AES Southland, L.L.C.

March 9, 2006

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Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

Response to comments (January 23, 2006) on the Phase II 316(b) Proposals for Information Collection – AES Alamitos Generating Station and AES Redondo Beach Generating Station

Dear Mr. Bishop,

The 316(b) Proposals for Information Collection (PICs) for the AES Redondo Beach and AES Alamitos Generating Stations were submitted to the Los Angeles Regional Water Quality Control Board (LARWQCB, or Board) on August 31 and September 1, 2005, respectively. Verbal comments from the LARWQCB were discussed during a meeting on December 21, 2005 and written comments were received in January 2006. The following are AES Redondo Beach's and AES Alamitos' responses to comments received both verbally and in writing.

The LARWQCB's comments can be grouped into six general topics:

1. 316(b) Phase II compliance approaches;
2. Hydraulic Zone of Influence (HZI) determination;
3. Evaluation of technologies and operational measures;
4. Role of restoration in 316(b) Phase II compliance;
5. Summarization of physical and biological information;
6. Proposed new biological studies.

316(b) Phase II compliance approaches

Cooling water intake flow versus generating capacity:

In General Comment 1 and for Section 2.5 of RBGS, and Section 2.6 of AGS, the Board Staff comments that AES recalculate utilization capacity based on historical intake of water through the cooling water intake structures (CWIS) and not on actual electric generation. As discussed at the PIC meeting with the Board Staff, EPA specifically established the entrainment exemption based on capacity utilization. EPA's rational for providing the exemption is discussed in the second paragraph of page 41600 of the

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preamble to the Rule. In that discussion, EPA does not anticipate there is a proportional relationship between capacity utilization and cooling water flow for use of the 15% capacity factor exemption for entrainment. Rather it bases its decision to use capacity utilization on several factors that include:

- EPA determined that entrainment control is not economically practicable in view of the reduced operating levels of these facilities;
- "The total volume of water withdrawn by these facilities is significantly lower than for facilities operating at or near peak capacity";
- Operations tend to occur during periods of lower abundance.

Based on the language in the Rule and discussion in the preamble, AES for the purposes of consistency with the Federal Rule believes that evaluation of applicable performance standards should be based on capacity utilization. However, as discussed at the PIC meeting with the Board Staff, AES recognizes that it is important to evaluate applicable performance standards from both the intent as well as the letter of the Rule. Accordingly, AES plans to provide cooling water pump flow data in addition to capacity utilization data for any units that use this exemption. This will allow AES to demonstrate, consistent with the preamble, that the total volume of water withdrawn by such units at RBGS and/or AGS is significantly reduced compared to units operating at or near peak capacity and evaluate reductions in the context of seasonal fish and shellfish abundance.

It is important to note that the relevant capacity utilization period will be measured consistent with the "*capacity utilization rate*" as defined in the Rule. Thus, while in the PIC the 2000–2004 data was used for illustrative purposes, more recent data will be used to evaluate applicable performance standards for use in the Comprehensive Demonstration Studies (CDS). AES plans to ensure that for any units using this exemption that those units will comply with relevant definitions, including the definition of the CWIS, in addition to the definition of capacity utilization rate.

Rule's use of Performance Standards as a range:

The comments discuss that the Rule does not explicitly state a "minimum" target for the Rule's performance standards. Rather the Rule presents the performance standards as a range (i.e. 80–95% reduction in impingement and 60–90% for entrainment). EPA provides a discussion of the basis of the performance standards in Section VII, B of the preamble (beginning on page 41598). EPA explains that the use of a range instead of a single numeric standard is that the minimum end of the range is the level expected that facilities "could eventually achieve" while the higher end of the range is reflective of what many facilities "can and have achieved". The discussion further states: "*In specifying a range, EPA anticipates that facilities will select the most cost-effective technologies or operational measures to achieve the performance level (within the stated range) based on conditions found at their site, and that Directors will review the facility's application to ensure that appropriate alternatives were considered.*" For both Alamitos (AGS) and Redondo Beach (RBGS), consistent with the Rule, AES plans to evaluate technologies and operational measures discussed in the PICs and amendments to the PICs

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discussed in these comments to identify the most cost-effective compliance alternative(s) and option(s).

Definition of cooling water intake structure:

AES acknowledges that the EPA definition of a cooling water intake structure includes constructed waterways, which applies at the Alamitos Generating Station.

Taking credit for existing fish protection technologies and/or operational measures:

AES intends to evaluate the effectiveness of the velocity-capped intakes at the Redondo Beach Generating Station by conducting a site-specific study. The purpose of this study will be to determine what level of fish/shellfish protection is provided by the velocity cap in place at the Units 7&8 intake. AES believes this is the most accurate method to determine the effectiveness of the velocity-capped intakes. This will be accomplished by quantifying impingement during normal flow (existing intake) and reverse flow (existing discharge). Since the discharge structure is similar in design to the intake, but lacks a velocity cap, this will provide an estimation of the benefit afforded through use of the velocity cap. The Redondo Beach intake and discharge structures are separated by a linear distance of approximately 230 m. To limit bias in our estimation of velocity cap effectiveness due to potential differences in habitat between the intake and discharge, our analysis will be limited to those species entrained/impinged at both locations.

Consistent with the Phase II regulations, we will also supplement our analysis with site-specific results from other facilities where the intake and discharge used in such studies were closer to one another and in identical habitat types (such as at the AES Huntington Beach and Reliant Ormond Beach Generating Station).

Quantification of Live Returned Fishes – The Board Staff requests more information on the benefit of the historical practice of returning fish impinged at RBGS to the Pacific Ocean. As discussed in the RBGS PIC, for many years live impinged fishes collected at the RBGS traveling screens were returned to the Pacific Ocean. This procedure included a holding period of seven days prior to release. As indicated results of impingement sampling in progress include monitoring for the number of live fish in order to determine the potential benefit of a fish return system. Further discussion relative to this point is provided in Appendix B of the RBGS PIC.

Estimation of Benefit of the Submerged Offshore Intake with Velocity Cap - The Board Staff provides comments on the RBGS PIC relative to the evaluation of effectiveness the existing velocity cap and submerged offshore intake as an existing IM reduction technology. The effectiveness of submerged offshore intakes with velocity caps to reduce impingement has been documented previously at AES's Huntington Beach Generating Station as well as at Reliant Ormond Beach Generating Station and El Segundo Generating Station. The Rule specifically allows the calculation baseline to "*be estimated using: historical impingement mortality and entrainment data from your facility or another facility with comparable design, operational, and environmental conditions;…*" While AES could have relied solely on existing data from other facilities it opted to propose conducting a site-specific reverse flow study. AES acknowledges that unlike many other facilities with submerged velocity caps, such as Huntington Beach, the location of the Plant 3 (Units 7&8) intake and discharge at RBGS are in somewhat

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different environments. Both the Plant 2 (Units 5&6) and Plant 3 intakes are located within or at the entrance of King Harbor, while the discharge for Plant 2 is offshore and upcoast and the discharge for Plant 3 is within King Harbor. While some additional detail is provided on the Study in Appendix B, results of the site-specific study could determine that species differences between the intake and discharge locations are such that a meaningful comparison using the reverse flow study is not possible. Should this be the case, AES will estimate the benefit of the submerged offshore velocity caps using data from another facility with a comparable design, operational and environmental conditions consistent with the Rule.

HZI Determination

As requested in the Board's letter, AES will calculate the hydraulic zone of influence (HZI) for the RBGS and AGS intakes. The current sampling being done at both facilities can be used to estimate entrainment effects out to the radius of influence where flow is 0.01% of the flow measured at the intake.

Impingement mortality (IM) is much less dependent on changes in cooling water flow, which are directly proportional to the area of the HZI. Obviously, if cooling water pumps are not operating, there will be no IM, but other changes in pump flow do not usually correlate well with IM levels. The level of IM seems to be much more dependent on other factors related to the types and behavior of the species present, and environmental factors such as waves, surge, and levels of debris in the water.

Modeling AGS and RBGS Hydraulic Radius of Influence – General Comment 2 and comments on Section 2.4 of the RBGS PIC and Section 2.5 of the AGS PIC discuss the need to conduct hydrologic modeling to define the CWIS hydrologic Radius of Influence (ROI). The term ROI is not used in the Rule. The comments also state that: "*The ROI is used to develop a defensible sampling plan and compliance determination.*" Since the Rule is based on numeric performance standards for a reduction in baseline impingement mortality and entrainment, AES is not clear on how the ROI will be used by the Board Staff to make a "compliance determination".

However, AES agrees that for the purpose of ensuring that the sampling plan is defensible in terms of the location of entrainment sampling stations, the concept of the ROI is relevant and consistent with the requirement in 122.21(r)(2) to determine the intake's area of influence. As discussed at the PIC meeting, such modeling has already been conducted at RBGS Plant 3. AES will model the ROI for each facility. The model will identify the ROI on a "theoretical basis" using a depth averaged, radial flow boundary layer.

Assessing RBGS and AGS IM&E Impacts Within the ROI – The comments state that the cumulative impacts within the ROI should be evaluated. The federal Rule does not require addressing cumulative impacts and requires compliance based on a reduction in impingement mortality and entrainment as opposed to demonstrating a lack of adverse environmental impacts, including cumulative impacts. At the PIC meeting with the Board Staff, the Board Staff indicated their interest in the source waterbody data was to assist in decisions relative to the scaling of restoration projects. In the AGS and RBGS PICs, AES has laid out source waterbody sampling programs specifically to aid in the scaling of restoration measures in the event they are used for, or as part of, the compliance

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alternatives and/or options selected for either RBGS or AGS. AES believes the sampling programs described in the PICs, and PIC modifications included in this response to comments, while not required by the Rule, are considered directly responsive to the Board Staff's comments. See response to Appendix B on modifications or additional discussion provided relative to Board Staff comments and discussions at the PIC meeting.

Benefits of AGS Cooling Water Flow - The Board's comments discuss the statement in the PIC that there may be a benefit from AGS's cooling water flow in preventing the water in the harbor and marina from becoming stagnant. The comments indicate this statement in the PIC is not relevant to 316(b). As noted below in these comments and at the PIC meeting with the Board Staff held on 12/21/05, AES is adding flow reduction measures to the technologies and operational measures to be evaluated. To fully evaluate the costs and environment benefits of using flow reduction measures it will be important to consider the net environmental benefits. Under the cost-benefit analysis, the Rule specifically requires consideration of "ecological benefits." Thus, relative to flow reduction technologies it will be important to consider the impacts of significant flow reductions to the habitats within Los Cerritos Channel and Alamitos.

Evaluation of technologies and operational measures

Include analysis of alternative sources of cooling water:

AES agrees it is reasonable to evaluate use of alternative sources of cooling water for compliance and is adding that to the list of compliance alternatives and options to be evaluated.

Use of Fish Protection Technologies and/or Operational Measures under Compliance Alternatives 3 and 4

Flow Reduction Alternatives - The Board Staff commented that additional technologies including use of flow reduction during the spawning season, closed-cycle cooling (in whole or part) and variable speed pumps, should be evaluated. As discussed at the PIC meeting with the Board Staff, AES agrees it is reasonable to evaluate flow reduction options for both RBGS and AGS. Cost estimates will be provided for closed-cycle cooling on an intake or unit basis for each of these facilities. In addition to a discussion of capital costs and operation and maintenance (O&M) costs for closed-cycle cooling, feasibility of use in terms of space constraints and net environmental benefits will also be discussed. The cost and feasibility of flow reductions achieved through use of reduced pump usage or use of variable speed pumps are dependent on the densities of entrainable life stages during the spawning season. This analysis cannot be conducted until the 2006 entrainment study has been completed. As discussed in the PIC and these comments, all units at both RGBS and AGS have relatively low capacity factors with an associated reduction in cooling water pump flow compared to baseloaded facilities that operate closer to design flow. It is also AES's understanding that EPA is currently in the process of developing guidance under the calculation baseline relative to use of design versus actual flow. Such guidance should be available when the entrainment studies have been completed so that the analysis can also incorporate the results of that guidance.

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Fine Mesh Ristroph Screens – For both RBGS and AGS, the Board Staff made a number of comments relative to the need for further details regarding the evaluation of fine-mesh Ristroph screens, and for AGS a comment on a statement in the PIC regarding entrainment survival. Currently, AES is still in the process of developing plans for evaluating this technological alternative. AES plans to explore a number of options for acquiring this information. These options include exploring participation in planned evaluations by the Electric Power Research Institute (EPRI), coordinating with other companies with facilities in Southern California with similar species, as well as AES conducting such studies independently. The previous owner/operator of both the AES Alamitos and AES Redondo Beach Generating Stations conducted larval survival studies using fine mesh on several fish species common in both entrainment and impingement samples in southern California. AES will amend the PIC to provide the details of study plans for conducting studies relative to fine mesh Ristroph screens once plans are finalized and prior to initiating studies in order to get feedback from Board Staff. It is anticipated that such studies will not be initiated until the later part of 2006 as the current focus is implementation of new IM&E studies to verify dominant species and develop technically sound and cost-effective plans for implementation of these studies. For RBGS and AES, while the Rule requires the assumption of 100% mortality for entrainable life stages under the calculation baseline, the Rule does allow facilities to evaluate entrainment survival under the cost-benefit test if such data is based on an approved study. AES has not yet made a final decision regarding the need or potential benefit of conducting such studies, but may amend the PIC and propose such studies. Such studies could be used to compare current levels of entrainment survival with survival rates achieved with fine mesh screens to evaluate the net benefit.

Additional Board Staff Comments Specific to Alamitos – The Board Staff made several additional comments relative to Alamitos. These comments and AES responses are as follows:

- Broaden Evaluation of Barrier Nets to additional Units – AES agrees that this is reasonable and will expand the barrier net evaluation to the Unit 3 and 4 intake structures and Unit 5 and 6 intake structures;
- Page 24 Reference to Wide Slot Screens Relative to Entrainment – The referenced text on page 24 should is revised to read impingement rather than entrainment.

Role of restoration in 316(b) Phase II compliance

The Board Staff made several comments relative to use of restoration in the PICs that included:

- The need for a rigorous evaluation of technologies and/or operational measures prior to use of restoration;
- A lack of clarity regarding AES's statement that restoration is a preferred alternative;
- The evaluation of the amount of restoration necessary for compliance.

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AES, as stated in the PICs, fully agrees that prior to use of restoration facilities must demonstrate that use of restoration is either more feasible, cost effective or environmentally beneficial than the use of restoration. The rationale for AES's statement regarding restoration as a preferred alternative is based on a number of factors that include:

- The relative certainty of environmental benefits associated with many restoration measures relative to the uncertainty of any benefit associated with technologies and/or operational measures (see AES comments to the State Water Board);
- The relatively low capacity utilization and associated cooling water pump use at RBGS and AGS with associated lower entrainment;
- The relatively high cost of entrainment reduction technologies.

However, AES agrees that any final decision on compliance alternatives and options requires the results of new entrainment data that is currently being collected and the results of the evaluation of the feasibility, cost, and effectiveness of currently available compliance alternatives.

The Board Staff also made a number of comments on the PICs Appendix A discussion of restoration. Specific comments included:

- The Rule requirement that there be a watershed benefit from restoration measures;
- A statement that "*AES lists only mitigative actions that will augment an environmental resource and plan to demonstrate an economic equivalence between the impacted resource and the resource augment through restoration activities*";
- A comment regarding stocking of forage species and lack of support for the statement;
- A comment that the word "restoration" in the Rule is intended to restore impacted communities and that restoration measures produce and result in increases of fish and shellfish in the facility's watershed and the importance of protecting the watershed's structural and functional integrity.

AES's primary purpose for including Appendix A in the PICs was simply to provide a list of potential categories of restoration based on previous 316(b) projects implemented under various State 316(b) regulatory programs and to provide some suggestions for possible restoration measures that may be of interest for use in Santa Monica and San Pedro Bays. AES fully agrees that any restoration project selected for compliance with the Rule must provide a benefit to the watershed.

AES is not clear as to the basis of the Board Staff statement that AES plans to demonstrate an economic equivalence between the impacted resource and the resource augmented through restoration activities. At this point, AES has not proposed any specific restoration project for either RBGS or AGS nor has it proposed any specific methods selected for scaling of restoration measures if they are used for compliance.

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The Restoration Plan for demonstrating compliance with the Rule using such measures will be contingent upon the specific restoration measure or measures selected. Use of economic benefit equivalence, while one possible metric, may or may not be appropriate for any given restoration project.

The Board Staff are correct that AES did not provide the technical rational to support its statement that stocking of forage species is not likely to be of interest to federal and state fish and wildlife agencies. The Rule does discuss direct stocking as an in-kind restoration measure. Historically, the most abundant fish species in entrainment and impingement samples at southern California's coastal generating stations have been forage species. Examples of these include queenfish (*Seriphus politus*), gobies (Gobiidae), northern anchovy (*Engraulis mordax*), and combtooth blennies (*Hypsoblennius* spp.). These, and other forage species, have not historically been the subject of large-scale hatching/stocking efforts, probably due to their relatively low commercial value (anchovies excluded) and their small size. Other fishes, such as croakers and sea basses, have been successfully raised and stocked. AES is interested in analyzing potential stocking approaches as a means of complying with the 316(b) requirements.

While fish stocking has been found to be an effective fishery management tool, it has both advantages and disadvantages. Major advantages are the ability to target specific species to increase their abundance. Stocking is especially useful when this is done in conjunction with other fishery management programs and policies that address the limiting factors preventing natural recovery of stocked species. Stocking is also used on a put-and-take basis to provide fish for recreational harvest in many freshwater systems. One of the major disadvantages of stocking is concern over impacts to the population's gene pool. Stocked fish generally come from limited number of fish. In essence, large numbers of fish come from a relatively small number of adults. As a result, stocking of species with healthy fish populations (i.e. populations that are not considered in need of special fish management efforts) is currently not considered to be a sound fish management policy due to the potential to reduce the genetic variability in the gene pool. AES believes that an agency such as the California Department of Fish and Game is the appropriate agency to make decisions regarding direct stocking of species in California. Should the State determine that stocking of frequently impinged or entrained forage or other species is appropriate, AES is completely open to consideration of such projects.

The Rule discusses what is required in the Restoration Plan on page 41689 of the Rule. Should use of restoration be available for compliance, AES would prepare a plan that meets the requirements established at 125.95(b)(5). The Rule, as discussed in the Board Staff comments, does provide flexibility in terms of projects and allows consideration of both "in kind" restoration measures such as stocking as well as "out of kind" measures as long as it can be demonstrated that "out of kind" measures will provide a benefit equal to or greater than those achieved by in-kind measures. AES looks forward to a continued dialogue with the Board Staff regarding potential projects.

Summarization of physical and biological information

AES Alamitos entrainment study:

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The LARWQCB commented: "*it does not appear that an entrainment study has ever been performed at Alamitos's intake canals.*" AES Alamitos conducted an eight-week larval fish and invertebrate study at both intake canals in summer 2004. The results of that study are summarized in the AES Alamitos PIC, Attachment B, pages 8 and 9.

Utilization of historical information

The summarization of historical studies provided in Appendix B of both the AES Alamitos and AES Redondo Beach PICs was required as part of the 316(b) Phase II Final Regulations (§125.95(b)(1)(ii)). The regulations further specify that if historical data are to be used as part of 316(b) compliance, the extent to which they are representative of current conditions must be demonstrated, and that appropriate QA/QC procedures were followed.

AES Redondo Beach has proposed continuation of the monthly normal operation impingement sampling required by its NPDES permit. The sampling methods proposed for 2006 are similar to those used during NPDES studies the last few decades, except the approximate 24-hour sampling period is now divided into four 6-hour periods to provide information on diel variation in impingement rates. The QA/QC measures employed during sampling are described in Section 2.2.3 of the AES Redondo Beach IM&E Sampling Plan (page 8). The NPDES normal operation and heat treatment impingement sampling methodologies are summarized in Section 2.2.1 (page 6), and the results are summarized in Section 2.2.2 (pages 7–8). The proposed methods for the 316(b) IM study, including the QC program, are outlined in Section 3.1 (pages 13–18) of the AES Redondo Beach IM&E Sampling Plan. The relevance of historical results to current conditions cannot be determined until the "current data" – 2006 IM data – are collected. This will be evaluated in the IM&E Characterization Study to be submitted as part of the AES Redondo Beach Comprehensive Demonstration Study.

Proposed new biological studies

Collection of impingement survival data:

The SEA Lab (Redondo Beach, California) has been attending heat treatments at several southern California generating stations for the last few years. This has allowed them to collect live animals from impingement samples for use in their educational exhibits. As part of this process, they began keeping track of daily survival from impingement through a 168-hour period (7-day period). Data were collected for individual fishes and shellfishes to determine 7-day post-impingement survival rates. AES proposes to continue this sampling data collection in 2006.

The impingement survival study proposed for RBGS will evaluate the survival of impinged organisms for up to seven days post-impingement. These animals will be collected and held by the SEA Lab (Redondo Beach, California) at AES Redondo Beach Generating Station. The facility uses ambient seawater from the AES Redondo Beach cooling water intake system. Any visible signs of damage/stress to each individual will be documented and reported. Only those individuals that appear healthy upon return to the ocean will be assumed to have survived.

Normal operation impingement sampling methodologies:

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The Impingement Mortality sampling methodologies described in the AES Alamitos IM&E Sampling Plan (p. 12) and AES Redondo Beach IM&E Sampling Plan (p. 15) propose to rotate the traveling screens once every six hours over a 24-hour period. Normal operation sampling conducted for NPDES compliance at these facilities has historically consisted of sampling only once every 24 hours to determine a daily impingement rate. However, the 316(b) Phase II Final Regulations (§125.95(b)(3)(ii)) specifically require a characterization of the "*diel variations in impingement mortality and entrainment...*" Operation of the traveling screens at approximate six-hour intervals was proposed to provide information on the diel variation in impingement rates.

The IM&E Sampling Plan for the AES Alamitos Generating Station proposed the possibility extended sampling in the event of an extreme impingement event (Attachment B, p. 12). Based on past studies at Alamitos, we believe this is unlikely, but in the event there was a large influx of fish/shellfish, AES Alamitos would like to document this event to the extent possible. At present we believe the weekly IM sampling currently underway is sufficient to quantify and characterize impingement as required by the 316(b) Phase II Final Regulations.

We have not proposed to subsample when the abundance of a particular species is 30 individuals or higher. When there are less than 30 individuals of a given species, each of the individuals is weighed and measured. When there are greater than 30 individuals, the length of up to 200 individuals is recorded, but only 30 are individually weighed. Subsampling will only occur in the event of larger influxes of fishes/shellfishes and/or debris.

Heat treatment impingement sampling methodologies:

Heat treatments are currently uncommon at AES Alamitos, but are more likely at AES Redondo Beach. A description of the heat treatment process can be found in the IM&E Sampling Plans for both AES Alamitos (pages 7 and 13) and AES Redondo Beach (pages 6 and 13). Impingement sampling during heat treatments has been required by the LARWQCB in the NPDES permits for each facility, and the effectiveness of heat treating is further described in Graham et al. (1977).

Immediately prior to a heat treatment, the traveling screens are rotated and rinsed of any material that may have accumulated during normal operations. This material is then discarded. By movement of butterfly valves or stop-logs within the cooling water intake system, heated discharge water is redirected through the cooling water system such that fouling organisms, invertebrates, and fishes succumb to the heat water. Ordinarily the target temperature is 40.5°C (105°F), which is maintained for a period of at least one hour. The time it takes to reach this temperature within the cooling water system is affected by several factors, including ambient intake temperature and the ability of the station to increase discharge temperature.

During this process, the traveling screens are continuously rotated and all organisms that succumb to the heated water are impinged. The traveling screens continue rotating until the heat treatment is complete and the temperature within the cooling water system returns to normal. The organisms (fishes and macroinvertebrates) are then identified to the lowest practical taxonomic level and enumerated. Up to 200 individuals of each fish

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species are individually measured to the nearest millimeter; up to 30 individuals of each shellfish taxa are also measured. Individual weights are recorded for up to 30 individuals of each taxa, and when there are more than 30 individuals, the remaining are batch-weighed.

Graham, J.W., J.N. Stock, and P.H. Benson. 1977. Further studies on the use of heat treatment to control biofouling in seawater cooling systems. Oceans '77:23A1-6.

QA/QC Information:

The Quality Assurance/Quality Control (QA/QC) procedures for the IM sampling are described in both the AES Alamitos IM&E Sampling Plan (page 14) and the AES Redondo Beach IM&E Sampling Plan (page 18). While these describe the quarterly QA/QC sampling to be performed, there are more aspects of the program that are not described.

Impingement:

- Field leaders are experienced with impingement of southern California fishes and shellfishes;
- All impingement personnel review written procedures prior to field sampling;
- All impingement personnel review a specialized field taxonomic guide of the species most commonly impinged. The guide highlights the distinguishing characteristics of the commonly impinged species;
- All field data are verified after completion of each survey;
- Voucher specimens are returned to the laboratory for confirmation of identity;
- All field data are double-entered into an MS Access database. The two sets of entered data are checked against one another for data entry errors;
- Errors are corrected and data re-checked as required.

Entrainment:

- All entrainment personnel review written procedures prior to field sampling;
- At each entrainment/source water station, samples are voided and recollected if any of the following occur: (1) potential flowmeter malfunction, (2) damaged/torn nets, (3) large amounts of sediment in the codends, (4) any other gear failure, (5) any situation that prevents reliable collection of data, or (6) any situation that jeopardizes the safety of sampling personnel;
- Flowmeters are calibrated quarterly;
- Flowmeter readings are checked in the field to ensure both bongo nets are filtering similar volumes of water;
- Nets are inspected and repaired as necessary prior to each survey;
- Samples are transferred to containers with both internal and external labels.

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The QA/QC program for sample processing is described in detail in the AES Alamitos and Redondo Beach PICs.

Impingement Mortality and Entrainment data analysis:

All entrained and impinged fish and shellfish will be identified and enumerated as required by the Phase II Final Regulations. In addition, entrainment estimates for all fish and shellfish will be used in the baseline calculations that will be presented in the CDS. Those taxa that are analyzed in detail (e.g. demographic modeling or Empirical Transport Modeling) will be selected after analysis of the final data set. At other power plants over the last ten years detailed analyses have been done on the most abundant fishes and shellfishes collected during impingement and entrainment sampling, usually the species comprising the top 90-95% of the total abundance. In addition, other commercially or recreationally important species present in the samples that are in reasonably high numbers were also included in the more detailed assessments. This approach is used because most of the species are collected infrequently and in very small numbers during the sampling. The large sampling variance associated with these species results in high levels of uncertainty for any estimates of IM&E effects. As a result, previous studies have tried to include a suite of species in the detailed assessment that are representative of the different habitats potentially affected by IM&E. These species can then be used to estimate the average effects on other species that may not have been included in the detailed assessment.

Entrainment sample processing:

Fish eggs are presently being processed in entrainment samples. All fish eggs in these samples will be identified to the lowest practical level and enumerated.

AES Redondo Beach source water stations:

The two offshore source water stations located downcoast from King Harbor (Stations O5 and O6) were shifted offshore to be more consistent with the study off the Scattergood and El Segundo Generating Stations.

To our knowledge and to the extent possible AES has addressed and answered the Regional Boards comments and considers these responses to be amendments to the existing Proposals for Information Collection. AES looks forward to working with the Regional Board in implementing the Phase II 316(b) regulations. If you have any questions or require further assistance, please fell free to contact me at (562) 493-7384.

Sincerely,

Steve Maghy

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