Charge to the Executive Science Board of the CALFED Bay-Delta Authority as approved by the Authority on August 14, 2003

An Independent Science Board is called for in the CALFED ROD (August 2000) to ensure the application of world-class science to the California Bay-Delta system. Similarly, the Act requires an Independent Science Board to provide this function.

The Independent Science Board would be a standing board of distinguished experts (scientists and engineers) who would directly advise the Authority and BDPAC, as appropriate, on the application of science and the effectiveness of science practices across the Bay-Delta Program. The Independent Science Board would not be asked to pass direct judgment on the success or failure of Bay-Delta programs, but to provide insights that can make the science underlying those programs, the application of that science, and the technical aspects of those programs the best they can be. This includes overseeing the goal of explicitly characterizing the status of knowledge and identifying assumptions and uncertainties. Independent Science Board members would be paid. Many of the members of the Independent Science Board will also be members of existing standing boards and technical panels. The Board as a whole should thus include the necessary expertise to cover the breadth of California Bay-Delta issues. It is expected that the Independent Science Board will grow beyond the initial appointees to address the necessary expertise, but will be no larger than 25 members total.

The specific charge of the Independent Science Board is outlined as follows:

1. Understand the technical underpinnings of the Bay-Delta Program. Work with the Lead Scientist and the Science Program to effectively incorporate science into large scale water management and restoration programs. As a group, the Independent Board should have and sustain an up-to-date understanding of the Authority's proposed actions and the state of the science applicable to those actions.

2. Evaluate and provide insights on progress toward addressing underlying premises of the Bay-Delta Program. Implicit in the CALFED ROD are basic premises about balanced progress toward achieving the four goals of the program. Can outcomes of ecosystem restoration balance outcomes of modifications of water diversion? Should ecosystem restoration proceed across the Delta or avoid areas influenced by stressors such as the diversion pumps? How does the program balance the benefits of bioavailable carbon genesis in restoration projects with the adverse consequences of DOC for drinking water? An important mission

of the Board is to explicitly identify the fundamental premises and help the program track progress toward addressing the technical aspects of these.

3. Annually evaluate the science agenda. Annually provide insights and evaluation on the implementation of a strategic, balanced, and proactive science agenda across the entire program. Evaluate technical priorities, adequacy of funding, peer review, use of outside experts, and the successes and weaknesses of the investments in gaps in scientific knowledge. Evaluate progress on the development of an authoritative body of knowledge relevant to each goal and program of the Authority. Help identify where important gaps in knowledge or the science effort might exist, with an emphasis on considering interconnections among different elements of the Program.

4. Assure balance and credibility of analyses. Provide insights in an annual report as to whether the analyses of the state of the science being applied to specific issues under the purview of the Authority are balanced and credible, including insights on how to improve such analyses in general or in the case of specific issues.

5. Approve performance measures. Evaluate and provide final approval of performance measures for the Bay-Delta Program, assuring scientific rigor and balanced interpretation of each measure and its updates.

6. Assure science is used in all programs. Compare development of science in different standing programs of the Authority and give advice on how to move science forward in all programs (including advice on selection of experts of advisory functions or standing boards; evaluation of science priorities).

7. Identify impending issues and significant interconnections. Help the Authority anticipate issues and identify areas of interconnection among programs that might otherwise be missed by more specialized boards and panels; and suggest solutions, where needed, to interconnecting issues (e.g., technically-based actions, workshops, reviews, RFPs, program collaborations, or new research).

8. Work with the National Research Council. Work with National Academy of Sciences and National Research Council board representatives to develop broad questions suitable for outside review by the National Research Council.

9. Help select the Lead Scientist. Working closely with the Director, the Independent Science Board will lead and oversee the selection process when the Lead Scientist position is vacant. This will include making a

recommendation to the Authority on the nomination of potential candidate(s).

The Independent Science Board's proposed role is one of overview rather than initiating reviews. The Independent Board cannot rescind the technical results of standing boards or technical panels or any other working group. But the Independent Science Board will review the activities of those groups for balance, rigor, and use of authoritative science. It is expected that individual standing boards will continue to act with independence with regard to their areas of assignment; although they might consult with the Independent Science Board for insights and suggestions to aid these activities. Like all technical expert bodies, the Independent Science Board will not be asked to make policy decisions, but it will provide insights on how to improve credibility, improve clarity, and advance the debate about Bay-Delta issues, as well as how to better connect science and management.

The Independent Science Board will be expected to produce a written report once every two years on the state of science across the entire Bay-Delta Program. Board members may be asked to testify on their evaluations before the Legislature or Congress. The Board will meet approximately three times per year unless experience dictates a greater or lesser meeting frequency. Membership of the Board will be constant for the first four years, and then a progressive rotation of 5 board members per year will begin. Board membership for an individual may be renewed up to two times at the request of the Lead Scientist, with concurrence from the Director and the Authority.

Definition of Independent Expert

Independent experts are defined by their academic credentials in specific areas of needed expertise. Except in specifically defined circumstances, they have little or no direct stake in the issue for which they are advisors. The experts are typically paid for their work by the Authority, unless they are Federal or State employees (whose hours may be reimbursed to their employer).

Typical activities of independent experts include the following:

1. Bringing detailed expertise to bear on scientific issues of concern. This may include characterizing the status of knowledge about critical issues; identifying key scientific issues, or helping staff prioritize issues. Other duties include organizing or participating in workshops on critical subjects, and/or identifying, proposing, prioritizing, or writing white papers or reviews. Some expert advisors have identified pending issues before they become critical or worked directly with managers, staff biologists, or operating engineers to help them take into account broader scientific practices, principles and implications.

2. Reviewing, advising, or providing technical insights for documents, proposals, or programs. Programs can include either issues that require multiple studies or proposals for an action by implementing agencies, such as changes in conveyance, threats to levees, and restoration strategies.
3. Analyzing existing data related to specific actions or programs as relevant to reviews or advising as described above.

4. Designing, conducting, or leading studies relevant to accomplishing Program goals that are not in conflict with review roles.

Qualifications of Independent Experts

Independent experts are agents for facilitating communication between the Authority and the scientific and management community. Therefore, they must have the highest level of expertise and stature so that their advice is respected by the public, scientists, agency technicians, agency staff, BDPAC, and management. The ability to sustain a balanced view of issues is just as important as stature in an independent expert. It is critical that the expert (or advisor) have a reputation for willingness to listen to opposing views, willingness to change one's mind in the face of evidence contrary to an original view, and willingness to separate one from biases associated with employment or professional associations. Thus, invitation to be an independent expert requires all or most of the following:

- Scientific stature. Evidence of stature in the broad scientific community (invited contributions to workshops, conferences or panels; evidence of scientific leadership; awards, membership, or important committee assignments in prestigious organizations).
- Advisory experience. Experience advising top managers and promoting constructive uses of environmental science, especially in arenas relevant to water management and/or ecosystem restoration.
- Technical publications. A strong record of publication in peer-reviewed scientific literature in an area of expertise relevant to the issues at hand.
- Relevant knowledge. Evidence of extensive and/or intensive working knowledge of a scientific field related to the specific issues of concern.
- People skills. Evidence of abilities to work and communicate well with people.
- Reputation for achieving balance. Evidence of ability to weigh issues in a balanced manner when in an advisory capacity.
- Interdisciplinary skills. Evidence of ability to work and think across disciplines, and/or experience in working with and advising on complex issues that integrate multiple disciplines.