms of the settlements.

The CPUC's Division of Ratepayer Advocates argued for a return to ratepayers of any unspent marine mitigation monies, citing the owner's efforts at that time (1995) to amend the SONGS permit, thereby reducing mitigation obligations, and attendant costs. The plant owners counter-argued for a two-way balancing account, meaning that owners would also reserve the right to seek additional mitigation cost reimbursement from the ratepayers. By the time the settlement was finalized in late 1995, the Coastal Commission had refused to file the owner's proposed permit amendment to reduce mitigation requirements. Ultimately the CPUC did not include provisions for returning any funds the permittee might save in the future by reducing its mitigation obligation (e.g., from an amended permit); any such savings accrue solely to the benefit of SONGS shareholders.

5.3.c A Balancing of Risk: Commission Cap on Permittee's Costs

As explained above, the permittee now operates the SONGS Units 2 and 3 under a new ratemaking paradigm. For the short-term (the next 8 years), the SONGS is a relatively protected utility asset. According to the CPUC, the permittee is positioned to recover a 7.78% overall rate of return on the sunk costs portion ($22 million) of its marine mitigation package and to— at minimum— break even on the budgeted portion ($104 million) of the incremental costs. By means of the trust fund solution, the Commission provides the permittee with the means to cap its mitigation monitoring and remediation costs. Thus, the combination of revised Special Condition D and the CPUC settlement provisions provide the highest possible degree of financial certainty for the permittee. The permittee would thus be assured that shareholder liability for potentially expensive remediation efforts is limited, while the affected resources benefit by the implementation of maximum feasible mitigation.

On the other hand, as more fully explained elsewhere within these findings, the projected performance of the SONGS marine mitigation package is subject to significant uncertainty. Results can be estimated, but only future monitoring will yield certain measurement of project success. Adaptive management will translate substandard performance detected by the monitoring program into remediation measures. There is an unavoidable risk that the costs of adaptive management will be higher than presently estimated. The Commission, by means of revised Condition D, balances the uncertainty of future mitigation costs with the ability to move forward with the stalled mitigation project by developing a trust fund solution that caps total permittee costs. Nevertheless, if remediation costs for the kelp bed and at the identified San Dieguito and Ormond Beach wetland project sites exceed the cap for unforeseen reasons, the Commission could not seek additional funds from the permittee in the future. On the other hand, the permittee would no longer have a profit motive to reduce mitigation obligations, and thus, the Commission finds that on balance the resources would receive maximum benefits. The Commission further finds that because the cap on total permittee costs ($78.03 million, total) is less than the CPUC settlement allows the permittee to recover from ratepayers ($104 million, total), the mitigation package is therefore feasible as defined by Coastal Act Section 30108.

6.0 MONITORING, REMEDIATION AND TECHNICAL OVERSIGHT FUND

6.1 Condition Compliance

The staff's proposal for the permittee to establish an account for monitoring, remediation and technical oversight seeks a solution to the permittee's concerns about the open-ended nature of these costs in the 1991 Condition D, while still providing for monitoring, remediation, and technical oversight of the entire mitigation program independent of the permittee. As conditioned by revised Condition D, the permittee has flexibility to fund an internal account "on paper" (i.e., as an accounting process rather than an actual transfer of monies), with interest accruing at specified rates to be paid out according to an established schedule. There is no large one-time investment of funds at the outset and there are no surprises—the costs are capped and the permittee's responsibility for the condition is satisfied when the monies are provided in accordance with Condition D.

6.2 Estimated Costs

Cost estimates for the fund include (1) the costs for oversight, project management and review incurred by technical personnel retained by the Executive Director of the Commission to oversee the design, independent monitoring, and remediation of the mitigation projects, including costs for public review of the projects; (2) the costs of planning and implementing the independent monitoring and remediation components for the operating life of the SONGS Units 2 and 3 of both the wetland restoration mitigation project (Condition A) and the artificial reef mitigation project (Condition C); and (3) the costs for such additional monitoring as may be necessary to evaluate the success of any

remediation that may be required. These additional monitoring costs are included in the remediation costs.

The staff estimated costs in consultation with the State Coastal Conservancy, Department of Fish and Game, and Scientific Advisory Panel, based on their past experience with these types of projects, and using the best information available at this time, including information submitted by the permittee to the CPUC, and professional engineering estimates for San Dieguito Lagoon[13] and Ormond Beach[14]. The costs are summarized as follows:

Table 3: Monitoring, Technical Oversight and Remediation Fund

Component	Wetland Mitigation (millions)	Experimental Reef (millions)	Mitigation Reef (millions)	Total (millions)
1. Technical oversight, project management and review (CCC)	3.00	1.84	2.28	7.12
2. Kelp recruitment and persistence studies	–	.50	–	.50
3. Independent monitoring (data collection)	4.38	1.20	2.95	8.53
4. Remediation	5.72	–	6.13	11.85
TOTAL	$13.10	$3.54	$11.36	$28.00

The permittee states its reliance on the MRC and Commission staff estimate of $29 million, excluding monitoring costs, for the mitigation projects. These estimates (in 1989 dollars) were for construction and land purchase alone; they did not include the costs for planning, permitting, monitoring, technical oversight, and remediation. The estimates were never intended to be precise cost estimates for implementing the mitigation projects, but were meant as a basis for comparing costs of mitigation with alternatives such as constructing cooling towers.

6.2.a Technical Oversight, Project Management and Monitoring

The Commission's technical oversight, program management and review are achieved through the retention of specialized scientific/technical personnel working under the

[13] Noble Consultants, Inc., San Dieguito Wetland Restoration Cost Estimate, January 18, 1996 and Submittal of Revised Data, January 23, 1996.
[14] Fugro West, Inc., Revised Cost Estimate to Implement the South Ormond Beach Wetland Restoration Plan. September 13, 1996.

direction of the Executive Director. Approximately two scientists and one administrative support staff are retained to perform these functions. In addition, a scientific advisory panel convened by the Executive Director provides scientific advice on the design, implementation, and monitoring and remediation of the wetland and reef mitigation projects, and other scientific consultants are retained to provide expert advice on specific components of the program. Public workshops are convened periodically by the Executive Director to review the status of the mitigation projects and determine whether any or all of the performance standards have been met, whether revisions to the standards are necessary, and whether remediation is required.

Funding is provided by the permittee in support of these technical personnel, scientific advisory panel, consultants, operating expenses, and overhead. Costs for participation on any advisory panel are limited to travel, per diem, meeting time, and reasonable preparation time and are only paid to the extent the participant is not otherwise entitled to reimbursement for such participation and preparation.

The cost estimates for technical oversight of the wetland mitigation project and the experimental and mitigation reef projects are calculated for the planning and permitting, construction, and monitoring phases for each project. Estimated costs are $3 million for the wetland (15.5 years), $1.84 million for the experimental reef (11 years), and $2.28 million for the mitigation reef (12.5 years), for a total cost of $7.12 million. (See Appendix D for detailed cost calculations.) Costs for technical oversight during the remediation phase of both projects are covered in the remediation estimate below.

6.2.b Monitoring

The monitoring program for the wetland restoration and artificial reef mitigation projects contained in Conditions A and C (as amended herein) will be carried out by contractors under the direction of the Executive Director. The monitoring field contractors will be responsible for collecting the data, and the Coastal Commission's technical staff will be responsible for analyzing and interpreting the data, and reporting the results to the Executive Director.

Cost estimates are for field contractors only and are based on sampling at each mitigation site each year for ten years and concurrent sampling at wetland and reef reference sites in each of the final three years of the monitoring program. Estimated monitoring costs for the wetland mitigation projects, including the San Dieguito Lagoon and Ormond Beach mitigation sites and up to 4 reference sites, total $4.38 million. Estimated costs for the reef mitigation include both experimental reef monitoring (including funds for kelp recruitment and persistence studies) and mitigation reef monitoring, for a total of $4.65 million. (See Appendix D for detailed cost calculations.)

6.2.c Remediation

It is not known what type or amount of any remediation will be necessary for the wetland restoration and artificial reef mitigation projects to be successful; consequently, cost estimates for remediation are calculated as a percentage of the total estimated costs for each project. The remediation costs include costs for the actual corrective measures, costs for any additional monitoring that may be necessary to determine success following the remediation, and costs for the Commission's technical oversight of the remediation and subsequent monitoring.

The wetland mitigation project remediation cost is calculated at 15% of the total project cost estimated by the Commission staff, in consultation with State Coastal Conservancy staff. Fifteen percent is an average of the range of costs used in other wetland restoration projects (such as Batiquitos and Bolsa Chica).

A higher percentage, i.e., 25%, is used for the reef mitigation project as conditioned in amended Condition C. In the 1991 condition, the Commission required a reef (300 acres) that was 50% larger than the estimated 200-acre loss of kelp resources attributed to the adverse impacts of SONGS on the San Onofre kelp bed. If parts of the 300-acre reef failed to achieve success, the remaining portions of the reef could reasonably be expected to produce kelp resources sufficient to compensate for the 200-acre loss. The staff is recommending a one-for-one reef, that is, 122 acres of constructed reef as mitigation for an estimated 122-acre loss of kelp resources. If any portion of the 122-acre reef fails to achieve success, the resource loss will not be adequately mitigated. The likelihood that remediation will be required is much greater without the cushion of a 50% larger reef. Therefore, the remediation costs for the kelp project are calculated at a higher percentage to ensure the availability of adequate funds to satisfy the condition.

The total estimated project costs for the wetland and reef projects are based on the mitigation requirements in revised Conditions A and C. Total estimated project costs for the wetland mitigation are $43.86 million; remediation costs are calculated at 15%, or $5.72 million. Total estimated project costs for the reef mitigation is $34.17 million; remediation costs are calculated at 25%, or $6.13 million. (See Appendix D.)

6.3 Limitations

The Commission identifies the following limitations on the cost estimates for the Monitoring, Remediation and Technical Oversight Fund:

1. All cost estimates are in 1996 dollars with no inflation or interest accrual adjustments. The estimates assume that the total amount of the monies required by the permittee to establish an internal account begins to accrue compound interest at market rates upon the establishment of the account.

2. The cost estimates are based on costs necessary to carry out the wetland restoration and artificial reef mitigation projects from this point in time. Funds already expended by the permittee or the Commission are not included in the estimates and cannot be deducted from the Fund amount.

3. The cost estimates are germane only to the Fund, and should not be relied on by the permittee to justify limits to its financial obligation for implementing the permit conditions or for any other reason.

7.0 COASTAL ACT CONSISTENCY: CONCLUSION

The Commission acknowledges that the performance of large-scale mitigation projects such as wetland restoration and artificial reef construction are subject to a considerable degree of uncertainty. Project performance must be monitored thoroughly and objectively and the results impartially interpreted to guide remediation decisions. The need to make considerable mid-stream corrections based on monitoring results is anticipated. The decision of whether to expend resources to perform remediation is, therefore, a function of the interpretation of—and quality of—monitoring results. To ensure adequate remediation, and thereby successful permit compliance, the Commission finds it necessary to protect the objectivity of the monitoring data collection and interpretation.

The Commission concludes that uncertainty is expected, and independent monitoring, oversight, and management essential to achieve mitigation results consistent with the requirements of Coastal Act Sections 30230, 30231, and 30233. Without the necessary independent administrative structure set forth in revised Condition D, Conditions A through C cannot be adequately implemented. Therefore, the Commission finds that only as conditioned by revised Condition D would the permittee's mitigation program be adequate to mitigate the adverse environmental effects upon marine resources caused by the operation of SONGS Units 2 and 3, consistent with the requirements of Coastal Act Sections 30230, 30331 and 30233.

Coastal Act Section 30108 defines "feasible":

> "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

As explained in detail above, the permittee has entered into a settlement with the California Public Utilities Commission that provides for the recovery of the SONGS wetland and marine mitigation costs up to $126 million through the year 2003. The permittee also notified the CPUC that an additional $5 million would be required for the mitigation program after the settlement expires (2003). Thus, a total of $129 million would ultimately be recovered from the ratepayers to pay for SONGS mitigation required by coastal development permit 6-81-330. The total package for the SONGS mitigation set forth by the Commission in these Special Conditions, including $28 million for

implementation of Condition D, amounts to a maximum total of $78.03 million. This amount is $25.97 million less than the permittee expects to recover from the ratepayers (not counting the $22 million of accelerated depreciation of its existing investment in SONGS) through preset rates that will be charged for the sale of electricity generated by SONGS, through 2003 ($104 million). The total amount is $30.97 million less than the total amount the permittee estimated for mitigation costs for SONGS when the $5 million of estimated post-2003 mitigation costs forecast by the permittee in documents filed with the CPUC are included.

Based on the permittee's own forecasts and the operating record of SONGS, and on the settlement approved by the CPUC, the Commission finds that the permittee can reasonably be expected to pay for the costs of implementing the requirements of revised Conditions A through D. The Commission finds that the costs of permit compliance will not result in increased costs to ratepayers (as explained previously, the ratepayers will pay the cost of SONGS mitigation build into the permittee's settlement with the CPUC, regardless of the outcome of this permit amendment) nor will the costs of permit compliance impair the permittee's ability to profitably operate SONGS Units 2 and 3 now or in the future (as explained previously, savings the permittee realizes on the SONGS mitigation requirements will be retained by the permittee as shareholder profits). Therefore, the Commission finds that the independent monitoring, oversight and remediation provisions of the SONGS mitigation package, as provided for in revised Condition D, together with the costs of other mitigation requirements provided for in the applicable special conditions, constitute **feasible mitigation** consistent with the definition of feasibility set forth in Coastal Act Section 30108.

V. CEQA FINDINGS FOR RECOMMENDED CONDITIONS

Pursuant to section 21080.5(d)(i) of the California Environmental Quality Act (CEQA) and section 15252(b)(1) of Title 14, California Code of Regulations (CCR), the Commission may not approve a development project "if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impact which the activity may have on the environment." In addition, pursuant to section 21004 of the CEQA and section 15040 of Title 14, CCR, "in mitigating or avoiding a significant effect of a project on the environment, a public agency may exercise only those express or implied powers provided by law other than this division."

For the reasons indicated in the previous sections of these findings, the Commission finds that there are no feasible alternatives or feasible mitigation measures that, within the constraints imposed by applicable legal authority, are available which would substantially lessen any significant adverse impact which the activity may have on the environment, other than those identified herein.

VI. APPROVAL OF PRELIMINARY PLANS WITH REVISIONS AND APPROVAL OF A SITE SELECTION FOR WETLAND MITIGATION

A. BACKGROUND

The permittee has submitted three mitigation plans along with the proposed amendment, stating that "[t]he mitigation plans are submitted with the amendment request due to the critical interrelationships between the conditions and the mitigation program. The rationale for the requested amendments can be understood only in the context of the plans intended to implement them, thus they must be reviewed and considered together."

Procedurally, however, the submitted plans must be evaluated separately. Separate consideration is required because the permit special conditions must be evaluated relative to the Coastal Act, while plans required by a special condition are evaluated relative to that special condition. This section addresses whether the plans comply with condition requirements. The Coastal Commission is not at this time approving a coastal development permit for implementation of each plan. The Commission is simply determining whether the submitted plans comply with the respective condition requirements. For clarity, each plan is discussed separately.

B. COMPLIANCE OF THE SAN DIEGUITO WETLANDS PRELIMINARY PLAN WITH AMENDED CONDITION A

The permittee submitted a preliminary plan for undertaking wetland mitigation within San Dieguito Lagoon. The preliminary plan is entitled *Preliminary Plan: San Dieguito Wetlands Restoration Project*[15] (1996) (hereafter referred to as the "San Dieguito Wetlands Plan"). The San Dieguito Wetland Plan describes a project to create and substantially restore wetland habitat within San Dieguito Lagoon, as well as enhance existing wetland habitat. Enhancement is primarily achieved through maintenance of the lagoon inlet to allow for continual tidal flow through the lagoon (in perpetuity).

The Commission finds that the San Dieguito Wetland Plan complies with the criteria and standards stipulated in amended Condition A, only if revised. The following revisions are required to ensure that the Plan complies with Condition A:

1) The preliminary plan for the San Dieguito Wetland shall be revised to be made fully consistent with the *Preliminary Plan: San Dieguito Wetlands Restoration Project*[16] dated September 11, 1995.

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[15] Submitted by Southern California Edison Company August 16, 1996. In Submittal to Amend and Fulfill Certain Conditions of Coastal Development Permit No. 6-81-330 (SONGS Units 2 & 3); Volume II of III; Section I. 48 pp.

[16] Submitted by Southern California Edison Company September 11, 1995. In: Submittal to Amend and Fulfill Conditions to Coastal Development Permit No. 6-81-330 (SONGS Units 2 and 3); Volume 2 of 3.

2) The Inlet Maintenance Plan section of the preliminary plan shall be revised to clarify how the inlet to San Dieguito Lagoon is to be maintained in perpetuity. The Commission approves the permittee's goals that "inlet maintenance shall consist of maintaining an inlet channel sufficient for: (i) full tidal flows to the wetland within the tidal range at San Dieguito Lagoon; (ii) immigration and emigration of marine fish; and, (iii) water quality sufficient to support balanced populations of marine organisms."[17] However, the inlet maintenance plan needs to describe at a minimum: (a) the working definitions of an open lagoon mouth and a closed lagoon mouth; (b) the monitoring procedure and monitoring frequency used to determine whether the mouth is open or closed; (c) the duration of closure that may be allowed before inlet opening is required; and (d) the inlet opening procedures.

3) The preliminary plan shall be revised to include a list of all property owners whose lands the permittee is utilizing for enhancement credit through inlet maintenance at San Dieguito Lagoon. The plan shall provide that a letter of permission, memorandum of agreement (MOA), or other instrument will be required from each affected property owner as part of the final plan. Each letter of permission, MOA, or other instrument shall stipulate that each property owner agrees that the permittee may use the owner's property in perpetuity for the purpose of receiving credit toward the SONGS wetland mitigation obligation.

1.0 THE SAN DIEGUITO LAGOON WETLANDS RESTORATION PLAN AS REVISED COMPLIES WITH AMENDED CONDITION A

Condition A requires the permittee to develop a wetland mitigation project that meets the minimum standards of Condition A, as amended. The permittee must submit a preliminary plan for Commission approval prior to proceeding with development of a final plan that will be reviewed pursuant to CEQA, and that will be the project for purposes of obtaining various regulatory approvals, including a coastal development permit. The purpose of the Commission's review and approval of a preliminary plan is to ensure that the final plans developed by the permittee will adequately mitigate the adverse impacts of the SONGS.

1.1 Comparisons of the 1995 and the 1996 Plans

The permittee has submitted a preliminary plan for San Dieguito Lagoon with its amendment request. This 1996 preliminary plan is similar, but not identical, to the preliminary plan that the permittee submitted for approval in 1995. The Commission did not act on the 1995 plan; however, the Commission staff did review the 1995 plan during examination of the 1995 amendment submittal. A comparison of the 1996 and 1995 plans shows that the 1995 version of the preliminary plan for San Dieguito Lagoon provides more acres of low intertidal and subtidal habitat. The provision of extensive intertidal and subtidal acres is one of the minimum standards of Condition A (Section 1.3(b)) because it

[17] Submitted by Southern California Edison Company September 11, 1995. In. Submittal to Amend and Fulfill Conditions to Coastal Development Permit No. 6-81-330 (SONGS Units 2 and 3); Volume 1 of III, Section G page 16.

is these areas that primarily benefit fish resources. Providing habitat directly benefiting fish resources is a primary objective of any wetland project serving as compensatory mitigation for adverse impacts to Bight-wide fish stocks as a result of the SONGS operation. Those fish losses continue today, and in the case of impingement losses at the SONGS, the number of fish being killed today is higher than the number killed during the MRC period (see Appendix E).

As Table 4 shows, the 1995 plan calls for 13.9 acres to be created/restored below 1.5 ft National Geodetic Vertical Datum (NGVD), (i.e., intertidal and subtidal areas), whereas the 1996 plan calls for only 3.6 acres to be created/restored below 1.5 ft NGVD.

Table 4: Wetland acres created or restored in the 1995 and 1996 plans.

The data come from Table 1 in the preliminary plans submitted by the permittee. Only created and restored wetland habitats are shown in this table. Acreage affected through enhancement activities (e.g., inlet maintenance or berm breaches) is excluded.

habitat type	elevation (ft NGVD)	1995 (acres)	1996 (acres)	changes from the 1995 plan (acres)
Non-tidal	>5.0'	0	0	0
High tidal salt marsh	3.5' to 5.0'	22.3	24.9	+2.6
Mid-tidal salt marsh	2.5' to 3.5'	29.5	25.7	-3.8
Low tidal salt marsh	1.5' to 2.5'	0.8	12.8	+12.0
Intertidal and subtidal mudflat	< 1.5'	13.9	3.6	-10.3
Total		**66.5**	**67.0**	**+0.5**

Finally, the permittee's submission of the 1995 preliminary plan for San Dieguito Lagoon indicates the permittee believes the proposed project is feasible. Thus, the Commission has required revision of the 1996 plan to reflect the project proposed in the 1995 preliminary plan for San Dieguito Lagoon.

1.2 Evaluation of the 1995 Preliminary Plan

Sections 1.2 and 1.3 of Condition A sets forth the required elements and minimum standards each preliminary plan must meet. The 1995 preliminary plan includes the following elements in conformance with Condition A Section 1.2, as amended: 1) review of existing physical, biological, and hydrological conditions; 2) review of ownership, land use and regulations; 3) site-specific and regional restoration goals and compatibility with the goal of mitigating for the SONGS impact to fish; 4) identification of site opportunities and constraints; and 5) conceptual mitigation design.

In addition, the 1995 preliminary plan proposes a project that could meet many of the minimum standards set forth in Condition A Section 1.3, as amended, including: 1) location within the Southern California Bight; 2) potential for restoration as tidal wetland; 3) creates, substantially restores approximately 92 acres of wetland habitat in partial conformance with the total requirement for 150 acres (see credit to be awarded section below); 4) provides for site preservation in perpetuity; 5) minimizes the lost of existing wetlands; and 6) does not result in unauthorized impacts to endangered species. Several revisions to the preliminary plan are required as a condition of approval to maximize conformity with the required elements and minimum standards and to address project specific issues proposed in the plan such as inlet maintenance.

Based on these findings and the required revisions, the Commission approves the 1995 preliminary plan for San Dieguito Lagoon as a preliminary plan for the purposes of complying with Condition A as amended.

1.3 Credit to be Awarded for the San Dieguito Lagoon Preliminary Plan

Most of the work planned for San Dieguito Lagoon is enhancement. Condition A has been amended to allow the permittee to satisfy a portion of its wetland mitigation obligation by wetland enhancement. However, each acre enhanced will be "credited" as an acre restored only to extent enhancement improves the wetland habitat and functions. The amount of credit awarded to the permittee must be calculated, since the permittee is to receive partial credit for enhancement along with higher levels of credit for wetland restoration and creation. The results of these calculations are presented in Table 5.

Table 5: Acres of credit for the wetland plan at San Dieguito Lagoon.

action	credit permittee is applying for	credit CCC shall award	credit IWAP recommended
Enhancement through inlet maintenance	146.4	35.4	12.6
Restoration of tidal wetlands at Airfield	47.3	40.2	
Restoration by removal of exotic trees at Airfield	3.3	3.3	
Enhancement by berm breaches at Airfield	13.0	1.3	
Restoration of tidal wetlands at Horseworld	15.9	11.9	
TOTAL	**225.9**	**92.1**	

Table 5 illustrates two important things. First, the biggest difference between what the permittee is asking for and what the Commission is awarding comes in the "enhancement through inlet maintenance" category. Second, the total amount of credit awarded to the permittee for its work at San Dieguito Lagoon is approximately 92.1 acres, which is 57.9 acres less than the 150 acre requirement. These two points are discussed further below. The calculations used to derive the values in Table 4 are given in Appendix F.

1.4 Enhancement through Inlet Maintenance

In 1983 the California State Coastal Conservancy, the City of San Diego and the Department of Fish and Game conducted a major wetland restoration and creation project at San Dieguito Lagoon. The area now known as the "Fish and Game Basin" was added to the lagoon. The goals of the project were to increase wetland habitat and to increase the tidal prism so that the inlet would remain open longer. Since 1983 the lagoon inlet has been open 70 percent of the time, suggesting the restoration project is a success. However, when the inlet was closed for extended periods (more than six months) resource degradation continued to occur. Therefore the current restoration goal for the lagoon is to maintain the lagoon inlet open continuously.

As part of its San Dieguito Lagoon wetland mitigation project the permittee is proposing to maintain the inlet open continuously (actually about 95 percent of the time). By maintaining the inlet open continuously, the permittee will prevent the occasional degradation of resources from occurring. Therefore all the areas currently subjected to tidal action will be enhanced to some degree.

In its amendment submittal the permittee asserts that each acre of wetland enhanced is the equivalent of an acre of created or substantially restored wetland. Thus, the permittee asserts that by enhancing 146 acres of wetland habitat through inlet maintenance in combination with substantial restoration or creation of another 67 acres, the permittee clearly satisfies the Condition A requirement to create or substantially restore 150 acres of wetland habitat. However, the permittee ignores the fact that the 146 acres of existing wetland currently have significant value. Enhancement of a functioning wetland does not mitigate the SONGS adverse impacts to the same extent as creating or substantially restoring wetland habitat. However, the Commission finds that based upon the significant number of wetland acres enhanced at San Dieguito Lagoon, and the fact that enhancement will improve the value of existing functions important to fish, the Commission can "credit" some of the enhanced acreage towards satisfaction of the substantial restoration requirement.

The Commission staff and the permittee worked to try to resolve the issue of how much credit to allocate for enhancement, but were unable to agree on an appropriate level of partial credit. As a result, the permittee and the Commission staff agreed to allow the Interagency Wetland Advisory Panel (IWAP)[18] to serve as the arbitrator of this disagreement. Previously, the IWAP was only consulted on the issue of inlet enhancement; in this case the IWAP was asked to make an official recommendation.

During two meetings, the Commission staff, the permittee and its consultants presented the scientific arguments regarding an appropriate level of partial credit for inlet maintenance. After considering these arguments, the IWAP decided that portions of the

[18] The IWAP, composed of wetland biologists from the resource agencies, was formed to advise the Commission on wetland mitigation issues related to the SONGS mitigation program.

lagoon would be enhanced by 28.1 percent through inlet maintenance. In addition, the IWAP attached five conditions (see Exhibit 3) to its percent enhancement value, two of which were relevant to the calculation of the credit:

1) The area of enhancement is limited to those areas at or below the Mean High Water level.

2) The area of enhancement excludes any property owned by the California Department of Fish & Game (CDFG). The CDFG property may be used if an agreement has been reached with CDFG, which includes compensation for the use of a public trust resource (State property) for mitigation purposes.

Because there are approximately 45 acres of wetland below the Mean High Water level and outside the CDFG property, the IWAP recommended 28.1% x 45 acres = 12.6 acres credit.

Consistent with the IWAP decision, the Commission finds that the existing wetlands will be enhanced by 28.1 percent credit. However, because of an earlier understanding with the permittee the credit awarded is greater than that determined by the IWAP because the Commission will: 1) apply the percentage to all the areas below Mean Higher High Water (2.9' NGVD); and 2) include the CDFG Basin (assuming a MOA is established between the permittee and CDFG) in the calculation. Therefore the Commission's calculation of the enhancement credit for inlet maintenance is: 28.1% x 126 acres = 35.4 acres.

1.5 Total Credit at San Dieguito Lagoon

The Commission finds that the amount of wetlands created or substantially restored at San Dieguito Lagoon is approximately 92.1 acres. Most of the credit comes from tidal restoration at the Airfield (approximately 40.2 acres) and the Horseworld (approximately 11.9 acres) properties, and from enhancement through inlet maintenance (approximately 35.4 acres). The credit total is therefore approximately 57.9 acres less than the 150 acre requirement, showing that more mitigation work is needed to meet the total requirement. The Commission staff suggested the permittee either increase the mitigation acreage at San Dieguito Lagoon (for example through infrastructure improvements) or conduct a mitigation project at another site. The permittee has proposed a second wetland site (Ormond Beach Wetland), which has the potential of providing the required remaining credit.

C. COMPLIANCE OF THE ORMOND BEACH WETLAND SITE WITH AMENDED CONDITION A

The permittee submitted a plan for undertaking wetland mitigation within Ormond Beach wetland. The plan is entitled the *South Ormond Beach Wetland Restoration and*

Management Plan[19] (hereafter referred to as the "Ormond Beach Wetland Plan"). The Commission finds that the Ormond Beach Wetland is a suitable site for development of a preliminary plan for the reasons set forth below.

1.0 EVALUATION OF THE ORMOND BEACH RESTORATION PLAN

The permittee has proposed to fund restoration of Ormond Beach wetland according to the South Ormond Beach Wetland Restoration and Management Plan (the "Ormond Plan"). Although Condition A identifies Ormond Beach wetland as one of the sites available for wetland mitigation, the plan as submitted does not contain many of the elements required in a preliminary plan, according to Condition A, Section 1.2, as revised. For example, the submitted plan does not provide a conceptual design that includes proposed grading plans or proposed habitat types. In addition, critical components, such as establishing a tidal connection with Mugu Lagoon, are dealt with in a superficial way. Hydrologic studies to determine if tidal restoration is possible have not been completed, and there are no drawings of where the channel will go, or how much of Ormond Beach would become tidal wetland.

In addition to providing a preliminary plan that meets the elements and minimum standards required by Condition A, Sections 1.2 and 1.3, as amended, a preliminary plan for Ormond Beach wetland must also include the following:

1) A Memorandum of Agreement with the U.S. Navy regarding establishment of a tidal channel between Ormond Beach wetland and Mugu Lagoon. The MOA shall stipulate that the Navy supports tidal enhancement/restoration of Ormond Beach wetland. The MOA shall also stipulate that the Navy will allow the use of its property for the purposes of establishing a tidal channel between the eastern end of Ormond Beach wetland and Mugu Lagoon, and that any tidal linkage established will remain in perpetuity.

2) Incorporation of the project area to include areas appropriate for enhancement/restoration located within the fenced boundary of the Ormond Beach Generating Station. A description of the wetland mitigation work proposed on this property as required in Condition A shall also be included.

The information submitted by the permittee, however, does permit an evaluation of the Ormond Beach site to determine its suitability as a site with the potential of partially fulfilling the mitigation obligation required by Condition A. Based on the information submitted, the Commission estimates that there is potential for approximately 58 acres of mitigation credit for a restoration project at Ormond Beach wetland. The credit calculations are detailed in Table 6. The Commission notes that much of the area (approximately 57.12

[19] Submitted by Southern California Edison Company August 16, 1996. In Submittal to Amend and Fulfill Certain Conditions of Coastal Development Permit No. 6-81-330 (SONGS Units 2 & 3); Volume III of III; Section K.

acres) is sandy beach. These beach areas are unlikely to be altered by any restoration plan. The Commission also notes that much of the remaining site is a functioning wetland that does not currently require restoration. However, the Commission estimates that these areas have the potential for enhancement and, based on preliminary information, the Commission estimates that partial credit for enhancement is likely to be approximately 10 percent.

Table 6: Acres of credit for the wetland plan at Ormond Beach.

Acres of credit potentially available for enhancement/restoration of Ormond Beach wetland. The Northwest and Southeast area habitat details come from Table 2-5 in the Ormond Beach wetland plan submitted by the permittee. Others values are estimated. Note that enhancement is given 10% credit, while restoration is given 100% credit.

habitat	area (acres)	likely project	estimate of credit CCC will award
Northwest Area			
sandy beach	21.66	no change	0.00
coastal dune scrub	9.05	no change	0.00
pickleweed marsh	9.81	enhancement	0.98
ditchgrass/salt flats	5.46	enhancement	0.55
open water	0.38	enhancement	0.04
disturbed/barren	8.20	enhancement	0.82
invasive exotics	0.87	enhancement	0.09
total	55.43		2.48
Fenced Area			
coastal dune scrub	10	no change	0.00
pickleweed marsh	50	enhancement	0.50
disturbed/barren	14	restoration	14.00
total	29		14.50
Southeast Area			
sandy beach	35.46	no change	0.00
coastal dune scrub	0.94	no change	0.00
coastal bluff scrub	0.11	no change	0.00
pickleweed marsh	9.64	enhancement	0.96
ditchgrass/salt flats	11.70	tidal restoration	11.70
open water	1.65	tidal restoration	1.65
disturbed/barren	25.37	tidal restoration	25.37
invasive exotics	1.11	enhancement	0.11
total	85.97		39.79
Construction of tidal channel inside Navy property	1.00	tidal restoration	1.00
TOTAL credit			**57.77**

As Table 6 shows, the area that holds the greatest potential for substantial restoration is the Southeast Area where badly disturbed or barren areas would be substantially improved by the introduction of tidal flow from Mugu Lagoon. Tidal restoration is unlikely in the Northwest and in the fenced area; thus, the type of enhancement completed in these areas is estimated to result in approximately 10 percent credit for some of these habitats.

Thus, the Commission finds the Ormond Beach wetland is a site suitable for development of a preliminary mitigation plan. This finding is based on the identification of Ormond Beach wetland as a potential mitigation site in Condition A, as well as an estimate of potential credit available for tidal restoration.

D. COMPLIANCE OF THE EXPERIMENTAL ARTIFICIAL REEF PRELIMINARY PLAN WITH AMENDED CONDITION C

The permittee submitted a plan for construction of an experimental artificial reef. The plan is entitled, *San Onofre Marine Mitigation Program: Experimental Reef for Kelp*[20] (hereafter referred to as the "Experimental Reef Plan"). The Experimental Reef Plan describes a project to create a 16.8 acre artificial reef to test the design parameters necessary for providing a persistent giant kelp forest and associated ecosystem.

The Commission finds that the Experimental Reef Plan complies with the criteria and standards in amended Condition C, only if revised. the following revisions are required to ensure the plan complies with Conditions C:

1) The plan shall be revised to include the results of a detailed side-scanning sonar and substrate profile survey necessary to determine the appropriate location and height of hard substrate deposited as part of the experimental reef.

1.0 THE ARTIFICIAL REEF PRELIMINARY PLAN COMPLIES WITH AMENDED CONDITION C

The plan proposes an experimental approach to determine the feasibility of various reef designs, construction materials, and locations near the SONGS for the purpose of providing suitable habitat to replace kelp bed resources. The plan is logical in its approach, and covers a wide range of options. Execution of this plan should provide much of the information needed to design a successful mitigation reef that compensates for the kelp bed resources lost due to the operation of the SONGS Units 2 and 3 as required by Condition C, as amended.

The Commission finds the Experimental Reef Plan as revised meets many of the site assessment criteria established in Condition C. The Experimental Reef Plan proposes a

[20] Submitted by Southern California Edison Company August 16, 1996. In Submittal to Amend and Fulfill Certain Conditions of Coastal Development Permit No. 6-81-330 (SONGS Units 2 & 3); Volume II of III; Section J. 12 pp.

project that: 1) is located as near as possible to the SOK, and between Dana Point (Orange Co.) and Carlsbad (San Diego Co.); 2) results in minimal disruption of natural reef or cobble habitats and sensitive or rare biotic communities; 3) is located at a depth locally suitable for kelp growth and recruitment; 4) is located near a persistent natural kelp bed; 5) is Located away from sites of major sediment deposition; 6) would minimize interference with vessel traffic; 7) is located away from power plant discharges, waste discharges, dredge spoil deposition sites, and activities of the U. S. Marine Corps; and 8) will not interfere with known historic cultural sites. Revision of the plan to include a detailed substrate survey is required to determine if the proposed site contains suitable substrate.

ATTACHMENT 1: CDP NO. 6-31-330A

STANDARD CONDITIONS

1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. Expiration. If development has not commenced, the permit will expire two years from the date this permit is reported to the Commission. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. Compliance. All development must occur in strict compliance with the proposal as set forth in the application for permit, subject to any special conditions set forth below. Any deviation from the approved plans must be reviewed and approved by the staff and may require Commission approval.

4. Interpretation. Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

5. Inspections. The Commission staff shall be allowed to inspect the site and the development during construction, subject to 24-hour advance notice.

6. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

7. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

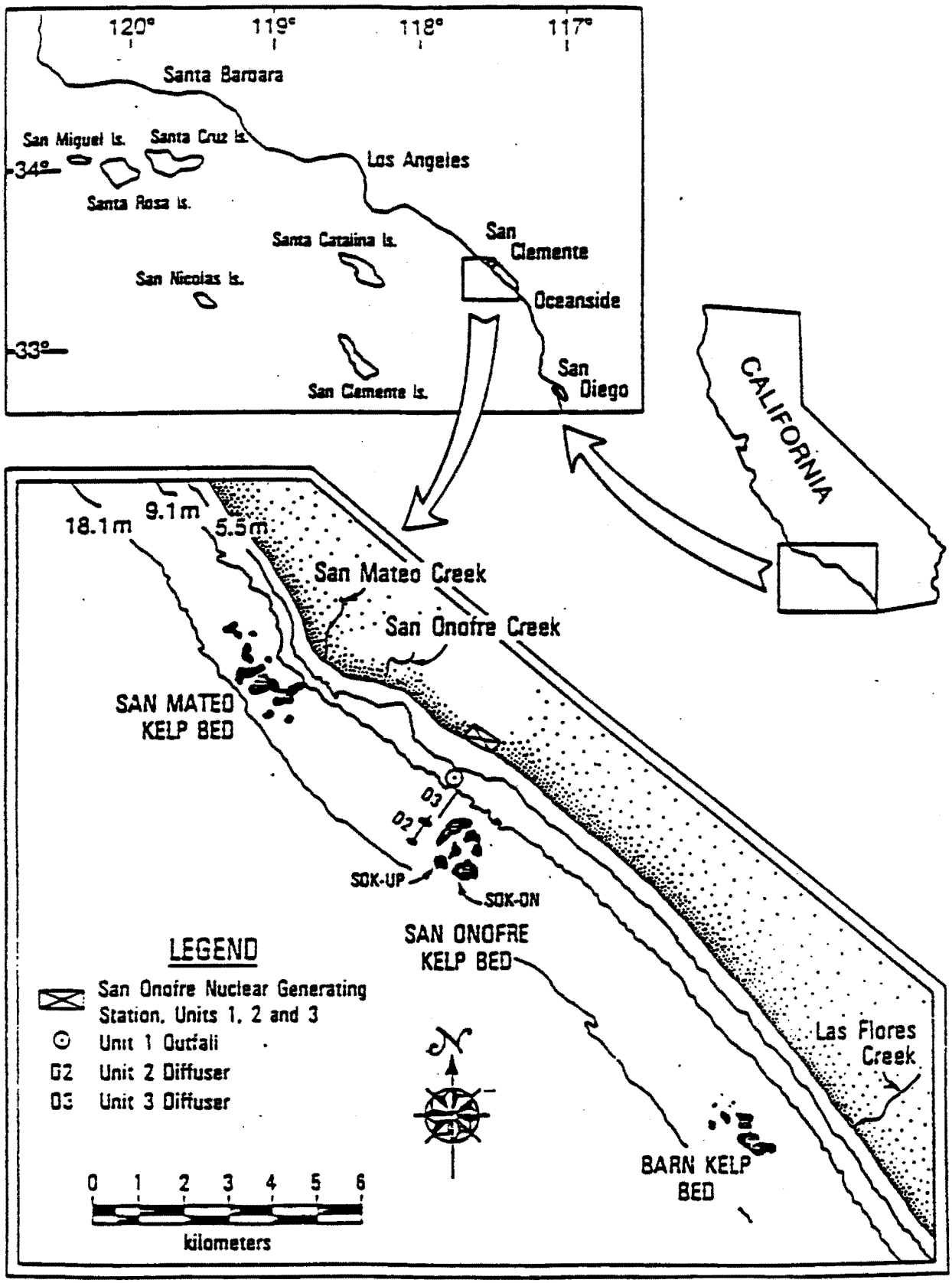

EXHIBIT NO. 1 Map of San Onofre Area

Source: MRC Final Report 1989, p. 38.

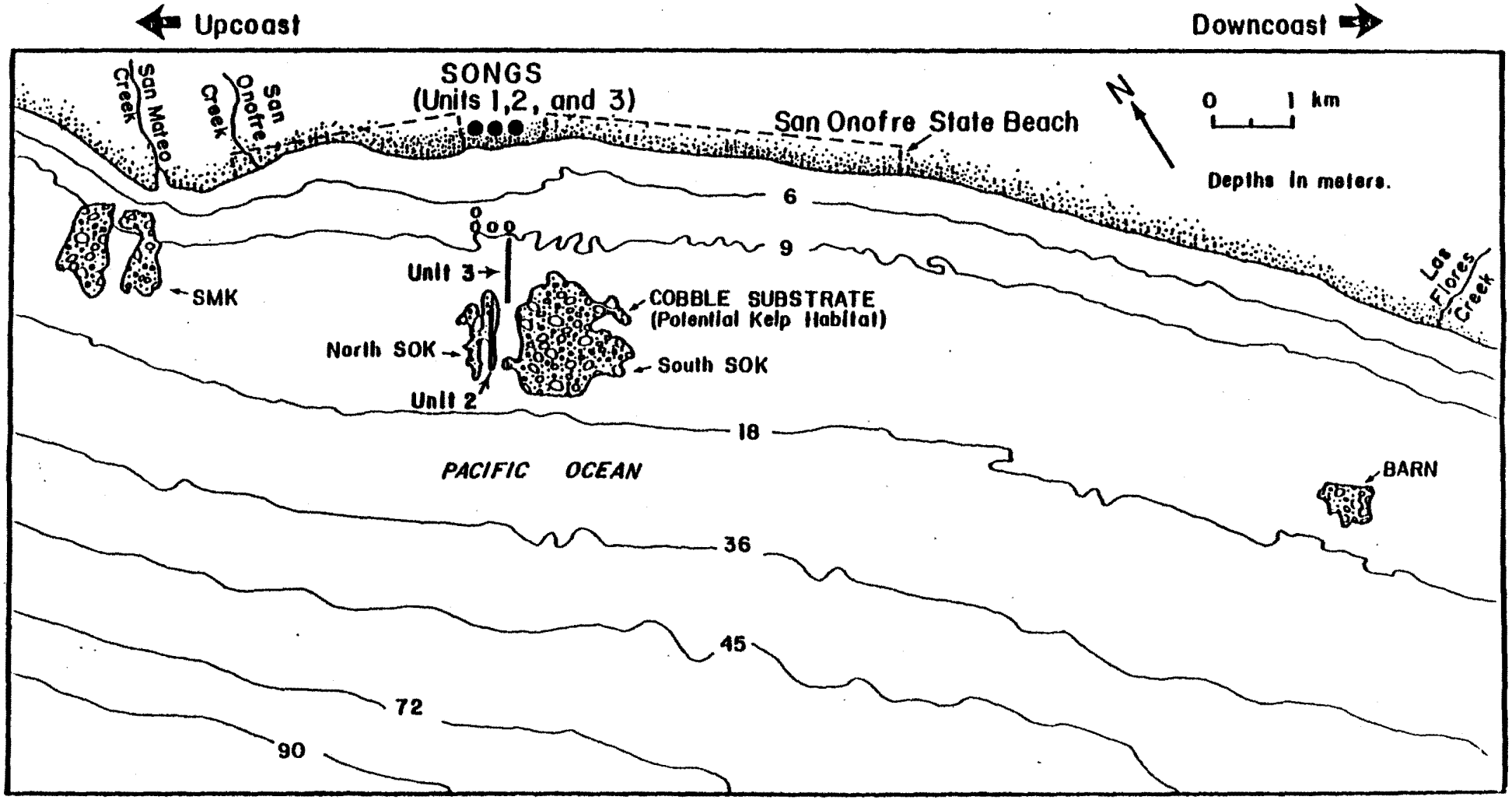

EXHIBIT NO. 2 **Layout of SONGS intakes and diffusers relative to the shore and the cobble beds that provide kelp habitat.**

ooo = UNITS 1,2,& 3 INTAKES
o = UNIT 1 DISCHARGE
—— = DIFFUSER LINES

Source: MRC Final Report 1989, p. 84.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213
TEL (310) 980-4000; FAX (310) 980-4018

JUN 26 1996

F/SWO21:RSH

Mr. Peter Douglas
Executive Director
California Coastal Commission
45 Fremont St., 20th Floor
San Francisco, California 94105

Dear Mr. Douglas:

As you are aware, there have been a series of meetings to attempt to reach a consensus on the issue as to how much "credit" should be given to Southern California Edison Company (SCE) for maintaining an open mouth at San Dieguito Lagoon relative to the 150-acre wetland restoration requirement. Since agreement could not be reached between SCE and California Coastal Commission (CCC) staff on this issue, the Interagency Wetlands Advisory Panel (IWAP) was requested to provide an independent recommendation regarding what "credit" would be appropriate.

On behalf of the IWAP, I have agreed to summarize the position of the Panel on this issue.

On June 12, 1996, the IWAP met with the intent to reach consensus among the Panel members on this "credit" issue utilizing a combination of all information provided as of that date, as well as best professional judgement. Those IWAP members that were present included myself, Jack Fancher (U.S. Fish and Wildlife Service), David Zoutendyk (Corps of Engineers), Richard Nitsos (California Department of Fish and Game), Tim Dillingham (California Department of Fish and Game, Troy Kelly (California Department of Fish and Game), Joanne Kerbavaz (Tijuana River National Estuarine Research Reserve), and Diane Coombs (Joint Powers Authority, San Dieguito River Valley Regional Open Space Park). It should be noted that Diane Coombs acted only as an observer and did not participate in assigning a numeric value relative to the enhancement credit issue.

After extensive discussions, the IWAP agreed that each of the five represented agencies would be allowed one vote or opinion relative to the percent enhancement that would occur to the existing wetland with maintenance of an open mouth condition. The range of values varied among the five agencies from 27.1 to 28.6 percent. The IWAP further agreed that the mean value-of the five opinions would serve as the official recommendation from the IWAP. That value is 28.1 percent.

In addition, the IWAP also believes the recommended enhancement credit of 28.1 percent is applicable only with the adoption of the following five conditions:

1) The area of enhancement is limited to those areas at or below the Mean High Water level.

2) The area of enhancement excludes any property owned by the California Department of Fish and Game (CDFG). CDFG property may be used if an agreement has been reached with CDFG which includes compensation for the use of a public trust resource (State property) for mitigation purposes. CDFG is not obligated to allow the use of public trust resources for mitigation purposes.

3) An open mouth condition is defined as a minimum 40-foot channel from the railroad bridge to the ocean, a bottom contour that does not rise above 0 feet at Mean Lower Low Water (MLLW) throughout the channel length, and a closure event (i.e., bottom elevation above 0 feet MLLW) that does not exceed 48 hours.

4) SCE shall complete, prior to or concurrent with implementation of the Lagoon mouth opening, an overall enhancement project at San Dieguito Lagoon similar to that depicted in the Submittal to Amend and Fulfill Conditions to Coastal Development Permit No. 6-81-330 (SONGS Units 2 and 3), Figure 2., dated September 11, 1995.

5) SCE shall pursue all feasible and appropriate restoration options at San Dieguito Lagoon to fulfill the 150-acre wetland restoration requirement before a concerted effort is given to considering enhancement/restoration alternatives at other sites.

While the process to reach a recommendation has been difficult given the limited biological information available for San Dieguito Lagoon, the IWAP believe the recommendations described above provide for an equitable solution to determining the enhancement value for maintaining an open mouth. We urge you to adopt our recommendation and now focus on the timely implementation of an appropriate project at San Dieguito Lagoon.

Should you have any questions regarding our recommendations, please contact me or any other member of the IWAP.

Sincerely,

Robert S. Hoffman
Southern Area Environmental
Coordinator

EXHIBIT NO. 3

Appendix A

SUBSTANTIVE FILE DOCUMENTS

Ambrose, R.F. 1990. *Technical Report to the California Coastal Commission*: H. *Mitigation*. Marine Review Committee, Inc.

California Public Utilities Commission Decision 96-01-011, January 10, 1996

Dayton, P.K., C.W. Osenberg, and J.R. Skalski. 1996. Independent technical review of studies by Southern California Edison on impacts to kelp resulting from the operation of SONGs 2 and 3. Submitted to the California Coastal Commission and Southern California Edison, 26 June 1996.

Dean, T.A. and L.E. Deysher. 1996. Reevaluation of the SONGs related changes in kelp at San Onofre. Submitted to Southern California Edison, 16 April 1996.

Eliot, J.L. 1992. Kelp density study: an evaluation of the kelp and subtidal hard bottom habitat off San Onofre, In Marine Environmental Analysis and Interpretation, San Onofre Nuclear Generation Station: Report on 1991 data. Southern California Edison Co. Report 92-RD-7.

Fugro West, Inc. *South Ormond Beach Wetland Restoration Plan Revised Cost Estimate*. Submitted to Coastal Conservancy September 13, 1996.

Letter from Roger Briggs, California Regional Water Quality Control Board— Central Coast Region, to Jeff Hays and Anne Jackson, PG&E, re: thermal effects monitoring program, dated September 3, 1996.

Letter from Frank Melone (SCE) to Susan Hansch (CCC) dated December 23, 1994, re: definition of "substantially restore."

Marine Review Committee. 1989. *Final Report of the Marine Review Committee to the California Coastal Commission*. MRC Document No. 89-02.

MRC Interim Technical Report 2, Sampling Design and Analytical Procedures (BACIP).

MRC. 1989. The final report of the Marine Review Committee to the California Coastal Commission. MRC Document No. 89-02.

Noble Consultants, Inc. San Dieguito Wetland Restoration Cost Estimated, submitted of Revised Data submitted to Coastal Conservancy, January 18, 1996

Noble Consultants, Inc. San Dieguito Wetland Restoration Cost Estimated, submitted of Revised Data submitted to Coastal Conservancy, January 23, 1996

North, W.J. and M.D. Curtis. 1995. Health of kelp beds, In Marine Environmental Analysis and Interpretation, San Onofre Nuclear Generating Station: Report on 1994 data. Southern California Edison Co. Report 94-RD-2.

Permittee's comments on CCC Staff Recommendation to further condition Permit No. 183-73, July 10, 1991

Southern California Edison, Exhibit 39 to Application 93-12-025, CPUC Decision 96-01-011, "Nuclear Power SONGs Required Environmental Mitigation Projects.", Rosemead, California, December 1993.

Stewart–Oaten, A. Parker, K.R. and Murdoch W.W. 1986. Environmental impact assessment: pseudoreplication in time? Ecology 67:929–940.

Summary staff report dated January 31, 1992. prepared for California Regional Water Quality Control Board, San Diego Region, for consideration of issuance of a cease and desist order for SONGs Units 2 and 3.

Transcript Coastal Commission Hearing, November 1995, Review of Executive Director's Determination to Reject Amendment Request.

Zedler, Joy B., Principal Author. 1996. Tidal Wetland Restoration: A Scientific Perspective and Southern California Focus. Published by the California Sea Grant System, University of California, La Jolla, California. Report No. T-038.

Appendix B

1991 COASTAL PERMIT 6-81-330 (Formerly 183-73) TEXT OF ORIGINALLY APPROVED SPECIAL CONDITIONS A–F

CONDITION A: WETLAND RESTORATION MITIGATION

The permittee shall develop, implement and fund a wetland restoration project that compensates for past. present and future fish impacts from SONGS Units 2 and 3, as identified by the Marine Review Committee.

1.0 SITE SELECTION AND PRELIMINARY PLAN

In consultation with Commission staff, the permittee shall select a wetland restoration site and develop a preliminary plan in accordance with the following process and terms.

Within 9 months of the effective date of this permit, the permittee shall submit the proposed site and preliminary wetland restoration plan to the Commission for its review and approval or disapproval.

1.1 Site Selection

The location of the wetland restoration project shall be within the Southern California Bight. The permittee shall evaluate and select from sites including, but not limited to, the following eight sites: Tijuana Estuary in San Diego County, San Dieguito River Valley in San Diego County, Huntington Beach Wetland in Orange County, Anaheim Bay in Orange County, Santa Ana River in Orange County, Los Cerritos Wetland in Los Angeles County, Ballona Wetland in Los Angeles County, and Ormond Beach in Ventura County. Other sites proposed by the permittee may be added to this list with the Executive Director's approval.

The basis for the selection shall be an evaluation of the sites against the minimum standards and objectives set forth in subsections 1.3 and 1.4 below. The permittee shall take into account and give serious consideration to the advice and recommendations of an Interagency Wetland Advisory Panel, established and convened by the Executive Director. The permittee shall select the site that meets the minimum standards and best meets the objectives.

1.2 Preliminary Restoration Plan

In consultation with Commission staff, the permittee shall develop a preliminary wetland restoration plan for the wetland site identified through the site selection process. The preliminary wetland restoration plan shall meet the minimum standards and incorporate as many as possible of the objectives in subsections 1.3 and 1.4, respectively.

The preliminary wetland restoration plan shall include the following elements:

a. Review of existing physical, biological, and hydrological conditions; ownership, land use and regulation.

b. Site-specific and regional restoration goals and compatibility with the goal of mitigating for SONGS impact to fish.

c. Identification of site opportunities and constraints.

d. Conceptual restoration design, including:

   1. Proposed grading and excavation; water control structures; planting; integration of public access, if feasible; buffers and transition areas; management and maintenance requirements.

   2. Proposed habitat types (including approximate size and location).

   3. Preliminary assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits.

   4. Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property interests.

   5. A graphic depiction of proposed plan.

1.3 Minimum Standards

The wetland restoration project site and preliminary plan must meet the following minimum standards:

a. Location within Southern California Bight.

b. Potential for restoration as tidal wetland, with extensive intertidal and subtidal areas;

c. Creates or substantially restores a minimum of 150 acres (60 hectares) of wetlands, excluding buffer zone and upland transition area;

d. Provides a buffer zone of a size adequate to ensure protection of wetland values, and not less than at least 100 feet wide, as measured from the upland edge of the transition area.

e. Any existing site contamination problems would be controlled or remediated and would not hinder restoration.

f. Site preservation is guaranteed in perpetuity (through appropriate public agency or nonprofit ownership, or other means approved by the Executive Director), to protect against future degradation or incompatible land use.

g. Feasible methods are available to protect the longterm wetland values on the site, in perpetuity.

h. Does not result in loss of existing wetlands.

i. Does not result in impact on endangered species.

1.4 Objectives

The following objectives represent the factors that will contribute to the overall value of the wetland. The selected site shall be that with the best potential to achieve these objectives. These objectives shall also guide preparation of the restoration plan.

a. Provides maximum overall ecosystem benefits e.g. maximum upland buffer, enhancement of downstream fish values, provides regionally scarce habitat, potential for local ecosystem diversity.

b. Provides substantial fish habitat compatible with other wetland values at the site.

c. Provides a buffer zone of an average of at least 300 feet wide, and not less than 100 feet wide, as measured from the upland edge of the transition area.

d. Provides maximum upland transition areas (in addition to buffer zones);

e. Restoration involves minimum adverse impacts on existing functioning wetlands and other sensitive habitats.

f. Site selection and restoration plan reflect a consideration of site specific and regional wetland restoration goals.

g. Restoration design is that most likely to produce and support wetland-dependent resources.

h. Provides rare or endangered species habitat.

i. Provides for restoration of reproductively isolated populations of native California species.

j. Results in an increase in the aggregate acreage of wetland in the Southern California Bight.

k. Requires minimum maintenance.

l. Restoration project can be accomplished in a timely fashion.

m. Site is in proximity to SONGS.

1.6 Restrictions

(a) The permittee may propose a wetland restoration project larger than the minimum necessary size specified in subsection 1.3(c) above, if biologically appropriate for the site, but the additional acreage must (1) be clearly identified, and (2) must not be the portion of the project best satisfying the standards and objectives listed above.

(b) If the permittee jointly enters into a restoration project with another party: (1) the permittee's portion of the project must be clearly specified, (2) any other party involved cannot gain mitigation credit for the permittee's portion of the project, and (3) the permittee may not receive mitigation credit for the other party's portion of the project.

(c) The permittee may propose to divide the mitigation requirement between a maximum of two wetland restoration sites, unless there is a compelling argument, approved by the Executive Director, that the standards and objectives of subsections 1.3 and 1.4 will be better met at more than two sites.

2.0 FINAL PLAN AND PLAN IMPLEMENTATION

2.1 Final Restoration Plan

Within 12 months following the Commission's approval of a site selection and preliminary restoration plan, the permittee shall submit a final restoration plan along with CEQA documentation generated in connection with local or other state agency approvals, to the Executive Director of the Coastal Commission for review and approval. The final restoration plan shall substantially conform to the approved preliminary restoration plan as originally submitted or as amended by the Commission pursuant to a request by the permittee. The final restoration plan shall include, but not be limited to the following elements:

a. Detailed review of existing physical, biological, and hydrological conditions; ownership, land use and regulation.

b. Evaluation of site-specific and regional restoration goals and compatibility with the goal of mitigating for SONGS impacts to fish.

c. Identification of site opportunities and constraints.

d. Schematic restoration design, including:

1. Proposed cut and fill, water control structures, control measures for stormwater, buffers and transition areas, management and maintenance requirements.

2. Planting Program, including removal of exotic species, sources of plants and or seeds (local, if possible), protection of existing salt marsh plants, methods for preserving top soil and augmenting soils with nitrogen and other necessary soil amendments before planting, timing of planting, plans for irrigation until established, and location of planting and elevations on the topographic drawings.

3. Proposed habitat types (including approximate size and location).

4. Assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits.

5. Location, alignment and specifications for public access facilities, if feasible.

6. Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property rights.

7. Cost estimates.

8. Topographic drawings for final restoration plan at 1" = 100 foot scale, one foot contour interval.

9. Drawings shall be directly translatable into final working drawings.

2.2 Wetland Construction Phase

Within 6 months of approval of the final restoration plan, subject to the permittee's obtaining the necessary permits, the permittee shall commence the construction phase of the wetland restoration project. The permittee shall be responsible for ensuring that construction is carried out in accordance with the specifications and within the timeframes specified in the approved final restoration plan and shall be responsible for any remedial work or other intervention necessary to comply with final plan requirements.

2.3 Timeframe for Resubmittal of Project Elements

If the Commission does not approve any element of the project (i.e. site selection, restoration plan), the Commission will specify the time limits for compliance relative to selection of another site or revisions to the restoration plan.

3.0 WETLAND MONITORING, MANAGEMENT AND REMEDIATION

Monitoring, management (including maintenance), and remediation shall be conducted over the "full operating life" of SONGS Units 2 and 3. "Full operating life" as defined in this permit includes past and future years of operation of SONGS units 2 and 3 including the decommissioning period to the extent there are continuing discharges. The number of past operating years at the time the wetland is ultimately constructed, shall be added to the number of future operating years and decommission period, to determine the length of the monitoring, management and remediation requirement.

The following section describes the basic tasks required for monitoring, management and remediation. Condition II-D specifies the administrative structure for carrying out these tasks, including the roles of the permittee and Commission staff.

3.1 Monitoring and Management Plan

A monitoring and management plan will be developed in consultation with the permittee and appropriate wildlife agencies, concurrently with the preparation of the restoration plan, to provide an overall framework to guide the monitoring work. It will include an overall description of the studies to be conducted over the course of the monitoring program and a description of management tasks that are anticipated, such as trash removal. Details of the monitoring studies and management tasks will be set forth in a work program (see Section II-D).

3.2 Pre-restoration site monitoring

Pre-restoration site monitoring shall be conducted to collect baseline data on the wetland attributes to be monitored. This information will be incorporated into and may result in modification to the overall monitoring plan.

3.3 Construction Monitoring

Monitoring shall be conducted during and immediately after each stage of construction of the wetland restoration project to ensure that the work is conducted according to plans.

3.4 Post-Restoration Monitoring and Remediation

Upon completion of construction of the wetland, monitoring shall be conducted to measure the success of the wetland in achieving stated restoration goals (as specified in restoration plan) and in achieving performance standards, specified below. The permittee shall be fully responsible for any failure to meet these goals and standards during the full operational years of SONGS Units 2 and 3. Upon determining that the goals or standards are not achieved, the Executive Director shall prescribe remedial measures, after consultation with the permittee, which shall be immediately implemented by the permittee with Commission staff direction. If the permittee does not agree that remediation is necessary, the matter may be set for hearing and disposition by the Commission.

Successful achievement of the performance standards shall (in some cases) be measured relative to approximately four reference sites, which shall be relatively undisturbed, natural tidal wetlands within the Southern California Bight. The Executive Director shall select the reference sites. The standard of comparison i.e. the measure of similarity to be used (e.g. within the range, or within the 95% confidence interval) shall be specified in the work program.

In measuring the performance of the wetland project, the following physical and biological performance standards will be utilized:

a. Longterm Physical Standards. The following longterm standards shall be maintained over the full operative life of SONGS Units 2 and 3.

   1) Topography. The wetland shall not undergo major topographic degradation (such as excessive erosion or sedimentation).

   2) Water Quality. Water quality variables [to be specified] shall be similar to reference wetlands.

   3) Tidal prism. The designed tidal prism shall be maintained, and tidal flushing shall not be interrupted.

   4) Habitat Areas. The area of different habitats shall not vary by more than 10% from the areas indicated in the final restoration plan.

b. Biological Performance Standards. The following biological performance standards shall be used to determine whether the restoration project is successful. Table 1, below, indicates suggested sampling locations for each of the following biological attributes; actual locations will be specified in the work program.

   1) Biological Communities. Within 4 years of construction, the total densities and number of species of fish, macroinvertebrates and birds (see table 1) shall be

similar to the densities and number of species in similar habitats in the reference wetlands.

2) Vegetation. The proportion of total vegetation cover and open space in the marsh shall be similar to those proportions found in the reference sites. The percent cover of algae shall be similar to the percent cover found in the reference sites.

3) Spartina Canopy Architecture. The restored wetland shall have a canopy architecture that is similar in distribution to the reference sites, with an equivalent proportion of stems over 3 feet tall.

4) Reproductive Success. Certain plant species, as specified by in the work program, shall have demonstrated reproduction (i.e. seed set) at least once in three years.

5) Food Chain Support. The food chain support provided to birds shall be similar to that provided by the reference sites, as determined by feeding activity of the birds.

6) Exotics. The important functions of the wetland shall not be impaired by exotic species.

Table 7: Suggested sampling locations.

	Salt Marsh			Open Water			Tidal
	Spartina	Salicornia	Upper	Lagoon	Eelgrass	Mudflat	Creeks
1) Density/spp:							
Fish				X	X	X	X
Macroinverts				X	X	X	X
Birds	X	X	X	X		X	X
2) % Cover							
Vegetation	X	X	X		X		
algae	X	X				X	
3) Spar. arch.	X						
4) Repro. suc.	X	X	X				
5) Bird feeding				X		X	X
6) Exotics	X	X	X	X	X	X	X

CONDITION B: BEHAVIORAL BARRIER MITIGATION

The permittee shall install and maintain behavioral barriers including but not limited to mercury lights and sonic devices at SONGS Units 2 and 3 to reduce midwater fish impingement losses. Within 6 months of the effective date of this permit amendment, the permittee shall submit a plan for installation of behavioral barrier devices to the Executive Director for review and approval. Within 3 months of the Executive Director's approval, the permittee shall install the required devices.

In consultation with the permittee, the Commission staff will monitor the effectiveness of the behavioral barrier devices. If the Executive Director determines that the installed devices are not sufficiently effective to warrant continued use, the Executive Director may require removal and installation of alternative behavioral barrier devices.

CONDITION C: KELP REEF MITIGATION

The permittee shall, in consultation with the Executive Director, select a site and construct an artificial reef as mitigation for the resource losses at the San Onofre Kelp Bed (SOK) caused by the San Onofre Nuclear Generating Station (SONGS). The reef shall be designed to replace the lost and damaged resources at the San Onofre Kelp Bed Reef and produce a persistent giant kelp forest and associated ecosystem. The reef shall be located in the vicinity of the SONGS, but outside the influence of the SONGS discharge plume and water intake.

After selecting potential sites, and conducting a pre-construction site assessment at these potential sites, the permittee shall select a site and design a reef which meets the standards and objectives listed below. The permittee shall submit the final reef plan to the Commission for its review and approval.

1.0 SITE SELECTION

Three or more potential reef sites shall be selected based on, but not limited to, the following criteria:

1) Location as near as possible to the San Onofre Kelp Bed, and preferably between Dana Point (Orange Co.) and the Pendleton Artificial Reef (San Diego Co.), but outside the influence of the SONGS discharge plume and water intake;

2) Minimal disruption of natural reef or cobble habitats and sensitive or rare biotic communities;

3) Suitable substrate with low mud and/or silt content (e.g. hard-packed fine to coarse grain sand, exposed cobble or bedrock without an established biological community, or cobble or bedrock covered with a thin layer of sand);

4) Location at a depth locally suitable for kelp growth and recruitment;

5) Location near a persistent natural kelp bed;

6) Location away from sites of major sediment deposition;

7) Minimal interference with uses such as vessel traffic, vessel anchorages, commercial fishing, mariculture, mineral resource extraction, cable or pipeline corridors;

8) Location away from power plant discharges, waste discharges, and dredge spoil deposition sites;

9) Location that will not interfere with or adversely affect resources of historical or cultural significance such as shipwrecks and archeological sites.

1.1 Preconstruction Site Assessment

The permittee shall obtain site-specific field information, over a period of one year, at each of the three or more potential reef sites which best meet the above criteria. This field information shall be used in both the site selection and design of the reef. Field information shall: (1) include a description of existing biota at the site, (2) provide a reasonable prediction of the likelihood that a healthy kelp bed will be established and persist, (3) provide a reasonable prediction of the extent of rock burial due to sediment deposition and/or sinking into soft sediment, and (4) provide a prediction of the effect of the reef on local sand transport and local beaches.

The specific field information to be gathered, and the methods for gathering and analyzing it, shall be approved by the Executive Director. At the conclusion of this pre-construction assessment, the permittee shall select the most suitable site to build the reef, subject to the review and approval of the Executive Director, in consultation with the resource agencies. The site shall be submitted to the Coastal Commission, for its review and approval, as part of the artificial reef plan described in Condition C-2 below.

2.0 REEF DESIGN AND FINAL PLAN

Following the preconstruction site assessment, and within 18 months of the effective date of this condition, the permittee shall submit to the Commission, for review and approval, an artificial reef plan, designed to: (1) replace the damaged resources (as identified by the MRC) at the San Onofre Kelp Reef and (2) produce a persistent, healthy giant kelp forest

and associated ecosystem. If the Executive Director determines that specific information is needed to evaluate whether the reef design will meet the goals and standards set forth in this condition, the Executive Director may direct the permittee to provide this information. The Executive Director, in evaluating the reef design, will consult with the resource agencies.

The primary goals of the reef shall be to provide: (1) stable rock surfaces and rock configurations that produce a community of algae and invertebrates similar in composition, diversity and abundance to SOK; (2) adequate conditions for giant kelp recruitment, growth, and reproduction, and (3) adequate conditions for a community of reef-associated biota similar in composition, abundance and diversity to SOK. This design shall meet the following standards:

1) The reef shall be constructed of rock determined to be suitable to sustain a kelp forest and a community of reef associated biota similar in composition, abundance and diversity to SOK. Additional devices may also be used to anchor kelp.

2) The total areal extent of the kelp reef shall be no less than 300 acres (120 hectares).

3) The 300 acre reef shall be covered by at least 200 acres (80 ha) of exposed rock substrate. Should the Executive Director determine that more rock coverage is necessary to meet the above goals, the Executive Director may require that the design include the additional coverage recommended.

4) The reef design shall take into account sediment deposition characteristics of the site, so that 200 acres of exposed stable rock substrate will be permanently present, be sufficiently free of scouring to support a diverse and stable community of attached biota, and allow kelp to become established and persist.

3.0 KELP REEF CONSTRUCTION

The reef shall be constructed in two phases. The first phase shall cover an area large enough to represent the important processes affecting a large 300 acre (120 ha) reef, but no larger than necessary in the event there are major problems with the initial design. The proposed size of the first phase reef shall be included in the reef plan submitted to the Commission. This phase shall be monitored for at least 3 years to determine if the design is likely to meet the goals and standards set forth in this condition, and determine that the reef does not interfere with local sand transport. Management techniques shall be tested during this phase to determine if such techniques will better ensure that the goals and standards will be met. At the conclusion of this initial monitoring period, the permittee shall submit any recommendations for changes to the design to the Coastal Commission for its review and approval. Construction of the remaining portion of the reef shall be completed no later than 6 years after the effective date of this condition.

The artificial reef shall be constructed according to the approved design, including location, depth, overall rock coverage, rock size, dispersion of rocks, and rock relief. A post-construction survey shall be carried out to demonstrate that the reef was built to approved specifications. If the Executive Director determines that the reef was not built to specifications, the permittee shall modify the reef to meet the approved specifications.

4.0 MONITORING AND REMEDIATION

The permittee is fully responsible for any failure to meet the standards and goals set forth in this condition during the full operational years of SONGS units 2 and 3 as defined in Condition II-A-3.0. Should the Executive Director find that the goals and standards set forth in this condition have not been met, the permittee must immediately undertake necessary modifications to the reef design or other remediation determined by the Executive Director to be necessary to meet the standards and goals. If the permittee does not agree that the standards and goals have not been met, the matter may be set for hearing and disposition by the Commission.

4.1 Monitoring

Monitoring shall be implemented as described in Condition II-D to: (1) insure that the performance standards of this condition are met, (2) determine if the mitigation successfully replaces the lost and damaged resources in the San Onofre Kelp Bed Reef, and (3) determine the reasons why standards have not been met, so that remediation will be successful. The monitoring program shall be designed to assess whether the performance standards listed below have been met.

4.2 Performance Standards

a. **Substrate**. At least 90% of the 200 acres (80 ha) of exposed rock substrate must remain available for attachment by reef biota. If, at any time, more than 10% of the reef should become covered by sediment, or become unsuitable for growth of attached biota due to scouring, and there is no sign of recovery within 3 years, as determined by the Executive Director, more rock shall be added to the reef to replace the substrate lost. Surveys to monitor exposed rock substrate availability shall begin immediately after construction is complete and shall continue for the full operational life of SONGS units 2 and 3.

b. **Kelp Bed**. Kelp recruitment experiments to determine the best method of establishing kelp on the reef shall be carried out in the first phase. The experiments shall provide a basis for future kelp establishment efforts should adequate natural recruitment fail to occur. Within 3 years of construction of the second phase, the Executive Director shall evaluate the status of kelp on the artificial reef. If 60% of the reef is not covered with a self-sustaining medium to high density kelp bed

(defined as more than 4 adult plants/100 m2 of substrate), the reason for failure of the kelp bed to become established shall be determined, and an effort begun to establish or augment kelp on the reef. The experimental method determined by the Executive Director to be most likely to be successful and reliable shall be employed until kelp coverage meets the above standard, or until 5 years after establishment or augmentation is first attempted. If oceanographic conditions are unfavorable to kelp during part of this period, the Executive Director may direct the permittee to defer the effort to establish kelp.

The reef shall sustain an average kelp coverage of 60% for the full operational life of SONGS units 2 and 3. If the long-term average kelp coverage does not meet this standard, the permittee shall undertake feasible corrective action, as identified by the Executive Director, to restore the kelp coverage to 60%. This may entail adding more rock to the reef. If, during the period of time of the full operational life of SONGS units 2 and 3, coverage of medium to high density kelp falls below 30% of the reef for two consecutive years, the Commission staff will, at the permittee's expense, evaluate the general state of kelp in the region. If the decline is region-wide, no attempt to correct the situation shall be required. If the decline is confined to the artificial reef, the permittee shall undertake feasible corrective action, as identified by the Executive Director, to restore the kelp coverage to 60%

c. **Fish**. Within 10 years of reef construction, the standing stock of fish at the reef shall be at least 28 tons. The MRC determined that this amount of reduction in the kelp bed fish biomass was caused by the operation of SONGS. The fish biota shall demonstrate the following characteristics:

   1) The resident fish assemblage shall have a total density and number of species similar to natural reefs within the region.

   2) Fish reproductive rates shall be similar to natural reefs within the region.

   3) The total density and number of species of young-of-year fish (fish in the first year after settling) shall be similar to natural reefs within the region.

   4) Fish production shall be similar to natural reefs within the region.

d. **Benthos**. Within 10 years of reef completion, the benthic community shall demonstrate the following characteristics:

   1) The benthic community (both algae and macroinvertebrates) shall have a total density and number of species similar to natural reefs within the region.

   2) The benthic community shall provide food-chain support for fish similar to natural reefs within the region.

3) The important functions of the reef shall not be impaired by undesirable or invasive benthic species (e.g. urchins, Cryptoarachnidium).

Samples taken at reference natural kelp reef sites shall be used to determine the similarity of each variable listed above for natural reefs within the region. The standard of comparison, i.e. the measure of similarity to be used, shall be specified in the work program (see Condition D). If the fish and benthos standards listed above are not met within 10 years after reef construction, the permittee shall be responsible for any corrective action the Executive Director deems appropriate and feasible.

CONDITION D: ADMINISTRATIVE STRUCTURE

1.0 ADMINISTRATION

Personnel with appropriate scientific or technical training and skills will, under the direction of the Executive Director, oversee the mitigation and monitoring functions identified and required by conditions II-A through C. The Executive Director will retain approximately two scientists and one administrative support staff to perform this function.

This technical staff will oversee the preconstruction and post-construction site assessments, mitigation project design and implementation (conducted by permittee), and monitoring activities (including plan preparation); the field work will be done by contractors under the Executive Director's direction. The contractors will be responsible for collecting the data, analyzing and interpreting it, and reporting to the Executive Director.

The Executive Director shall convene a scientific advisory panel to provide the Executive Director with scientific advice on the design, implementation and monitoring of the wetland restoration and artificial reef. The panel shall consist of recognized scientists, including a marine biologist, an ecologist, a statistician and a physical scientist.

2.0 BUDGET AND WORK PROGRAM

The funding necessary for the Commission and the Executive Director to perform their responsibilities pursuant to these conditions will be provided by the permittee in a form and manner determined by the Executive Director to be consistent with requirements of State law, and which will ensure efficiency and minimize total costs to the permittee. The amount of funding will be determined by the Commission on a biennial basis and will be based on a proposed budget and work program, which will be prepared by the Executive Director in consultation with the permittee, and reviewed and approved by the Commission. If the permittee and the Executive Director cannot agree on the budget or work program, the disagreement will be submitted to the Commission for resolution.

The budget to be funded by the permittee will be for the purpose of reasonable and necessary costs to retain personnel with appropriate scientific or technical training and skills needed to assist the Commission and the Executive Director in carrying out the mitigation and lost resource compensation conditions (II-A through C) approved as part of this permit action. In addition, reasonable funding will be included in this budget 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(s) convened by the Executive Director for the purpose of implementing these conditions.

Costs for participation on any advisory panel shall be limited to travel, per diem, meeting time and reasonable preparation time and shall only be paid to the extent the participant is not otherwise entitled to reimbursement for such participation and preparation. Total costs for such advisory panel shall not exceed $100,000 per year adjusted annually by any increase in the consumer price index applicable to California.

The work program will include:

a. A description of the studies to be conducted over the subsequent two year period, including the number and distribution of sampling stations and samples per station, methodology and statistical analysis (including the standard of comparison to be used in comparing the mitigation projects to the reference sites.)

b. A description of the status of the mitigation projects, and a summary of the results of the monitoring studies to that point.

c. A description of the performance standards that have been met, and those that have yet to be achieved.

d. A description of remedial measures or other necessary site interventions.

e. A description of staffing and contracting requirements.

f. A description of the Scientific Advisory Panel's role and time requirements in the two year period.

The Executive Director may amend the work program at any time, subject to appeal to the Commission.

3.0 ANNUAL REVIEW

A duly noticed public workshop will be convened and conducted by the Executive Director or the Commission each year to review the status of the mitigation projects. The meeting will be attended by the contractors who are conducting the monitoring, appropriate

members of the Scientific Advisory Panel, the permittee, Commission staff, representatives of the resource agencies (CDFG, NMFS, USFWS), and the public. Commission staff and the contractors will give presentations on the previous year's activities, overall status of the mitigation projects, identify problems and make recommendations for solving them, and review the next year's program. The permittee shall report on the status of the behavioral barrier devices.

The public review will include discussions on whether the artificial reef and wetland mitigation projects have met the performance standards, identified problems, and recommendations relative to corrective measures necessary to meet the performance standards. The Executive Director will utilize information presented at the annual public review, as well as any other relevant information, to determine whether any or all of the performance standards have been met, whether revisions to the standards are necessary, and whether remediation is required. Major revisions shall be subject to the Commission's review and approval.

The mitigation projects will be successful when all performance standards have been met each year for a three-year period. The Executive Director shall report to the Commission upon determining that all of the performance standards have been met for three years and that the project is deemed successful. If the Commission determines that the performance standards have been met and the project is successful, the monitoring program will be scaled down, as recommended by the Executive Director and approved by the Commission. A public review shall thereafter occur every five years, or sooner if called for by the Executive Director. The work program shall reflect the lower level of monitoring required. If subsequent monitoring shows that a standard is no longer being met, monitoring may be increased to previous levels, as determined necessary by the Executive Director.

The Executive Director may make a determination on the success or failure to meet the performance standards or necessary remediation and related monitoring at any time, not just at the time of the annual public review.

CONDITION E: MRC DATA MAINTENANCE

The scientific data collected by the MRC will be stored in the Commission library in San Francisco, and at the Los Angeles County Museum of Natural Science, or at an alternative location in Southern California, as determined by the Executive Director; and will be made available for public use. The permittee shall purchase the necessary computer equipment for the Commission and the Southern California location to store and retrieve the data, and shall fund appropriate staff training on data storage and retrieval at both locations.

CONDITION F: MARINE FISH HATCHERY[21]

1.0 Provision of Funds

At the direction of the Executive Director of the California Coastal Commission (Executive Director), the permittee shall deposit $1.2 million in an interest bearing account established by the permittee. The funds shall be expended only upon the authorization of the Executive Director. All interest accrued on the funds shall be added to the program. The Executive Director shall have the authority to release the funds in phases as the construction of the hatchery proceeds.

2.0 Preconditions to Expenditure of Funds

Expenditure of funds for hatchery construction shall be contingent upon the following: (1) execution of an agreement between the California Coastal Commission ("Commission" or "Coastal Commission"), the California Department of Fish and Game (DFG), the Ocean Resources Enhancement Advisory Panel (OREAP), and Southern California Edison Company (SCE) incorporating the terms described below (see 3.0); (2) the Executive Director's approval of a comprehensive hatchery plan, prepared by the DFG (see 3.0(c)); (3) the formation of a "joint panel" for contractor selection (see 3.0(d)); and (4) granting of a coastal development permit and all other necessary permits for the hatchery.

3.0 Memorandum of Agreement

The Department of Fish and Game, the Ocean Resources Enhancement Advisory Panel, the Coastal Commission and Southern California Edison Company shall enter into a Memorandum of Agreement (MOA). The MOA shall include, but not be limited to, the following terms:

a. **Funding for Evaluation**. The Ocean Resources Enhancement Hatchery Program (OREHP) shall allocate OREHP funds to conduct the necessary evaluation program. The evaluation program is currently estimated to cost approximately $170,000 per year. OREHP shall dedicate, in a manner to be specified in the MOA, **at least** this amount of funding for the evaluation program, adjusted for inflation, for the duration of the evaluation program (10 years after the initial fish releases into the ocean). This funding amount does not include funding for the genetic quality assurance program. The funding for the first year of evaluation shall have been dedicated prior to issuance of the permit for construction of the hatchery. Under no circumstances shall evaluation funds be reduced below this level without the approval of the Joint Panel (see 3.0(d)), in order to augment funding for hatchery operations.

[21] The original staff report erroneously referred to this condition as Condition E: Marine Fish Hatchery.

b. **Evaluation and Genetic Quality Assurance Objectives**. The objectives listed in Section 5.0 and Section 6.0 of this report, shall provide the basis for the development of the evaluation and genetic quality assurance programs, respectively.

c. **Comprehensive Hatchery Plan**. The DFG, in consultation with the Commission staff, shall develop a comprehensive hatchery plan and submit it for approval to the Executive Director of the Coastal Commission. The plan shall include, but not necessarily be limited to: (1) the specifications for the production of white seabass from broodstock to young juveniles, (2) a plan for the grow-out and release of the fish, (3) performance standards for measuring the success of the hatchery, (4) an enhancement objective i.e. what biomass or catch will be considered the endpoint for restoration of the white seabass population, and (5) a budget and schedule for the hatchery construction.

d. **Joint Panel**. A joint panel (Joint Panel) shall be formed, consisting of one representative from each of the following entities: the Coastal Commission, the Department of Fish and Game, and the Ocean Resources Enhancement Advisory Panel. The Joint Panel shall oversee the evaluation and genetic quality assurance of the hatchery. SCE may, but shall not be required to, appoint a fourth member of the panel. Should SCE determine it does not want to participate in the Joint Panel, a fourth qualified person shall be jointly selected by CCC, DFG and OREAP to replace the SCE representative. The Joint Panel shall make decisions based on the consensus of all panel members. Separate contracts shall be let for the evaluation and genetic quality control of the hatchery. The Joint Panel shall develop Request for Proposals (RFPs), recommend contractor selections to the Director of DFG, develop contract terms, and oversee and evaluate contractor performance in carrying out the evaluation and genetic quality assurance programs. The RFP for the evaluation contract shall incorporate the evaluation objectives listed in section 5.0. The RFP for the genetic quality assurance contract shall incorporate the objectives listed in section 6.0. Contractor selection shall be based, in part, on the ability of the contractor's proposal to achieve these objectives.

e. **Funding for Genetic Quality Assurance**. OREHP shall provide funding in amount sufficient to enable a contractor to achieve the objectives set forth in Section 6.0, for studies of the genetics of the wild stock of seabass, of the hatchery brood stock, and of any seabass released to the wild from the hatchery. Funding for these studies shall be in addition to the $170,000 to be allocated annually for the evaluation program (see 3.0(a)). The Joint Panel shall determine the necessary amount of funding and duration of studies, and shall oversee the genetic studies.

f. **Annual Reports.** On an annual basis, the evaluation contractor and genetic quality assurance contractor shall report on the previous year's activities and overall status of the hatchery project, identify problems and make recommendations for solving them, and review the next year's program at the Annual Mitigation Monitoring Review Meeting (to be held in accordance with the requirements of Condition D, Permit No. 183–73, dated July 16, 1992). The contractors also shall prepare quarterly or semi-annual status reports for CCC and OREAP review.

g. **Failure to Carry Out the Terms of the MOA**. If the actions described in the MOA are not carried out fully, the Executive Director shall evaluate the situation, and recommend an appropriate course of action to the Coastal Commission.

h. **Environmental Degradation**. Contracts let by DFG in connection with the white seabass hatchery project shall require the hatchery contractors to closely monitor the operations of the hatchery and grow out facilities to ensure that they are not causing significant environmental degradation. Examples of ways that a marine hatchery can cause environmental degradation are: (1) discharge of effluent from the hatchery, (2) decayed or excess food and dead fish from the rearing pens, (3) introduction of pathogens or parasites, (4) trophic alterations such as cannibalism, food competition or predation on other species, and (5) genetic alterations to the wild stock due to hybridization or displacement. If, after consulting with the Joint Panel, the Executive Director determines that the hatchery is causing significant degradation of the environment, the Executive Director may order that the operations be halted until the degradation is stopped.

4.0 Failure to Sign an MOA

If, after a reasonable period of time, it becomes evident to the Executive Director that the parties specified in Section 3.0 are not willing to enter into an MOA that conforms to the standards of Section 3.0, the Executive Director shall consider a range of options for addressing the situation, and shall bring a recommendation to the Commission. Such options shall include requiring SCE to fund an alternative project. In that event, the Commission will determine if this permit condition shall be modified, or shall be null and void.

5.0 Evaluation Program

As described in Section 3.0 above, the Joint Panel shall develop an RFP for an evaluation contract, review proposals and recommend a contractor to the Director of DFG. The evaluation program shall have two stages: (1) the nearshore habitat sampling program for young white seabass (years 1 to 4), and (2) the ocean sampling program for adult white

seabass (years 5 to 10). The evaluation proposals shall be judged, in part, on the ability of each proposal to achieve the following objectives.

5.1 Nearshore Habitat Sampling Program Objectives

a. Released fish should be counted accurately and marked, so that their source, date of release, place of release, and numbers released in each place can be determined if they are subsequently recaptured.

b. The field sampling program should be adequate to obtain the following estimates:

   (1) How many wild juvenile fish are present in each habitat area sampled?

   (2) What are the annual losses (emigration and mortality) and gains (immigration and releases) of wild and hatchery raised juveniles in each embayment sampled?

c. The results of marking fish and sampling in nearshore habitats should answer the following questions:

   (1) Do certain habitat areas or seasons result in better apparent survival of released fish?

   (2) Can habitat areas be saturated by the release of too many juvenile fish?

   (3) What are the optimal stocking densities and seasons for individual habitat areas?

5.2 Ocean Sampling Program

a. Heads of legal-sized white seabass (where tags will be found if present) should be collected from anglers and commercial passenger fishing vessels in cooperation with California Department of Fish and Game personnel and private parties. The fish heads should be collected from locations covering as wide an area as possible.

b. The study should be well publicized to inform the public about the purpose of the sampling and to increase the likelihood of recovering heads of tagged fish.

c. Fish heads should be deposited in freezers in standard locations and collected at appropriate intervals. Heads preserved in freezers could provide material for genetic studies, if needed.

d. The data from the ocean sampling program should be used to:

(1) Estimate the contribution of hatchery fish to the catch; and

(2) Estimate the mortality rate of hatchery fish.

6.0 Genetic Quality Assurance Objectives

The following section contains the objectives of the Genetic Quality Assurance Program. Some of the objectives will be achieved through genetic studies, others address aspects of the hatchery operation. As described in Section 3.0 above, the Joint Panel shall develop an RFP for a genetic quality assurance contract, shall evaluate proposals, and recommend a contractor to the Director of DFG. The genetic quality assurance proposals shall be evaluated, in part, on the ability of each proposal to achieve the relevant objectives.

a. Population genetics and diversity of the wild population shall be described from enough individuals and for enough genetic loci (plural of locus, the location of a gene on a chromosome) to characterize the population so changes can be detected by reasonable monitoring efforts. The Joint Panel will determine whether the genetic diversity of white seabass is already adequately characterized or if the database should be expanded and more precise techniques developed.

b. The hatchery broodstock shall consist of a enough fish in the appropriate sex ratio to ensure that the effective hatchery population size will maintain genetic diversity and rare alleles (the different forms of a gene which can occur at a locus) in the hatchery-produced fish. The hatchery broodstock should consist of approximately 100 males and 100 females based on current information. The Joint Panel will determine the precise number.

c. Hatchery spawning and rearing practices will be implemented to achieve equal input from a large number of random breeders to preserve quantitatively the allelic diversity and genotypic variety of the wild stock in the fish released from the hatchery.

d. The effects of selection within the hatchery for traits favorable to survival within a hatchery, but not necessary for survival in the wild, shall be minimized. This should be done by adjusting the numbers of fish released from each batch spawned, so that the genetic composition of fish released is representative of the genetic composition of the wild population to the maximum extent possible

(given the characteristics of the brood stock and knowledge of the genetic composition of the wild population).

e. Genotypes of spawners and samples of their offspring that are to be released shall be monitored as a quality assurance measure to document hatchery contributions to the wild stock and to provide data to detect long term changes in genetic diversity of the wild population. Tissue samples shall be taken from all of the spawners and an adequate sample of each batch released to the wild.

Appendix C

AN UPDATED ESTIMATE OF THE EXTENT OF SONGS' IMPACT ON GIANT KELP BASED ON NEW INFORMATION

Introduction

The Marine Review Committee (MRC) was charged with the responsibility of determining the type and the extent of adverse impacts caused by operation of the SONGS. To fulfill this charge the MRC used a scientific approach that relied on both survey and experimental data to document the extent of the SONGS' impacts and the mechanisms that produced them. In general, these studies had a single basic design. The MRC established the pattern of distribution and abundance of marine populations near the SONGS (**impact** site) and at a **control** site, **before** the operation of Units 2 and 3, and **after** full operation of these two units began. Because data were collected at the same time at both the control and impact sites the data collection was **paired**. This study design is referred to as BACIP (Before-After/Control-Impact Paired) (Stewart–Oaten et al. 1986)[22]. The resulting data were analyzed using the BACIP design to determine the type and extent of adverse impacts.

In 1989 the MRC concluded that a turbid plume produced by the SONGS' once-through cooling water discharges caused substantial adverse effects to giant kelp, kelp-bed fish, and kelp-bed invertebrates within the San Onofre kelp bed (SOK) (MRC 1989). The MRC's estimate of the loss of giant kelp was based largely on downlooking sonar estimates of kelp density obtained between 1982 and 1988, excluding the start-up period of 1983–1986. By comparing the average area covered by moderate to high density kelp (greater than 4 plants per 100 m^2) at SOK and at the nearby control site, San Mateo kelp bed (SMK), in three surveys conducted before the SONGS began operating (February 1982 to July 1983) and three surveys after the SONGS began operating (December 1986 to February 1988), the MRC estimated that area of kelp in SOK (relative to SMK) declined by 200 acres.

As part of their water quality compliance monitoring, the permittee has continued to conduct downlooking sonar and sidescanning sonar surveys at SOK and SMK using the same data collection methods as those of the MRC. Unlike the MRC, the permittee has not collected data on other biological (i.e. kelp-bed fish, kelp-bed invertebrates) and physical (i.e. turbidity, sedimentation rates) characteristics of the kelp bed community, nor did the permittee conduct any experiments to evaluate potential mechanisms producing change in kelp abundance or these other characteristics.

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[22] See Appendix A for a complete listing of all references cited.

In September 1995 the permittee submitted a report to the CCC staff that used the new sonar data to extend the MRC data set on giant kelp (a revised version of this report, hereafter referred to as Dean and Deysher (1996) was submitted in April 1996). Dean and Deysher (1996) used a BACIP analysis on data collected through July 1995 that was similar, though not identical, to the one used by the MRC. The authors concluded that the average loss of medium to high density kelp at SOK caused by the operation of the SONGS was between 48 and 110 acres (the size of the impact varied depending on whether kelp abundance was calculated using downlooking or sidescanning sonar and on the assumptions used concerning changes in potentially confounding factors such as sea urchins and the amount of rocky substrate). Because the permittee did not conduct experimental studies or collect data on other physical and biological components of the kelp bed, Dean and Deysher (1996) could only speculate on the potential causes that could lead to a lessening of the SONGS' impact on giant kelp as indicated by the extended data set.

Coastal Commission staff and the permittee jointly agreed to have Dean and Deysher's report reviewed by an independent three-member panel (consisting of a kelp ecologist, a statistician, and an expert in impact assessment) chosen by the permittee and the Commission staff. Although the independent panel agreed with Dean and Deysher's qualitative conclusion that the effects of SONGS' discharges on giant kelp were substantially less than those estimated by the MRC, they did not endorse all of Dean and Deysher's analyses and they made recommendations for future analyses aimed at determining the area of kelp lost at SOK (relative to SMK) as a result of the SONGS turbid discharge plume.

As a preamble, the panel noted that "BACIPs require a variety of assumptions for reliable and accurate estimation of impacts," and stated that "[a] difficulty with any analysis is the potential need to correct for localized effects of sea urchin grazing and changes in hard substrate" (p. 2 Dayton et al. 1996). The panel's recommendations for future analyses were as follows (Dayton et al. 1986 pages 2 and 5):

1) Use the ratio: mean area of kelp in SOK/mean area of kelp in SMK for the before and after periods.

2) Focus the analysis directly on kelp abundance, in preference to making adjustments for hard substrate.

3) Estimate impacts by evaluating trends.

4) Use estimates of kelp abundance based on side-scanning sonar.

We follow all four recommendations in our analyses, below, of the permittee's extended data set on kelp abundance. We make a correction for sea urchin effects, following Dean and Deysher (1996). The independent panel noted that calculating confidence intervals is problematic in this situation and we have not attempted to do so here.

Methods

Time periods considered

We considered June 1978 to July 1983 as the SONGS pre-operational period, and December 1986 to July 1995 as the SONGS operational period. The period between April 1984 and April 1986 after the SONGS began operation was designated by the MRC as the start-up period and data from this period were not included in the BACIP analyses.

Confounding effects of sea urchins

There is evidence that differential grazing by sea urchins in SOK and SMK caused changes in kelp unrelated to the effect of SONGS. Sea urchin grazing during the operational period of the SONGS caused a substantial loss in the area of medium to high density kelp in SMK but not in SOK. This differential grazing is unrelated to the operation of the SONGS. Quantitative data on the differential effects of sea urchin grazing were not collected by the permittee throughout the operational period. The only quantitative data available were collected in the fall of 1995 by the Commission staff who surveyed the effects of sea urchin grazing in SOK and SMK. Results from this survey showed that the size of SMK was reduced by approximately 75 acres due to sea urchin grazing; no such reduction was observed in SOK. Dean and Deysher (1996) added 50 acres to the area of SMK beginning in November 1992 to account for the confounding effects of sea urchin grazing in their BACIP analysis that used downlooking sonar estimates of kelp. This estimate likely underestimates the confounding effects of sea urchin grazing because: (1) substantial kelp loss at SMK due to sea urchin grazing was observed by SCE' contractors during 1986 to 1988 (Elliot 1992, North and Curtis 1995), and (2) sea urchin grazing caused substantial kelp loss in the offshore portion of SOK during the SONGS pre-operational period but not during the extended SONGS operational period (North and Curtis 1995). Unfortunately, the data needed to properly correct for the confounding effects of sea urchin grazing in the BACIP analyses do not exist. Therefore, to avoid further dispute, we used the technique of Dean and Deysher (1996) to correct for the confounding effects of sea urchin grazing.

Results

Estimates based on approach recommended by independent panel

Estimates of the area of medium to high density kelp in SOK and SMK using sidescanning sonar that are corrected for the confounding effects of sea urchin grazing are shown in Figure 1a. During the pre-operational period the average area of medium to high density kelp in SOK was 1.84 times that of SMK (Figure 1b). The average area of kelp in SOK during the period beginning December 1986 is 27 percent smaller than that observed during the pre-operational period. By contrast, the average area of kelp in SMK during this period was 59 percent larger than that observed during the pre-operational period. Based on these data the BACIP analysis predicts that the average area of medium to high

density kelp in SOK during the period beginning December 1986 would have been 336 acres in the absence of SONGS' operation. This is twice the area that was actually observed in SOK and reflects a loss of 121 acres of medium to high density kelp.

The independent review panel suggested that effect size be evaluated by analyzing trends (a relationship between the effect size and time since the SONGS began operation). We did this by calculating the running average of the area of kelp lost for each date in the operational period, and, as noted by the panel we found that the effect declined over time (Figure 2). We used a LOWESS procedure to fit a line to the data. The LOWESS analysis indicated that the area of kelp lost (effect size) leveled off during the mid part of the operational period through the most recent survey. We then used a series of linear regressions to determine the specific survey at which the leveling off began and calculated the mean effect size since this survey. These results indicate that 122 acres of kelp area will be lost as long as the SONGS continues to operate at present levels.

Effects of alternative assumptions

The MRC and the permittee used two kinds of data to estimate kelp abundance: downlooking sonar data and sidescanning sonar data. There are advantages and disadvantages to each method that have been recognized by both the MRC and the permittee. Downlooking sonar provides the more accurate estimate of kelp abundance and has been calibrated to actual counts by divers. By contrast, side-scanning sonar has never been calibrated to diver counts and cannot distinguish between giant kelp and certain other large brown algae. The only advantage of sidescanning over downlooking sonar estimates is that sidescanning sonar data were collected for a longer period prior to the startup of the SONGS; this is the reason the independent review panel recommended its use. A longer data set should provide a better estimate of average kelp abundance in SOK and SMK prior to the SONGS startup. This is important because the ratio of kelp area in SOK/kelp area in SMK is a critical element in estimating the size of the SONGS' impact on kelp using BACIP. Our analyses, however, show that the ratio of kelp area in SOK to kelp area in SMK prior to SONGS startup is very similar using both methods (2.00 vs. 1.84 for downlooking and sidescanning sonar, respectively). Thus, the longer data set from sidescanning sonar does not appear to be reason for preferring it over the downlooking data for estimating kelp loss. Since downlooking sonar provides more reliable estimates of kelp abundance, we present results using this technique.

The estimated cumulative loss of kelp using the downlooking sonar data collected through January 1996, and the BACIP formula recommended by the independent panel, is 178 acres.

In the San Onofre region, giant kelp requires hard substrate to grow. The major reason for correcting for substrate is that suitable hard substrate might be a limiting resource for kelp. There are currently 215 acres of medium to high density kelp on 409 acres of hard substrate at SOK and 183 acres of kelp on 347 acres of hard substrate at SMK. There is thus abundant opportunity for expansion of kelp at both sites. Thus, the Independent

Review Panel's recommendation not to standardize kelp area to the area of hard substrate seems reasonable. However, we calculate the effect with a substrate correction, since the Independent Review Panel stated it as one, albeit less preferable, approach.

Dean and Deysher (1996) standardized kelp area to the amount of hard substrate, as did the MRC. If kelp area is standardized to the area of hard substrate, then the estimated cumulative loss of kelp using the downlooking sonar data collected through January 1996, and the BACIP formula recommended by the independent panel is 55 acres.

There continues to be dispute over the need to standardize kelp area to area of hard substrate, but in the absence of additional assumptions and time-consuming analyses, this dispute cannot be resolved. The fairest approach to resolving this issue is to take the average between the two estimates of kelp loss based on downlooking sonar data. This estimate is 117 acres. The projected kelp loss for the operational life of SONGS (as estimated using the same methods described above for the sidescanning sonar data) is 123 acres.

Conclusions

Using the Independent Review Panel's preferred recommendations for estimating SONGS' impacts to kelp, the cumulative estimate of the area of medium to high density kelp lost is 121 acres (the projected estimated loss for the operational life of SONGS is 122 acres). An alternative approach, that uses downlooking sonar data provides a cumulative estimated loss of 117 acres (the projected estimated loss for the operational life of the SONGS using this approach is 123 acres). These estimates are substantially less that the 200 acre loss estimated by the MRC using data collected through 1988.

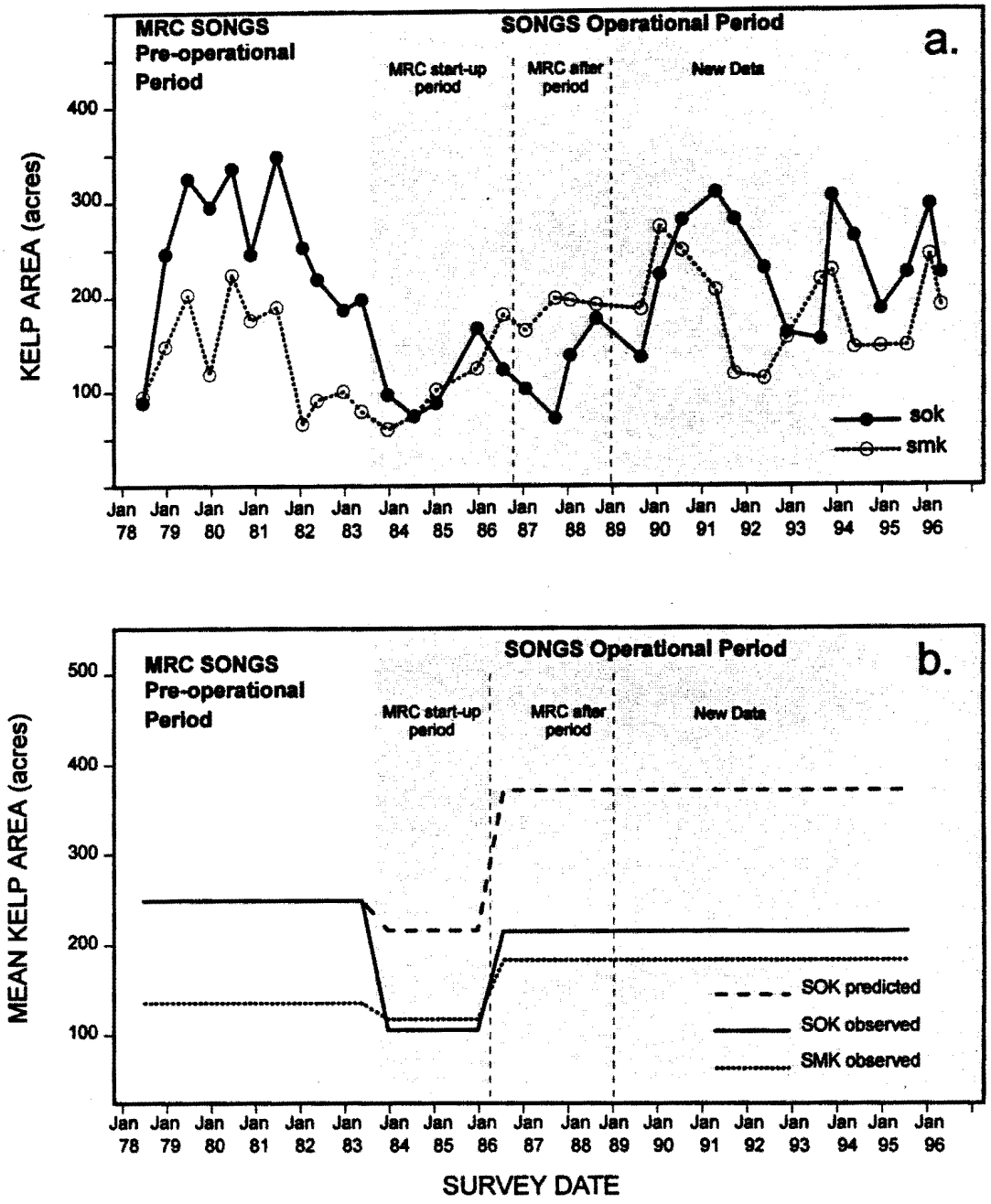

Figure 1(a): Kelp area changes. Figure 1(b): Mean kelp area changes.

Figure 1(a) illustrates temporal changes in the area of medium to high density kelp at SOK and SMK as estimated using sidescanning sonar. Data are not adjusted for area of hard substrate, but are adjusted for the confounding effects of sea urchin grazing. Figure 1(b) illustrates mean areas of medium to high density kelp observed at SOK and SMK for various time periods. Predicted values for mean area of kelp at SOK are based on BACIP.

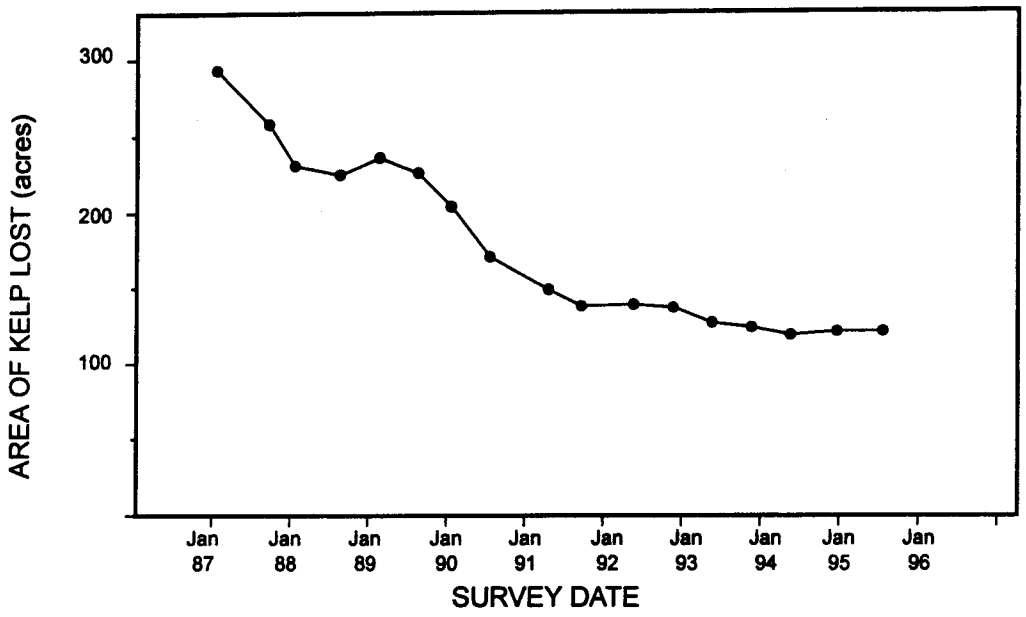

Figure 2: Average kelp lost

Figure 2 illustrates the running averages of area of medium to high density kelp lost in SOK based on sidescanning sonar estimates of kelp abundance.

Appendix D

COST ESTIMATES

The following tables show the staff's estimated costs for the mitigation program. To summarize:

- $43.86 million for implementation, monitoring, oversight and remediation of the wetland mitigation project.
- $34.17 million for implementation, monitoring, oversight and remediation of the reef mitigation project.
- **$78.03 million grand total for both projects.**

  Included in these costs are:

  - $27.76 million for implementation of San Dieguito Lagoon wetland mitigation (Condition A).
  - $ 3.00 million for implementation of Ormond Beach wetland mitigation (Condition C).
  - $19.27 million for implementation of mitigation reef (Condition C).
  - $28.00 million for monitoring, oversight and remediation of all required mitigation projects (Condition D).

All estimated costs are in 1996 dollars with no inflation or interest adjustments. Cost estimates do ***not*** include costs already incurred.

Estimated costs for each project are based on the following:

Wetland Mitigation Project

The staff's estimated costs for implementing the wetland mitigation project required in Condition A are based on (1) the permittee's *Preliminary Plan: San Dieguito Wetlands Restoration Project* submitted to the Commission August 16, 1996, as revised by the Commission's approval of the plan; (2) the *South Ormond Beach Wetland Restoration and Management Plan* submitted to the Commission August 16, 1996; and (3) revised cost estimates for the Ormond Beach plan prepared for the Coastal Conservancy September 13, 1996. Costs were estimated in consultation with the Coastal Conservancy.

The project includes credit for enhancing tidal influence at San Dieguito Lagoon (i.e., maintaining the inlet) and credit for restoration of tidal wetlands and enhancement of

existing wetlands at Airfield and Horseworld properties, for a total of approximately 92 acres credit at San Dieguito Lagoon. The remaining required wetland acreage, approximately 58 acres, will be obtained through enhancement and restoration, including a tidal connection with Mugu Lagoon, at Ormond Beach wetland.

Reef Mitigation Project

The staff's estimated costs for the reef project include (1) implementation of the mitigation kelp reef required in Condition C, including monitoring, oversight and remediation, and (2) implementation of kelp recruitment and persistence studies, monitoring and oversight for the experimental reef. Costs were estimated in consultation with the Department of Fish and Game. Implementation of the experimental reef is the responsibility of the permittee, and costs for planning, permitting and constructing the experimental reef will be borne directly by the permittee.

The results of the 16.8-acre experimental reef will be used to design the larger mitigation reef. The estimates are based on a mitigation reef project which constructs a 105.2-acre artificial reef with 67 percent cover of quarry rock, at 3 feet high to fully compensate, in conjunction with the 16.8-acre experimental reef, for 122 acres of lost kelp bed habitat and resources at San Onofre Kelp bed (SOK). Construction estimates for the mitigation reef were provided by the California Department of Fish & Game. Hydrographic surveys taken during construction are to ensure the reef is built to approved design specifications.

Monitoring

Post-construction monitoring of the experimental reef will evaluate the success of various reef designs in attaining the physical and biological performance standards for the larger mitigation reef. The resulting information will be used in developing a design for the mitigation reef. Data collection costs are estimated at $120,000/year for up to 10 years for the experimental reef.

Monitoring of the mitigation reef and the wetland mitigation projects will measure each project's compliance with the performance standards as compared to selected reference sites. Data collection costs for the mitigation reef are estimated at $100,000/year for the first seven years. Data collection costs for the mitigation reef are estimated at $750,000/year ($250,000/year at the mitigation site and $500,000/year at the reference sites) for the final three years to evaluate overall compliance with the performance standards. Data collection costs for the wetland mitigation are estimated at $240,000/year ($120,000/year at each mitigation site) for the first seven years and $900,000/year ($150,000/year at each of 2 mitigation sites and 4 reference sites) for the final three years to evaluate overall compliance with the performance standards.

Table D-1. Total Estimated Project Cost: Wetland Mitigation Project

		Estimated Cost (millions)
San Dieguito Lagoon (SDL)		
1	SDL project design and permits	
	Preliminary design	0.50
	Environmental review	1.50
	Final design and permits	2.40
	Total SDL project design and permits	4.40
2	SDL project construction[23]	
	Mobilization/demobilization	0.45
	Initial inlet restoration	1.11
	Airfield property restoration	6.15
	Horseworld property restoration	3.12
	Construction allowances	1.10
	Subtotal (a)	11.93
	Overhead @ 15% of subtotal (a)	1.79
	Construction contingencies @ 25% of subtotal (a)	2.98
	Subtotal (b)	16.70
	Construction management @ 5% of subtotal (b)	0.84
	Total SDL project construction	17.54
3	SDL inlet maintenance[24]	3.99
4	SDL project management and administration (SCC)	
	Project design and permitting phase (3.5 yrs)	1.22
	Construction phase (2 yrs)	0.44
	Post-construction phase	0.17
	Total SDL project management and administration	1.83
	TOTAL SDL PROJECT IMPLEMENTATION COSTS	27.76
ORMOND BEACH WETLAND MITIGATION[25]		
	Project design and permits	0.56
	Construction	1.78
	Contingencies @ 25% construction)	0.45
	Project management and administration (SCC)	0.21
	TOTAL ORMOND BEACH PROJECT IMPLEMENTATION	3.00
MONITORING FOR WETLAND MITIGATION PROJECTS (10 yrs)		
	SDL mitigation site	1.29
	Ormond Beach mitigation site	1.29
	Reference sites	1.80
	TOTAL MONITORING	4.38
TECHNICAL OVERSIGHT, PROJECT MANAGEMENT & MONITORING (CCC)		
	Planning and permitting phase (3.5 yrs)	0.80
	Construction phase (2 yrs)	0.39
	Monitoring phase (10 yrs)	1.81
	TOTAL TECHNICAL OVERSIGHT	3.00
TOTAL WETLAND MITIGATION PROJECT COSTS		38.14
REMEDIATION (@15% OF TOTAL PROJECT COSTS)		5.72
GRAND TOTAL: WETLAND MITIGATION PROJECT		**$43.86**

[23]Estimates prepared by Noble Consultants, Inc., for Coastal Conservancy, January 1996. Construction estimates used are from Alternative 4. Costs are based on excavated volumes estimated by Philip Williams & Associates, Ltd. Disposal costs are mid-range.

[24]From Noble Consultants, Inc.

[25]Based on revised cost estimates prepared by Fugro West, Inc., for Coastal Conservancy, September 1996. Staff eliminated the proposed monitoring costs since those costs were already allocated under "Monitoring," added a 25% contingency, and added staff costs for the Coastal Conservancy's implementation of this project.

Table D-2. Total Estimated Project Cost: Reef Mitigation Project

		Estimated Cost
EXPERIMENTAL REEF		(millions)
1	Post-construction monitoring (10 yrs)	1.20
2	Kelp recruitment and persistence studies	0.50
3	Technical oversight, project management & monitoring (CCC)	
	Planning and construction phase (1 yr)	0.23
	Monitoring phase (10 yrs)	1.61
	TOTAL EXPERIMENTAL REEF COST[26]	3.54
MITIGATION REEF		
1	Project design and permits	2.00
2	Construction for 105.2 acres @ $126,920/acre (per CDFG)	13.35
	Construction contingency @ 15%	2.00
3	Construction monitoring (hydrographic surveys)	1.00
	TOTAL DESIGN, CONSTRUCTION & CONSTRUCTION MONITORING	18.35
4	Management and administration (Implementing Agency) @ 5%	.92
	TOTAL MITIGATION REEF IMPLEMENTATION[27]	19.27
5	Technical oversight, project management & monitoring (CCC)	
	Planning and construction phase (2.5 yrs)	0.47
	Monitoring phase (10 yrs)	1.81
6	Post-construction monitoring (10 yrs)	2.95
	TOTAL MITIGATION REEF OVERSIGHT, MANAGEMENT & MONITORING	5.23
	TOTAL MITIGATION REEF PROJECT COSTS	24.50
REMEDIATION (@ 25% OF TOTAL MITIGATION REEF PROJECT)		6.13
GRAND TOTAL: EXPERIMENTAL AND MITIGATION REEF PROJECTS		**$34.17**

[26]Cost estimate excludes planning, permitting and construction costs for the experimental reef. These costs will be borne directly by the permittee.
[27]Amount necessary to fund Condition C trust fund.

Table D-3. Summary of Condition D Fund: Administrative Structure

		Estimated Cost (millions)
WETLAND MITIGATION PROJECT		
1	Post-construction monitoring (10 yrs)	4.38
2	Technical oversight, project management and review (CCC)	3.00
3	Remediation	5.72
TOTAL WETLAND PROJECT		13.10
REEF MITIGATION PROJECT		
1	Post-construction monitoring	4.15
2	Kelp recruitment and persistence studies	0.50
3	Technical oversight, project management and review (CCC)	4.12
4	Remediation	6.13
TOTAL REEF PROJECT		14.90
TOTAL CONDITION D FUND		**$28.00**

Table D-4. Detailed Cost Calculation for Technical Oversight, Project Management and Monitoring for the Wetland Mitigation Project[28]

	Planning		Construction		Monitoring[29]		Total
	annual	PY	annual	PY	annual	PY	
Salaries & benefits							
Ecologist: Env Prgm Mgr FTE=67,464/yr	67,464	1.00	67,464	1.00	53,971	0.80	
Benefits @ 26.8%	18,080		18,080		14,464		
Admin: Sr Admin Analyst FTE=62,928/yr	15,732	0.25	15,732	0.25	12,586	0.20	
Benefits @ 26.8%	4,216		4,216		3,373		
Clerical: Office Tech FTE=29,724/yr	7,431	0.25	7,431	0.25	7,431	0.25	
Benefits @ 26.8%	1,992		1,992		1,992		
Operating expense & equip @ 28,000/PY/yr	42,000		42,000		35,000		
Scientific advice: panel, expert reviewers	50,000		20,000		36,000		
Annual Total	206,915		176,915		164,817		
Fund administration @ 10%	20,692		17,692		16,482		
Total	227,607		194,607		181,298		
Extension		Years		Years		Years	
EXTENDED TOTAL	**$796,623**	**3.50**	**$389,213**	**2.00**	**$1,812,982**	**10.00**	**$2,998,818**

[28]Values from this table are used in Table D-1. Total Estimated Project Cost: Wetland Mitigation Project.

[29]Greater monitoring work is expected in years 1, 2, 3 and years 8, 9, 10 compared to expected monitoring work during the middle years (4, 5, 6 and 7). Costs are the average annual costs for both periods during the monitoring phase.

Table D-5. Detailed Cost Calculations for Technical Oversight, Project Management, and Monitoring: Experimental and Mitigation Reef[30]

Salaries & benefits	Experimental Reef Planning & Construction		Experimental Reef Monitoring[31]		Mitigation Reef Planning & Construction		Mitigation Reef Monitoring[32]		Total
	annual	PY	annual	PY	annual	PY	annual	PY	
Ecologist: Env Prgm Mgr FTE=67,464/yr	67,46	1.00	47,225	0.80	67,464	1.00	53,971	0.80	
Benefits @ 26.8%	18,080		12,656		18,080		14,464		
Admin: Sr Admin Analyst FTE=62,928/yr	15,732	0.25	12,586	0.20	9,439	0.15	12,586	0.20	
Benefits @ 26.8%	4,216		3,373		2,530		3,373		
Clerical: Office Tech FTE=29,724/yr	7,431	0.25	7,431	0.25	7,431	0.25	7,431	0.25	
Benefits @ 26.8%	1,992		1,992		1,992		1,992		
Operating expense & equip @ 28,000/PY/yr	42,000		32,200		39,200		35,000		
Scientific advice: panel, expert reviewers	50,000		29,000		25,000		36,000		
Annual Total	206,915		146,462		171,136		164,817		
Fund administration @ 10%	20,692		14,646		17,114		16,482		
Total	227,607		161,108		188,249		181,298		
Extension		Years		Years		Years		Years	
EXTENDED TOTAL	**$227,607**	**1.00**	**$1,611,083**	**10.00**	**$470,623**	**2.50**	**$1,812,982**	**10.00**	**$4,122,295**

[30]Values from this table are used in Table D-2. Total Estimated Project Cost: Reef Mitigation Project.
[31]Greater monitoring work is expected in years 1, 2, 9 & 10 compared to expected monitoring work during the middle years (3, 4, 5, 6, 7 & 8). Costs are the average annual costs for both periods of the experimental reef monitoring phase.
[32]Greater monitoring work for the mitigation reef is expected in years 1, 2, 3 and 8, 9, 10 compared to the middle years (4, 5, 6, & 7). Costs are the average annual costs for both periods during the mitigation reef monitoring phase.

Appendix E

FISH LOSSES DUE TO THE SONGS OPERATION

In addition to monitoring kelp, the permittee is required by its NPDES permit to monitor the number of juvenile and adult fish killed by the SONGS cooling water system. These new data show that the average number of fish killed since the MRC study period (1987–1995) is more than twice the average number killed during the MRC study period (1983–1986; Figure E-1). Because the abundance of fish and larvae are positively related to the abundance of adult fish, these data suggest fish losses may have increased since the MRC studies ended. Although the permittee has argued that the new data on kelp are essential to adequately assess the adverse impacts of the SONGS, the permittee has not made similar arguments for the new data on fish losses.

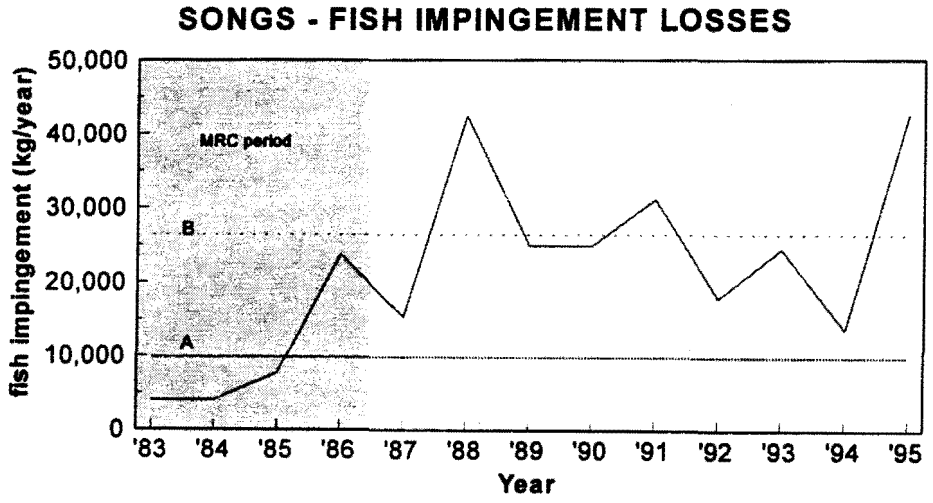

Figure 3: Annual fish losses at the SONGS due to impingement. The average annual loss during the MRC period (1983–1986) was approximately 10,000 kg/year (line A). Since the MRC studies (1987–1995) the average annual loss has been approximately 26,000 kg/year (line B). Data are from Southern California Edison's Annual Marine Environmental Analysis and Interpretation reports. 1,000 kg = 1 metric ton; to convert kilogram to pounds multiply kilograms by 2.2.

Appendix F

DESCRIPTION OF THE COASTAL COMMISSION STAFF'S CREDIT CALCULATIONS FOR THE SAN DIEGUITO WETLANDS RESTORATION PROJECT

This section describes how the acres of credit given in Table 4 were calculated.

> Note that the credit figures are estimates because the size of some of the habitats had to be estimated rather than accurately measured. In order to make more accurate calculations of credit more detailed maps of the proposed plan are needed.

1. CREDIT FOR MAINTAINING INLET ENTRANCE

The Coastal Commission's scientific team estimates that each acre currently inundated by the tides will be enhanced by 28.1% when SCE maintains the lagoon open (from Interagency Wetlands Advisory Panel – IWAP, June 26, 1996).

The IWAP suggested that (a) this percentage apply to the areas below Mean High Water level (2.1' NGVD; 81 acres) and (b) that the area owned by the California Department of Fish and Game (CDFG) could not be included in the calculation, unless permission is granted by the CDFG (i.e., minus 36 acres). Therefore the enhancement credit suggested by the IWAP for maintaining full tidal flow was: 28.1% x 45 acres = 12.6 acres.

The Coastal Commission staff recommendation is based on calculations that to increase the acreage awarded to SCE by (a) applying the percentage to all the areas below Mean Higher High Water (2.9' NGVD), and (b) including the CDFG Basin in the calculation. This means the percentage enhancement will apply to approximately 126 acres. The enhancement credit for inlet maintenance is therefore: 28.1% x 126 acres = **35.4 acres.**

2. CREDIT FOR WORK AT THE AIRFIELD SITE

There are many habitats at the Airfield. Some areas are completely degraded Ruderal habitats whereas other areas are well established Tidal Salt Marsh or Seasonal Salt Marsh. The credit that SCE would obtain for changing each habitat is calculated as the difference between its current value (as measured by percent cover of salt marsh plants) and its future value (as measured by expected percent cover of salt marsh plants). There is one proviso, if the credit for creation/restoration is between 1% and 28.1% (the enhancement credit amount) the credit will be 28.1%. Our reason for adding this proviso is that in creating or restoring a tidal salt marsh SCE should receive at least as much credit as it is getting for enhancing existing tidal salt marsh.

A map of the existing vegetation was completed by SCE in March 1993. The map is generally good but we have added one habitat—"High Quality Ruderal." We have added this habitat because during June 1994 two salt marsh experts, Wayne Ferrin and Joy Zedler, examined the Ruderal areas in San Dieguito Lagoon and concluded, independently, that there were some Ruderal areas that had significant value because they contained many salt marsh plants. We have calculated the credit that SCE can obtain for restoration/enhancement of each of the habitats and the credit is as follows:

Tidal Salt Marsh to a tidal habitat	0%
Ruderal to uplands	0%
Seasonal Salt Marsh to a tidal habitat	28.1%
Seasonal Salt Marsh (Transitional) to a tidal habitat	46%
High Quality Ruderal to a tidal habitat	77%
Ruderal to a tidal habitat	100%

a) Restoration of tidal wetlands at the Airfield Site

The credit calculation for the restoration at the Airfield is as follows:

Tidal Salt Marsh to a tidal habitat	4 acres	@	0%	=	0
Ruderal to uplands	0 acres	@	0%	=	0
Seasonal Salt Marsh to a tidal habitat	2 acres	@	28.1%	=	0.56
Seasonal Salt Marsh (Transitional) to a tidal habitat	1 acre	@	46%	=	0.46
High Quality Ruderal to a tidal habitat	5 acres	@	77%	=	3.85
Ruderal to a tidal habitat	35.3 acres	@	100%	=	35.3
Total	**40.17 acres**	**credit**			

Notes— (1) All acreage values are estimates; and (2) the Ruderal to uplands acreage is zero because the upland "fingers" and Tern Island do not appear to be included in the total acreage.

b) Replacement of exotic trees with tidal wetlands at the Airfield Site

The removal of the exotic trees and the construction of tidal Southern Coastal Salt Marsh in their place constitutes substantial restoration. Therefore SCE would obtain full credit for this part of the project, i.e., 3.3 x 100% = **3.3 acres credit.**

c) A concern about the removal of the exotic trees at the Airfield Site

The September 1995 plan calls for the removal of the exotic trees and their replacement with tidal Southern Coastal Salt Marsh. Because this constitutes substantial restoration we would award full credit for this part of the project. However, the current elevations under

the exotic trees are above the extreme tide level which means that to accomplish the above restoration some grading would be required.

If SCE does not intend to conduct any grading at the site and instead upland or non-tidal salt marsh is created then the CCC would have to award less than full credit. Because the exotic trees currently support a pair of breeding Black-shouldered Kites this site has current resource value even though the wetland value is zero. Taking these considerations into account the credit values would be:

	credit %	credit acreage
exotic trees to upland (no grading)	0%	0
exotic trees to non-tidal salt marsh (no grading)	10%	0.33
exotic trees to tidal salt marsh (grading)	100%	3.3

d) Enhancement of seasonal wetlands by berm breaches at the Airfield Site

SCE has also proposed enhancing some Airfield Seasonal Salt Marsh and Seasonal Salt Marsh (Transitional) by making holes in berms that currently partially cut the habitats off from tidal flows. In their July 1995, plan SCE asked for 10% credit for this enhancement but in the September 1995 plan SCE asked for 100% credit. The CCC staff believes that the enhancement will be small because the berms already have one hole and because the habitats are at such a high elevation they will be inundated only rarely during flooding caused by high rainfall. We believe that the 10% enhancement figure is reasonable. If SCE can provide reasons for a higher enhancement amount then we will evaluate them. Using the 10% figure the credit calculation is as follows: 13 x 10% = **1.3 acres of credit** for this work.

e) Total credit for the airfield Site

The total credit for the Airfield restoration/enhancement is:

Restoration of tidal wetlands	40.17
Replacement of exotic trees with tidal wetlands	3.3
Enhancement of seasonal wetlands by berm breaches	1.3
Total	**44.77 acres credit**

3. RESTORATION OF TIDAL WETLANDS AT HORSEWORLD

There are also several habitats on the Horseworld property and credit was calculated using the same approach as at the Airfield, and the following percentages were used to calculate credit:

Tidal Salt Marsh to a tidal habitat	0%
Ruderal to uplands	0%
Seasonal Salt Marsh to a tidal habitat	28.1%
Seasonal Salt Marsh (Transitional) to a tidal habitat	46%
High Quality Ruderal to a tidal habitat	77%
Ruderal to a tidal habitat	100%

The credit calculation is as follows:

Seasonal Salt Marsh to a tidal habitat	4 acres	@	28.1	=	1.12
High Quality Ruderal to a tidal habitat	5 acres	@	77	=	3.85
Ruderal to a tidal habitat	6.9 acres	@	100	=	6.9
Total at Horseworld	**11.87 acres**	**credit**			

4. TOTAL CREDIT FOR THE SAN DIEGUITO LAGOON PLAN

Thus the total credit for the San Dieguito Lagoon plan is as follows:

	acres credit
Enhancement through inlet maintenance	35.4
Restoration of tidal wetlands at Airfield	40.2
Restoration by removal of exotic trees at Airfield	3.3
Enhancement by berm breaches at Airfield	1.3
Restoration of tidal wetlands at Horseworld	11.9
TOTAL	**92.1 acres**

Appendix G:

SONGS CPUC SETTLEMENT CALCULATIONS

The CPUC calculates the SONGS marine mitigation component of the total SONGS settlement for the period 1996—2003 as follows:

$110.94	million[33]	Direct mitigation costs forecast by permittee for wetlands, reef, fish return & fish hatchery projects
x 1.3		Southern California Edison's standard 30% overhead rate
$144.22	million	
+ 1.1		Back out "Allowance for Funds Used During Construction"[34]
$131.11	million	
- $ 5	million	Subtract $5 million Edison forecast for post-2003 SONGS million mitigation costs (settlement covers 1996–2003 only)
$126.11		
- $22	million[35]	Subtract amount categorized in settlement as "sunk costs,"
$104.11	**million**[36]	monies theoretically already spent on SONGS mitigation as defined in settlement, leaving $104 million in ICIP[37] costs available for mitigation

[33] $110.94 million. Southern California Edison prepared and published this estimate for SONGS mitigation costs in Table II-1 of a document referred to as "Exhibit 39 to CPUC Decision 96-01-011" and titled by Edison as "Nuclear Power SONGS Required Environmental Mitigation Projects, Before the Public Utilities Commission of the States of California," dated December, 1993.

[34] AFUDC: Allowance for Funds Used During Construction. A term used in traditional rate cases. This is an add-on charge to account for the cost to the utility of expending funds in advance of recovery through rates. This factor is removed in the settlement because costs will be recovered as power is sold, not as a function of after-the-fact ratemaking.

[35] $22 million, sunk costs. The SONGS owners did not introduce into the CPUC public record a detailed accounting for these amounts theoretically already spent. CPUC staff indicate that to some extent the amounts placed in the "sunk costs" category are a product of the tradeoffs of the negotiated settlement rather than a true reflection of actual expenditures.

[36] $104.11 million. The SONGS owners will recover this amount during the term of the settlement for mitigation costs but will not be required to return any unspent portion of it to the ratepayers. This amount is placed in the settlement category of "Incremental Costs Incentive Pricing"--or "ICIP"--a catchall term for the operating costs that the SONGS owners were not allowed to recover through the favorable accelerated depreciation method allowed for sunk costs. Southern California Edison's portion of this amount is $76.5 million (ICIP) (and $17 million--sunk costs, for a total of $93.5 million).

[37] Incremental Costs Incentive Pricing--Amount SONGS owners will recover from ratepayers for SONGS mitigation 1996–2003 based on ~ 4 cents per kilowatt-hour for sales of SONGS power, operating costs in the range forecast by Edison, and the assumption that SONGS runs at a 78%[37] operating efficiency during this period, on average.

APPENDIX H
PERMITTEE'S PROPOSED TEXT TO AMEND CONDITIONS A, C & D

Application For Amendment of Coastal Permit No. 6-81-330
Filed August 16, 1996

Redline Version of SONGS Coastal Development Permit
Proposed Amendments to Conditions II-A, C, and D

SECTION II: ADOPTED PERMIT CONDITIONS

This section consists of five permit conditions. Condition A consists of a requirement for a wetland restoration project to mitigate for fish losses. Condition B consists of a requirement for the installation of behavioral barrier devices to divert fish from the cooling water intake areas. Condition C consists of a requirement for a artificial kelp reef to mitigate impacts to the San Onofre Kelp reef. Condition D describes an administrative structure to provided oversight and independent monitoring of the mitigation projects. Condition E addresses the issue of the maintenance and storage of the data collected by MRC.

CONDITION A: WETLAND RESTORATION MITIGATION

The permittee shall develop, implement and fund a wetland restoration project that compensates for past, present and future fish impacts from SONGS Units 2 and 3, as identified by the Marine Review Committee.

1.0 SITE SELECTION AND PRELIMINARY PLAN

In consultation with Commission staff, the permittee shall select a wetland restoration site and develop a preliminary plan in accordance with the following process and terms.

~~Within 9 months of the effective date of this permit,~~ Before January 1, 1997, the permittee shall submit the proposed site and preliminary wetland restoration plan to the Commission for its review and approval or disapproval.

1.1 Site Selection

The location of the wetland restoration project shall be within the Southern California Bight. The permittee shall evaluate and select from sites including, but not limited to, the following eight sites: Tijuana Estuary in San Diego County, San Dieguito River Valley in San Diego County, Huntington Beach Wetland in Orange County, Anaheim Bay in Orange County, Santa Ana River in Orange County, Los Cerritos Wetland in Los Angeles County, Ballona Wetland in Los Angeles County, and Ormond Beach in Ventura County. Other sites proposed by the permittee may be added to this list with the Executive Director's approval.

The basis for the selection shall be an evaluation of the sites against the minimum standards and objectives set forth in subsections 1.3 and 1.4 below. The permittee shall take into account and give serious consideration to the advice and recommendations of an interagency Wetland Advisory Panel, established and convened by the Executive Director. The permittee shall select the site that meets the minimum standards and best meets the objectives.

1.2 Preliminary Restoration Plan

In consultation with Commission staff, the permittee shall develop a preliminary wetland restoration plan for the wetland site identified through the site selection process. The preliminary wetland restoration plan shall meet the minimum standards and incorporate as many as possible of the objectives in subsections 1.3 and 1.4, respectively.

The preliminary wetland restoration plan shall include the following elements:

a. Review of existing physical, biological, and hydrological conditions; ownership, land use and regulation.

b. Site-specific and regional restoration goals and compatibility with the goal of mitigating for SONGS impact to fish.

c. Identification of site opportunities and constraints.

d. Conceptual restoration design, including:

1. Proposed grading and excavation; water control structures; planting; integration of public access, if feasible; buffers and transition areas: management and maintenance requirements.

2. Proposed habitat types (including approximate size and location).

3. Preliminary assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits.

4. Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property interests.

5. A graphic depiction of proposed plan.

1.3 Minimum Standards

The wetland restoration project site and preliminary plan must meet the following minimum standards:

a. Location within Southern California Bight.

b. Potential for restoration as tidal wetland, with extensive intertidal and subtidal areas;

c. Creates or substantially restores a minimum of 150 acres (60 hectares) of wetlands, excluding buffer zone and upland transition area:

d. Provides a buffer zone of a size adequate to ensure protection of wetland values, and not less than at least 100 feet wide, as measured from the upland edge of the transition area, except in those areas where a smaller buffer is functionally adequate or otherwise appropriate (e.g. near existing development).

e. Any existing site contamination problems would be controlled or remediated and would not hinder restoration.

f. Site preservation is guaranteed in perpetuity (through appropriate public agency or nonprofit ownership, or other means approved by the Executive Director), to protect against future degradation or incompatible land use.

g. Feasible methods are available to protect the long-term wetland values on the site, in perpetuity.

h. Does not result in any net loss of existing wetlands.

i. Does not result in impact on endangered species unless authorized by the appropriate regulatory agencies.

1.4 Objectives

The following objectives represent the factors that will contribute to the overall value of the wetland. The selected site shall be that with the best potential to achieve these objectives. These objectives shall also guide preparation of the restoration plan.

a. Provides maximum overall ecosystem benefits e.g. maximum upland buffer, enhancement of downstream fish values, provides regionally scarce habitat, potential for local ecosystem diversity.

b. Provides substantial fish habitat compatible with other wetland values at the site.

~~c. Provides a buffer zone of an average of at least 300 feet wide, and not less than 100 feet wide, as measured from the upland edge of the transition area.~~

cd. Provides maximum upland transition areas (in addition to buffer zones);

de. Restoration involves minimum adverse impacts on existing functioning wetlands and other sensitive habitats consistent with the goal of optimizing tidal restoration.

ef. Site selection and restoration plan reflect a consideration of site specific and regional wetland restoration goals.

fg. Restoration design is that most likely to produce and support wetland-dependent resources.

gh. Provides rare or endangered species habitat.

hi. Provides for restoration of reproductively isolated populations of native California species.

ij. Results in an increase in the aggregate acreage of wetland in the Southern California Bight.

jk. Requires minimum maintenance.

kl. Restoration project can be accomplished in a timely fashion.

lm. Site is in proximity to SONGS.

1.6 [sic] Restrictions

(a) The permittee may propose a wetland restoration project larger than the minimum necessary size specified in subsection 1.3(c) above, if biologically appropriate for the site, but the additional acreage must (1) be clearly identified, and (2) must not be the portion of the project best satisfying the standards and objectives listed above.

(b) If the permittee jointly enters into a restoration project with another party: (1) the permittee's portion of the project must be clearly specified, (2) any other party involved cannot gain mitigation credit for the permittee's portion of the project, and (3) the permittee may not receive mitigation credit for the other party's portion of the project.

(c) The permittee may propose to divide the mitigation requirement between a maximum of two wetland restoration sites, unless there is a compelling argument, approved by the Executive Director, that the standards and objectives of subsections 1.3 and 1.4 will be better met at more than two sites.

2.0 FINAL PLAN AND PLAN IMPLEMENTATION

2.1 Final Restoration Plan

Within 24~~12~~ months following the Commission's approval of a site selection and preliminary restoration plan, the permittee shall submit a final restoration plan along with CEQA documentation generated in connection with local or other state agency approvals, to the Executive Director of the Coastal Commission for review and approval. The final restoration plan shall substantially conform to the approved preliminary restoration plan as originally submitted or as amended by the Commission pursuant to a request by the permittee. The final restoration plan shall include, but not be limited to the following elements:

a. Detailed review of existing physical, biological, and hydrological conditions; ownership, land use and regulation.

b. Evaluation of site-specific and regional restoration goals and compatibility with the goal of mitigating for SONGS impacts to fish.

c. Identification of site opportunities and constraints.

d. Schematic restoration design, including:

1. Proposed cut and fill, water control structures, control measures for stormwater, buffers and transition areas, management and maintenance requirements.

2. Planting Program, including removal of exotic species, sources of plants and or seeds (local, if possible), protection of existing salt marsh plants, methods for preserving top soil and augmenting soils with nitrogen and other necessary soil amendments before planting, timing of planting, plans for irrigation until established, and location of planting and elevations on the topographic drawings.

3. Proposed habitat types (including approximate size and location).

4. Assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits.

5. Location, alignment and specifications for public access facilities, if feasible.

6. Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property rights.

7. Cost estimates.

8. Topographic drawings for final restoration plan at 1" = 100 foot scale, one foot contour interval.

9. Drawings shall be directly translatable into final working drawings.

2.2 Wetland Construction Phase

Within 6 months of approval of the final restoration plan, subject to the permittee's obtaining and complying with any ~~the~~ necessary permits, the permittee shall commence the final engineering and construction phase of the wetland restoration project. The permittee shall be responsible for ensuring that construction is carried out in accordance with the specifications and within the timeframes specified in the approved final restoration plan and shall be responsible for any remedial work or other intervention necessary to comply with final plan requirements.

2.3 Timeframe for Resubmittal of Project Elements

If the Commission does not approve any element of the project (i.e. site selection, restoration plan), the Commission will specify the time limits for compliance relative to selection of another site or revisions to the restoration plan.

3.0 WETLAND MONITORING, MANAGEMENT AND REMEDIATION

Monitoring; will occur for 10 years after construction of the permittee's wetland restoration is completed to ensure that the restoration has been successful. During this time, the permittee will be responsible for all management (including maintenance); and remediation required to achieve success. If at the end of 10 years, the restoration is successful according to Condition II-A.3.4, the permittee's responsibility for monitoring and remediation shall cease. The permittee shall ensure that all monitoring will be performed by professionally qualified personnel.

Management by the permittee shall be conducted over the "full operating life" of SONGS Units 2 and 3. "Full operating life" as defined in this permit includes past and future years of operation of SONGS units 2 and 3 including the decommissioning period to the extent there are continuing discharges. The number of past operating years at the time the wetland is ultimately constructed, shall be added to the number of future operating years and decommission period, to determine the length of the ~~monitoring;~~ management ~~and remediation~~ requirement.

The following section describes the basic tasks required for monitoring, management and remediation. Condition II-D specifies ~~the administrative structure for carrying out these tasks, including~~ the roles of the ~~permittee and~~ Commission staff.

3.1 Monitoring and Management Plan

A monitoring and management plan will be developed *and implemented* by the permittee in consultation with the Commission staff ~~permittee~~ and appropriate fish and wildlife agencies, including, but not limited to, the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service (hereinafter jointly referred to as

the "Resource Agencies"). The Monitoring and Management Plan shall be submitted as part of the final restoration plan for Commission approval. The Monitoring and Management Plan will ~~, concurrently with the preparation of the restoration plan, to~~ provide an overall framework to guide the monitoring work and management. *The goal shall be to assess and maintain the success of the wetland restoration, as described in the Final Restoration Plan. The Monitoring and Management Plan shall describe the sampling methodology, analytical techniques, and methods for measuring attainment with the performance standards in permit Condition II-A.3.4.* It will include an overall description of the studies to be conducted over the course of the monitoring program and a description of management tasks that are anticipated, such as trash removal and inlet maintenance. ~~Details of the monitoring studies and management tasks will be set forth in a work program (see Section II-D).~~

The Management and Monitoring Plan shall provide for (1) inlet maintenance in perpetuity, if inlet maintenance is a component of the final restoration plan, and (2) all other maintenance for the full operating life of SONGS Units 2 and 3. At the permittee's discretion, the permittee may establish an endowment fund, or other appropriate mechanism, in an amount not to exceed $2,000,000. The endowment fund will be to fund the activities necessary to maintain tidal influence through the inlet in perpetuity and to perform all other long-term maintenance described in the Monitoring and Management Plan. Inlet maintenance shall consist of maintaining an inlet channel sufficient for (i) full tidal flows to the wetland within the tidal range at San Dieguito, (ii) immigration and emigration of marine fish, and (iii) water quality sufficient to support balanced populations of marine organisms.

3.2 Pre-restoration Site Monitoring

Pre-restoration site monitoring shall be conducted by the permittee to collect baseline data on the wetland attributes to be monitored. This information will be incorporated into and may result in modification to the overall monitoring plan.

3.3 Construction Monitoring

Monitoring shall be conducted by the permittee during and immediately after each stage of construction of the wetland restoration project to ensure that the work is conducted according to plans. Construction monitoring reports will be submitted monthly to the Executive Director.

3.4 Post-Restoration Monitoring and Remediation

Upon completion of construction of the wetland, monitoring shall be conducted by the permittee, in accordance with the Monitoring and Management Plan prepared under Condition II-A.3.1, to measure the success of the wetland in achieving stated restoration goals (as specified in

restoration plan) and in achieving performance standards, specified below. Monitoring surveys shall be conducted during years 1, 2, 3, 5, 7, and 10. A report documenting the results of annual monitoring shall be submitted to the Executive Director by the end of the first quarter following each year of monitoring. These reports shall utilize the baseline data collected under Condition II-A.3.2 to help determine if the goals and standards have been met. If the goals and performance standards are achieved at the end of the 10 year monitoring period, the final restoration plan will be considered successfully completed and the wetland monitoring program will cease. Except as provided in Condition II-A.3.5, the ~~The~~ permittee shall be fully responsible for any failure to meet these goals and standards during the 10 year monitoring period~~full operational years of SONGS Units 2 and 3~~. Consistent with the final restoration plan and in consultation with the Executive Director and the Resource Agencies, the permittee may take any steps necessary to meet these goals and standards during the 10 year monitoring period. Upon determining that the goals or standards are not being achieved during the 10 year monitoring period, the permittee and Executive Director shall prescribe remedial measures, after consultation with the ~~permittee~~Resource Agencies, which shall be immediately implemented by the permittee. ~~with Commission staff direction.~~ If the permittee does not agree that remediation is necessary, the matter may be set for hearing and disposition by the Commission.

The method for determining if the performance standards have been attained shall be specified in the Monitoring and Management Plan. Successful ~~achievement~~ attainment of the performance standards shall ~~(in some cases)~~ be measured relative to existing literature and data. ~~approximately four reference sites, which shall be relatively undisturbed, natural tidal wetlands within the Southern California Bight. The Executive Director shall select the reference sites. The standard of comparison i.e., the measure of similarity to be used (e.g., within the range, or with the 95% confidence interval) shall be specified in the work program.~~

In measuring the performance of the wetland project, the following physical and biological performance standards will be utilized:

a. Long-term Physical Standards. To assure restoration success, ~~T~~the following long-term standards shall be maintained throughout the 10 year monitoring period following construction of the wetland restoration~~over the full operative life of SONGS Units 2 and 3~~.

1) Topography. The wetland shall not undergo major topographic degradation (such as excessive erosion or sedimentation).

2) Water Quality. Water quality variables shall be maintained as specified in the Monitoring and Management Plan.~~[to be specified] shall be similar to reference wetlands.~~

3) Tidal prism. The designed tidal prism shall be maintained, and tidal flushing shall not be interrupted.

4) Habitat Areas. Habitat areas shall be maintained within the range described in the final restoration plan, including allowances for natural successional patterns. ~~The area of different habitats shall not vary by more than 10% from the areas indicated in the final restoration plan.~~

b. Biological Performance Standards. The following biological performance standards shall be used to determine whether the restoration project is successful. These standards shall be achieved within 10 years (or earlier if so specified) following the completion of construction. ~~Table 1, below, indicates suggested s~~Sampling locations and methodologies for each of the following biological attributes~~; actual locations~~ will be specified in the ~~work program~~Monitoring and Management Plan.

1) Aquatic Organisms~~Biological Communities~~. Within 4~~10~~ years of construction, the wetland shall possess a sustainable estuarine community representative of fully tidal Southern California coastal estuaries. Density and diversity standards shall be based on information from the relevant literature sources, wetland-based data, and pre-construction baseline studies gathered at the project site. ~~total densities and number of species of fish, macroinvertebrates and birds (see table 1) shall be similar to the densities and number of species in similar habitats in the reference wetlands.~~

2) Vegetation. In newly vegetated areas in the final restoration plan, ~~T~~the proportion of total vegetation cover and open space in the marsh shall be 50% vegetation coverage by year 5. By year ten, 90% vegetation coverage must be achieved. Composition of vegetation must be similar to other Southern California tidal wetlands as determined by existing studies, literature, and data. Algae growth shall not reach nuisance conditions or significantly and adversely affect estuarine or marine animal species. ~~similar to those proportions found in the reference sites. The percent cover of algae shall be similar to the percent cover found in the reference sites.~~

3) Spartina Canopy Architecture. ~~The restored wetland shall have a canopy architecture that is similar in distribution to the reference sites, with an equivalent proportion of stems over 3 feet tall.~~ *For those portions of the restored wetland that are dominated by Spartina foliosa and soils consist of clays and silts, the canopy architecture shall have a 30% proportion of stems over 3 feet tall as recommended by Zedler (1993).*

4) Reproductive Success. Certain *coastal salt marsh* plant species~~, as specified in the work program,~~ *that are dominant species* shall have demonstrated *vegetative or sexual* reproduction (i.e. seed set) at least once in three years.

5) Food Chain Support. The food chain support provided to birds shall be ~~similar to that provided by the reference sites, as~~ determined by feeding activity of the birds.

6) Exotics. The important functions of the wetland shall not be impaired by exotic species.

~~Table 1: Suggested Sampling Locations~~

	Salt Marsh			Open Water			Tidal
	Spartina	Salicornia	Upper	Lagoon	Eelgrass	Mudflat	Creeks
1) Density/spp:							
Fish				X	X	X	X
Macroinverts				X	X	X	X
Birds	X	X	X	X		X	X
2) % Cover							
Vegetation	X	X	X		X		
algae	X	X				X	
3) Spar. arch.	X						
4) Repro. suc.	X	X	X				
5) Bird feeding				X		X	X
6) Exotics	X	X	X	X	X	X	X

3.5 Uncontrollable Forces

Remediation shall not be required for a failure to achieve any performance standard substantially due to an "uncontrollable force." An uncontrollable force" includes any catastrophic event, unlawful or reasonably unforseeable act or acts of another, an act of God (such as an earthquake, fire, flood event exceeding the wetland design capacity described in the final restoration plan, hail storm, etc.), or other cause outside the reasonable control of the permittee which could not have been prevented by the permittee using due diligence and taking reasonable actions.

4.0 Ormond Beach Wetland Restoration and Management Plan

Within 60 days, the Permittee shall establish an internal, interest bearing, account in the amount of $3 million. The Permittee shall contribute up to $3 million, plus accrued interest, to the California State Coastal Conservancy or the City of Oxnard, depending upon which agency is to implement (the "Implementing Agency") the South Ormond Beach Wetland Restoration and Management Plan (the "Ormond Plan"). The Permittee shall first enter into an agreement with the Implementing Agency that limits the use of the money to the implementation of the Ormond Plan. Then, the Permittee shall distribute the money as requested by the Implementing Agency. Within 90 days of the adoption of the final environmental approvals pursuant to the National Environmental Policy Act and the California Environmental Quality Act, Edison shall execute a conservation easement, for

the 141 acre, Edison-owned, property discussed in the Ormond Plan, to the Implementing Agency.

The Permittee shall offer to the Implementing Agency the inclusion of additional wetlands, currently within the fenced boundary of the Ormond Beach Generating Station, in the Ormond Plan. These additional wetlands shall not include any upland or other areas used for operation and maintenance purposes, such as existing roads, the yard drain valve boxes and the pig launching pipes. If the additional wetlands are included within the final environmental approval is for the Ormond Restoration Plan, Edison shall grant a conservation easement to the Implementing Agency for the wetlands within the Generating Station's fenced boundary. Edison may reserve the right to (i) continue the present practice of draining storm water runoff on the wetlands, including water quality monitoring testing, (ii) continue the use of existing patrol roads around the wetland area, (iii) perform standard operation and maintenance activities, and (iv) require the Implementing Agency to meet with the Permittee prior to restoration and ensure the restoration does not either interfere with Generating Station operation and maintenance activities or breach the integrity of the security fence around the Generating Station.

CONDITION C: KELP REEF MITIGATION

The permittee shall, using qualified professionals and in consultation with the Executive Director, select a site and construct an experimental artificial reef for kelp as mitigation for possible resource losses at the San Onofre Kelp Bed (SOK) caused by SONGS. The experimental reef shall test the design parameters necessary for producing a persistent giant kelp forest and associated ecosystem.

1.0 SITE ASSESSMENT

The permittee shall select at least three potential sites and conduct pre-construction site assessments at these potential sites.

The permittee shall obtain information about each potential experimental reef site to allow the permittee to determine which site best meets the criteria of Section 2.0. This information shall be used in both the site selection and design of the experimental reef. Information shall: (1) include a description of existing biota at the site, (2) provide a reasonable prediction of the likelihood that a healthy kelp bed will be established and persist, (3) provide a reasonable prediction of the extent of rock burial due to sediment deposition and/or sinking into soft sediment, and (4) provide a prediction of the effect of the reef on local sand transport and local beaches.

2.0 FINAL SITE SELECTION

Selection of the actual experimental reef site from among the potential sites shall be based on, but not limited to, the following criteria:

1) Location as near as possible to SOK, and preferably between Dana Point (Orange Co.) and Carlsbad (San Diego Co.), but outside the influence of the SONGS discharge plume and water intake, and away from Camp Pendleton;

2) Minimal disruption of natural reef or cobble habitats and sensitive or rare biotic communities;

3) Suitable substrate with low mud and/or silt content (e.g. hard-packed fine to coarse grain sand, exposed cobble or bedrock without a persistent kelp biological community, or cobble or bedrock covered with a thin layer of sand);

4) Location at a depth locally suitable for kelp growth and recruitment;

5) Location near a persistent natural kelp bed;

6) Location away from sites of major sediment deposition;

7) Minimal interference with uses such as vessel traffic, vessel anchorages, commercial fishing, mariculture, mineral resource extraction, cable or pipeline corridors;

8) Location away from power plant discharges, waste discharges, dredge spoil deposition sites, and activities of the U. S. Marine Corps;

9) Location that will not interfere with or adversely affect resources of historical or cultural significance such as shipwrecks and archeological sites.

The permittee shall select the most suitable site to build the experimental reef, in consultation with the Executive Director and the resource agencies. The site shall be submitted to the Coastal Commission for its review and approval, as part of the experimental reef plan described in Condition C-3 below.

3.0 EXPERIMENTAL REEF DESIGN AND FINAL PLAN

Following the site selection process, and by December 31, 1995, the permittee shall submit to the Commission, for review and approval, an experimental reef for kelp plan. The experimental reef plan will be designed to identify and test those parameters important to the establishment of a persistent, healthy giant kelp forest and associated ecosystem.

The primary goals of the experimental reef shall be to test several promising substrate surfaces and configurations to determine which can provide adequate conditions for giant kelp recruitment, growth, and reproduction and adequate conditions for a community of reef-associated biota.

The total areal extent (as measured at the ocean bottom: the surface area within the perimeter of the reef's outermost hard substrate/sand interface area, as installed by the permittee) of the experimental kelp reef shall be 12 acres.

4.0 KELP REEF CONSTRUCTION

The experimental artificial reef shall be constructed according to the approved design. A post-construction survey shall be carried out by the permittee to demonstrate that the experimental reef was built to approved specifications.

5.0 TESTING

The permittee shall make scientific observations of the experimental reef over a 10-year period. This will allow a test for differences among designs to determine which provides the best habitat for kelp and associated biota, as described in the Final Plan. The Plan shall set forth the methods of observations and statistical means of evaluating differences among reef designs. At the conclusion of this 10-year period, the permittee's further obligation shall be to submit a report that includes recommendations for future reef construction designs to the Commission. This final report shall focus on the success or failure of the reef design.

~~CONDITION C: KELP REEF MITIGATION~~

~~The permittee shall, in consultation with the Executive Director, select a site and construct an artificial reef as mitigation for the resource losses at the San Onofre Kelp Bed (SOK) caused by the San Onofre Nuclear Generating Station (SONGS). The reef shall be designed to replace the lost and damaged resources at the San Onofre kelp Bed Reef and produce a persistent giant kelp forest and associated ecosystem. The reef shall be located in the vicinity of the SONGS, but outside the influence of the SONGS discharge plume and water intake.~~

~~After selecting potential sites, and conducting a pre-construction site assessment at these potential sites, the permittee shall select a site and design a reef which meets the standards and objectives listed below. The permittee shall submit the final reef plan to the Commission for its review and approval.~~

~~1.0 SITE SELECTION~~

~~Three or more potential reef sites shall be selected based on, but not limited to, the following criteria:~~

~~1) Location as near as possible to the San Onofre Kelp Bed, and preferably between Dana Point (Orange Co.) and the Pendleton Artificial Reef (San Diego Co.), but outside the influence of the SONGS discharge plume and water intake;~~

~~2) Minimal disruption of natural reef or cobble habitats and sensitive or rare biotic communities;~~

~~3) Suitable substrate with low mud and/or silt content (e.g. hard-packed fine to coarse grain sand, exposed cobble or bedrock without an established biological community, or cobble or bedrock covered with a thin layer of sand);~~

~~4) Location at a depth locally suitable for kelp growth and recruitment;~~

~~5) Location near a persistent natural kelp bed;~~

~~6) Location away from sites of major sediment deposition;~~

~~7) Minimal interference with uses such as vessel traffic, vessel anchorage's, commercial fishing, mariculture, mineral resource extraction, cable or pipeline corridors;~~

~~8) Location away from power plant discharges, waste discharges, and dredge spoil deposition sites;~~

~~9) Location that will not interfere with or adversely affect resources of historical or cultural significance such as shipwrecks and archeological sites.~~

1.1 Preconstruction Site Assessment

The permittee shall obtain site-specific field information, over a period of one year, at each of the three or more potential reef sites which best meet the above criteria. This field information shall be used in both the site selection and design of the reef. Field information shall: (1) include a description of existing biota at the site, (2) provide a reasonable prediction of the likelihood that a healthy kelp bed will be established and persist, (3) provide a reasonable prediction of the extent of rock burial due to sediment deposition and/or sinking into soft sediment, and (4) provide a prediction of the effect of the reef on local sand transport and local beaches.

The specific field information to be gathered, and the methods for gathering and analyzing it, shall be approved by the Executive Director. At the conclusion of this pre-construction assessment, the permittee shall select the most suitable site to build the reef, subject to the review and approval of the Executive Director, in consultation with the resource agencies. The site shall be submitted to the Coastal Commission, for its review and approval, as part of the artificial reef plan described in Condition C-2 below.

2.0 REEF DESIGN AND FINAL PLAN

Following the preconstruction site assessment, and within 18 months of the effective date of this condition, the permittee shall submit to the Commission, for review and approval, an artificial reef plan, designed to: (1) replace the damaged resources (as identified by the MRC) at the San Onofre Kelp Reef and (2) produce a persistent, healthy giant kelp forest and associated ecosystem. If the Executive Director determines that specific information is needed to evaluate whether the reef design will meet the goals and standards set forth in this condition, the Executive Director may direct the permittee to provide this information. The Executive Director, in evaluating the reef design, will consult with the resource agencies.

The primary goals of the reef shall be to provide: (1) stable rock surfaces and rock configurations that produce a community of algae and invertebrates similar in composition, diversity and abundance to SOK; (2) adequate conditions for giant kelp recruitment, growth, and reproduction, and (3) adequate conditions for a community of reef-associated biota similar in composition, abundance and diversity to SOK. This design shall meet the following standards:

1) The reef shall be constructed of rock determined to be suitable to sustain a kelp forest and a community of reef associated biota similar in composition, abundance and diversity to SOK. Additional devices may also be used to anchor kelp.

2) The total areal extent of the kelp reef shall be no less than 300 acres (120 hectares).

3) The 300 acre reef shall be covered by at least 200 acres (80 ha) of exposed rock substrate. Should the Executive Director determine that more rock coverage is necessary to meet the above goals, the Executive Director may require that the design include the additional coverage recommended.

4) The reef design shall take into account sediment deposition characteristics of the site, so that 200 acres of exposed stable rock substrate will be permanently present, be sufficiently free of scouring to support a diverse and stable community of attached biota, and allow kelp to become established and persist.

3.0 KELP REEF CONSTRUCTION

The reef shall be constructed in two phases. The first phase shall cover an area large enough to represent the important processes affecting a large 300 acre (120 ha) reef, but no larger than necessary in the event there are major problems with the initial design. The proposed size of the first phase reef shall be included in the reef plan submitted to the Commission. This phase shall be monitored for at least 3 years to determine if the design is likely to meet the goals and standards set forth in this condition, and determine that the reef does not interfere with local sand transport. Management techniques shall be tested during this phase to determine if such techniques will better ensure that the goals and standards will be met. At the conclusion of this initial monitoring period, the permittee shall submit any recommendations for changes to the design to the Coastal Commission for its review and approval. Construction of the remaining portion of the reef shall be completed no later than 6 years after the effective date of this condition.

The artificial reef shall be constructed according to the approved design, including location, depth, overall rock coverage, rock size, dispersion of rocks, and rock relief. A post-construction survey shall be carried out to demonstrate that the reef was built to approved specifications. If the Executive Director determines that the reef was not built to specifications, the permittee shall modify the reef to meet the approved specifications.

4.0 MONITORING AND REMEDIATION

The permittee is fully responsible for any failure to meet the standards and goals set forth in this condition during the full operational years of SONGS Units 2 and 3 as defined in Condition II-A-3.0. Should the Executive Director find that the goals and standards set forth in this condition have not been met, the permittee must immediately undertake necessary modifications to the reef design or other remediation determined by the Executive Director to be necessary to meet the standards and goals. If the permittee does not agree that the standards and goals have not been met, the matter may be set for hearing and disposition by the Commission.

4.1 Monitoring

Monitoring shall be implemented as described in Condition II-D to: (1) insure that the performance standards of this condition are met, (2) determine if the mitigation successfully replaces the lost and damaged resources in the San

~~Onofre Kelp Bed Reef, and (3) determine the reasons why standards have not been met, so that remediation will be successful. The monitoring program shall be designed to assess whether the performance standards listed below have been met.~~

~~4.2~~ Performance Standards

~~a. Substrate. At least 90% of the 200 acres (80 ha) of exposed rock substrate must remain available for attachment by reef biota. If, at any time, more than 10% of the reef should become covered by sediment, or become unsuitable for growth of attached biota due to scouring, and there is no sign of recovery within 3 years, as determined by the Executive Director, more rock shall be added to the reef to replace the substrate lost. Surveys to monitor exposed rock substrate availability shall begin immediately after construction is complete and shall continue for the full operational life of SONGS Units 2 and 3.~~

~~b. Kelp Bed. Kelp recruitment experiments to determine the best method of establishing kelp on the reef shall be carried out in the first phase. The experiments shall provide a basis for future kelp establishment efforts should adequate natural recruitment fail to occur. Within 3 years of construction of the second phase, the Executive Director shall evaluate the status of kelp on the artificial reef. If 60% of the reef is not covered with a self-sustaining medium to high density kelp bed (defined as more than 4 adult plants/100 m2 of substrate), the reason for failure of the kelp bed to become established shall be determined, and an effort begun to establish or augment kelp on the reef. The experimental method determined by the Executive Director to be most likely to be successful and reliable shall be employed until kelp coverage meets the above standard, or until 5 years after establishment or augmentation is first attempted. If oceanographic conditions are unfavorable to kelp during part of this period, the Executive Director may direct the permittee to defer the effort to establish kelp.~~

~~The reef shall sustain an average kelp coverage of 60% for the full operational life of SONGS units 2 and 3. If the long-term average kelp coverage does not meet this standard, the permittee shall undertake feasible corrective action, as identified by the Executive Director, to restore the kelp coverage to 60%. This may entail adding more rock to the reef. If, during the period of time of the full operational life of SONGS units 2 and 3, coverage of medium to high density kelp falls below 30% of the reef for two consecutive years, the Commission staff will, at the permittee's expense, evaluate the general state of kelp in the region. If the decline is region-wide, no attempt to correct the situation shall be required. If the decline is confined to the artificial reef, the permittee shall undertake feasible corrective action, as identified by the Executive Director, to restore the kelp coverage to 60%~~

~~c. Fish. Within 10 years of reef construction, the standing stock of fish at the reef shall be at least 28 tons. The MRC determined that this amount of reduction in the kelp bed fish biomass was caused by the operation of SONGS. The fish biota shall demonstrate the following characteristics:~~

~~1) The resident fish assemblage shall have a total density and number of species similar to natural reefs within the region.~~

~~2) Fish reproductive rates shall be similar to natural reefs within the region.~~

~~3) The total density and number of species of young-of-year fish (fish in the first year after settling) shall be similar to natural reefs within the region.~~

~~4) Fish production shall be similar to natural reefs within the region.~~

~~d. Benthos. Within 10 years of reef completion, the benthic community shall demonstrate the following characteristics:~~

~~1) The benthic community (both algae and macroinvertebrates) shall have a total density and number of species similar to natural reefs within the region.~~

~~2) The benthic community shall provide food-chain support for fish similar to natural reefs within the region.~~

~~3) The important functions of the reef shall not be impaired by undesirable or invasive benthic species (e.g. urchins, Cryptoarachnidium).~~

~~Samples taken at reference natural kelp reef sites shall be used to determine the similarity of each variable listed above for natural reefs within the region. The standard of comparison, i.e. the measure of similarity to be used, shall be specified in the work program (see Condition D). If the fish and benthos standards listed above are not met within 10 years after reef construction, the permittee shall be responsible for any corrective action the Executive Director deems appropriate and feasible.~~

CONDITION D: ADMINISTRATIVE STRUCTURE

1.0 ADMINISTRATION

Commission staff will, under the direction of the Executive Director, review all the permittee's activities such as mitigation, monitoring, management, construction, and remediation identified and required by Conditions II-A through C. The Executive Director shall consult with state and federal resource agencies to obtain scientific advice on the design, implementation and monitoring of the wetland restoration, behavioral barriers, and experimental reef for kelp.

2.0 *MITIGATION PROJECT* REVIEW

If requested by the Commission, a duly noticed public workshop will be convened *up to once a* year to review the status of the mitigation projects. The Commission *staff* will seek input from the permittee, representatives of the resource agencies, and the public.

The permittee will give a presentation on the previous year's activities; overall status of the mitigation projects; identify problems and successes related to the project plans, goals, and standards; make recommendations for resolving any outstanding issues; and review the next year's program.

The Executive Director *may* utilize information presented at the public review, as well as any other relevant information, to determine whether any or all of the wetland restoration performance standards have been met, whether revisions to these standards are necessary, and whether remediation is required for the wetland restoration project. Recommended revisions shall be subject to the Commission's review and approval.

~~CONDITION D: ADMINISTRATIVE STRUCTURE~~

~~1.0 ADMINISTRATION~~

~~Personnel with appropriate scientific or technical training and skills will, under the direction of the Executive Director, oversee the mitigation and monitoring functions identified and required by conditions II-A through C. The Executive Director will retain approximately two scientists and one administrative support staff to perform this function.~~

~~This technical staff will oversee the preconstruction and post-construction site assessments, mitigation project design and implementation (conducted by permittee), and monitoring activities (including plan preparation); the field work will be done by contractors under the Executive Director's direction. The contractors will be responsible for collecting the data, analyzing and interpreting it, and reporting to the Executive Director.~~

~~The Executive Director shall convene a scientific advisory panel to provide the Executive Director with scientific advice on the design, implementation~~

~~and monitoring of the wetland restoration and artificial reef. The panel shall consist of recognized scientists, including a marine biologist, an ecologist, a statistician and a physical scientist.~~

~~2.0 BUDGET AND WORK PROGRAM~~

~~The funding necessary for the Commission and the Executive Director to perform their responsibilities pursuant to these conditions will be provided by the permittee in a form and manner determined by the Executive Director to be consistent with requirements of State law, and which will ensure efficiency and minimize total costs to the permittee. The amount of funding will be determined by the Commission on a biennial basis and will be based on a proposed budget and work program, which will be prepared by the Executive Director of the Commission. If the permittee and the Executive Director cannot agree on the budget or work program, the disagreement will be submitted to the Commission for resolution~~

~~The budget to be funded by the permittee will be for the purpose of reasonable and necessary costs to retain personnel with appropriate scientific or technical training and skills needed to assist the Commission and the Executive Director in carrying out the mitigation and lost resource compensation conditions (II-A through C) approved as part of this permit action. In addition, reasonable funding will be included in this budget 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(s) convened by the Executive Director for the purpose of implementing these conditions.~~

~~Costs for participation on any advisory panel shall be limited to travel, per diem, meeting time and reasonable preparation time and shall only be paid to the extent the participant is not otherwise entitled to reimbursement for such participation and preparation. Total costs for such advisory panel shall not exceed $100,000 per year adjusted annually by any increase in the consumer price index applicable to California.~~

~~The work program will include:~~

~~a. A description of the studies to be conducted over the subsequent two year period, including the number and distribution of sampling stations and samples per station, methodology and statistical analysis (including the standard of comparison to be used in comparing the mitigation projects to the reference sites.)~~

~~b. A description of the status of the mitigation projects, and a summary of the results of the monitoring studies to that point.~~

~~c. A description of the performance standards that have been met, and those that have yet to be achieved.~~

~~d. A description of remedial measures or other necessary site interventions.~~

~~e. A description of staffing and contracting requirements.~~

~~f. A description of the Scientific Advisory Panel's role and time requirements in the two year period.~~

~~The Executive Director may amend the work program at any time, subject to appeal to the Commission.~~

~~3.0 ANNUAL REVIEW~~

~~A duly noticed public workshop will be convened and conducted by the Executive Director or the Commission each year to review the status of the mitigation projects. The meeting will be attended by the contractors who are conducting the monitoring, appropriate members of the Scientific Advisory Panel, the permittee, Commission staff, representatives of the resource agencies (CDFG, NMFS, USFWS), and the public. Commission staff and the contractors will give presentations on the previous year's activities, overall status of the mitigation projects, identify problems and make recommendations for solving them, and review the next year's program. The permittee shall report on the status of the behavioral barrier devices.~~

~~The public review will include discussions on whether the artificial reef and wetland mitigation projects have met the performance standards, identified problems, and recommendations relative to corrective measures necessary to meet the performance standards. The Executive Director will utilize information presented at the annual public review, as well as any other relevant information, to determine whether any or all of the performance standards have been met, whether revisions to the standards are necessary, and whether remediation is required. Major revisions shall be subject to the Commission's review and approval.~~

~~The mitigation projects will be successful when all performance standards have been met each year for a three year period. The Executive Director shall report to the Commission upon determining that all of the performance standards have been met for three years and that the project is deemed successful. If the Commission determines that the performance standards have been met and the project is successful, the monitoring program will be scaled down, as recommended by the Executive Director and approved by the Commission. A public review shall thereafter occur every five years, or sooner if called for by the Executive Director. The work program shall reflect the lower level of monitoring required. If subsequent monitoring shows that a standard is no longer being met, monitoring may be increased to previous levels, as determined necessary by the Executive Director.~~

~~The Executive Director may make a determination on the success or failure to meet the performance standards or necessary remediation and related monitoring at any time, not just at the time of the annual public review.~~