A REVIEW OF THE INTERAGENCY ECOLOGICAL STUDY PROGRAM AND RECOMMENDATIONS FOR ITS REVISION

BY

The Ad Hoc IESP REVIEW TEAM

Perry L. Herrgesell - Chairman
Martin A. Kjelson - member
James Arthur - member
Leo Winternitz - member
Patrick Coulston - member

for

The Coordinators of the Interagency Ecological Study Program

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TABLE OF CONTENTS

SECTION 1

INTRODUCTION

The Interagency Ecological Study Program was initiated in July 1970 by a Memorandum of Agreement between four state and federal agencies (California Department of Fish and Game, California Department of Water Resources, U.S. Bureau of Reclamation, and the U.S. Bureau of Sport Fisheries and Wildlife). This Memorandum of Agreement was an outgrowth of testimony at Water Rights Hearing 1379, which indicated that construction and operation of the State Water Project and Federal Central Valley Project may have been contributing to fish and wildlife problems in the estuary. Testimony also indicated a need for more information regarding environmental needs of fish and wildlife and ways to design and operate the water projects to minimize detrimental effects on those resources. As a result, studies were initiated by the member agencies.

During the first 10 years of the program, goals and objectives were clear and studies were focused. Engineering and biological studies were directed towards solving mutual problems that were prohibiting full development of the state and federal water projects. A significant result of these efforts was the recommendation that a peripheral canal be constructed to allow full development of the projects and substantial environmental protection, as well. During 1982, an initiative process cause a cessation in Peripheral Canal planning. IESP efforts since then focused on improving conditions through operational changes and barrier evaluations.

Since 1982, four more state and federal agencies have joined IESP, the budget has increased dramatically, and new study elements were added, while old ones continued. But most importantly, the political, planning, sociological, and environmental climates have changed dramatically. During this time, project planning faltered (due to lack of specific direction), regulatory and environmental compliance requirements have dictated program directions, and most importantly, biological resources in the estuary continued to decline stimulating the imposition of the endangered species act as well as the development of other federal legislation meant to reverse the declines. Concurrently, state water quality and quantity regulatory processes attempted to resolve problems in the estuary but have largely failed. In short, problems in the estuary became more acute and satisfactory solutions have become more evasive. All this pointed to the need for a review of the IESP that would ensure that it could remain a relevant force in the

development and protection of estuarine water supplies and associated biological resources.

In order to carry out this review, the IESP Coordinators commissioned an ad hoc Review Team to perform a complete review of the program and provide them with any recommendations necessary to ensure that the program remain effective and relevant to current planning and resource conditions. This report describes the findings and recommendations of this Review Team, and has been written such that the reader can easily read parts or all of the report depending on his/her level of interest.

The remainder of this introduction will briefly describe the review process and direct the reader to various sections of the report for more detailed information.

The Review Team laid out a three phased process which when completed would result in implementation of a revised IESP. Phase I included review of existing information, development of a new conceptual program, development of a strategy to be followed to complete an "Implementation Plan", preparation of this report for the Coordinators, and review by the Coordinators. This phase was to be completed by June 9, 1993. Phase II of the process is to include implementation plan development (i.e. broader staff involvement designed to flesh out necessary details to make the recommendations implementable). This phase is scheduled to be completed by November 15, 1993. Phase III, implementation of the recommended revised program, is scheduled for January 1994.

The first task of the Review Team was to develop a group of assumptions that would guide their review process. Section 2, page 5, provides a short description and listing of these assumptions. After the assumptions were developed, the team began reviewing the existing elements of the program. This involved a rigorous review of each Program Element Fact Sheet and Workplan for all of the 31 existing program elements within IESP. During this process, critical questions were asked about the objectives of the program (see Figure 1, page 8). Concurrent with this element review process, the Review Team developed a description of the key management issues that are currently, or will be, influencing IESP. The Team recognized that it had to understand these influences so that they could determine if existing elements and activities were relevant or if new program elements were needed to respond to these influences. The description of key management issues is presented in Section 3, page 9.

As the Team reviewed the Fact Sheets and Workplans, questions were raised about the element activities. It became obvious that the Team would need to talk with each element project leader to resolve these questions. The Team generated a

list of questions to be asked of each leader and a list of questions specific to their element activities. At this point, the element project leaders were interviewed by the full team and the actual element objectives were verified.

A second aspect of program evaluation entailed seeking input from management representatives from DWR, USBR, and USFWS in addition to representatives from the state and federal water contractors (i.e. those who "pay the bills"). The Team met with these groups over several days to solicit their comments/criticism about IESP.

The fact sheet review, project leader interviews, manager interviews, and contractor discussions resulted in the generation of many comments about IESP (see Appendix 1 for a listing of these comments). It also allowed the Team to make various observations about each program element under review. The Team listed these observations along with the current objectives for each element. These observations eventually provided the basis for recommendations specific to each element. See Section 7, page 31 for a complete list of element objectives and observations.

In reality, this collection of element observations as well as the collective comments provided by the interviewees provided the basis for a problem identification process used by the Team to evaluate the whole program. The Team distilled all this information into a summary of significant issues that needed to be addressed. The results of this problem identification phase are provided in Section 4, page 14.

The development of solutions and/or recommendations to resolve IESP problems was accomplished at two levels. First, the Team developed specific recommendations to be considered for each individual program element. Again, note that these recommendations were derived from the element observations generated by the Team. Additionally, the Team provided justifications to backup the element recommendations. (See Section 7 for a complete listing of element recommendations and justifications.)

The second level of solution development occurred at the programmatic level. The Team developed solutions to problems that must be treated at a program level (i.e. policy, procedures, management or structure). These solutions were apportioned among the issues developed during problem identification. See Section 5, page 16 for a listing of these programmatic solutions. It was the intention of the Team that the programmatic solutions and elemental recommendations were to be compatible and not in conflict. SECTION 5 IS THE CORNERSTONE OF THIS REPORT. IT INCLUDES ALL PROGRAMMATIC RECOMMENDATIONS.

One of the programmatic solutions identified by the Team was structural. The Team recommended that IESP be reorganized. A graphic depiction of the recommended structural and a functional description of how the structure should work is presented in Section 6, page 24. This section has a description of the roles of all participants in the new structure.

In conclusion, if these solutions and recommendations are accepted by the Coordinators, the Team believes that a revised program could be implemented in January 1994.

SECTION 2

ASSUMPTIONS THAT GUIDED THE IESP REVIEW PROCESS

One of the first tasks that the Review Team completed was the development of a group of assumptions that would guide their review process. These assumptions, although not adhered to as law, provided a general framework within which the team confined their investigations and activities. In retrospect, some of the assumptions were not found to be totally valid or accepted by all review process participants. For example, assumption #9 (see below) states that "an overriding principle should be that Water Project related activities and impacts receive highest priority in study review or formulation." After our review/interview process we found that this assumption was not accepted by most management level people we talked to.

The complete list of assumptions is as follows:

1. The IESP is 22 years old, and indications are that it needs an infusion of new life. Old programs have continued without careful revision, and new programs have many times been added on to existing programs (sometimes without deference to duplication). It is time to take a close look at all IESP efforts and determine if these efforts are still relevant in the environmental, political, and planning arena of the 1990's.

2. The initial review of the program needs to be simple, yet rigorous and without bias or favoritism.

3. The review process should be completed by the fall of 1993 so that program modifications can be described in the 1994 workplans and implemented in early 1994.

4. It is recognized that this process may result in major program reorganization within some agencies and even between agencies.

5. As a result of this critical review of the various programs, significant conclusions or findings may emerge dictating new program directions or agency policy.

6. To the extent possible, revised efforts should not require major additional funding.

7. The Revision Team will have freedom to consult with all coordinators, project leaders, and staff members during the review process.

8. During the review process, the Revision Team should be cognizant of agency missions, but these missions should be superseded by objectives and missions of the IESP. (It is implicit that IESP should advance the missions of all member agencies.)

9. An overriding principle should be that Water Project related activities and impacts receive highest priority in study review or formulation.

10. Generally, IESP programs are either compliance monitoring or special studies. At least the following questions should be considered when reviewing these types of programs.

    Compliance Monitoring Baseline Programs

    a. Are these baseline efforts RELEVANT?

    b. How FREQUENT are efforts needed?

    c. What SPATIAL COVERAGE is needed?

    d. Is it possible to INCORPORATE these efforts with other efforts?

    Special Studies

    a. Is the work RELEVANT?

    b. What LENGTH of effort is needed?

    c. Is the HYPOTHESIS clear and concise?

    d. Can it be done?

11. To the extent possible, program elements should aim to improve fisheries on the short and long term, as well. Actions should be emphasized that would improve the fishery not just study it.

12. When Special Studies are proposed, a testable hypothesis should be developed that could either be accepted or rejected.

13. A list of key management plans/projects should be developed and this list should guide program element development.

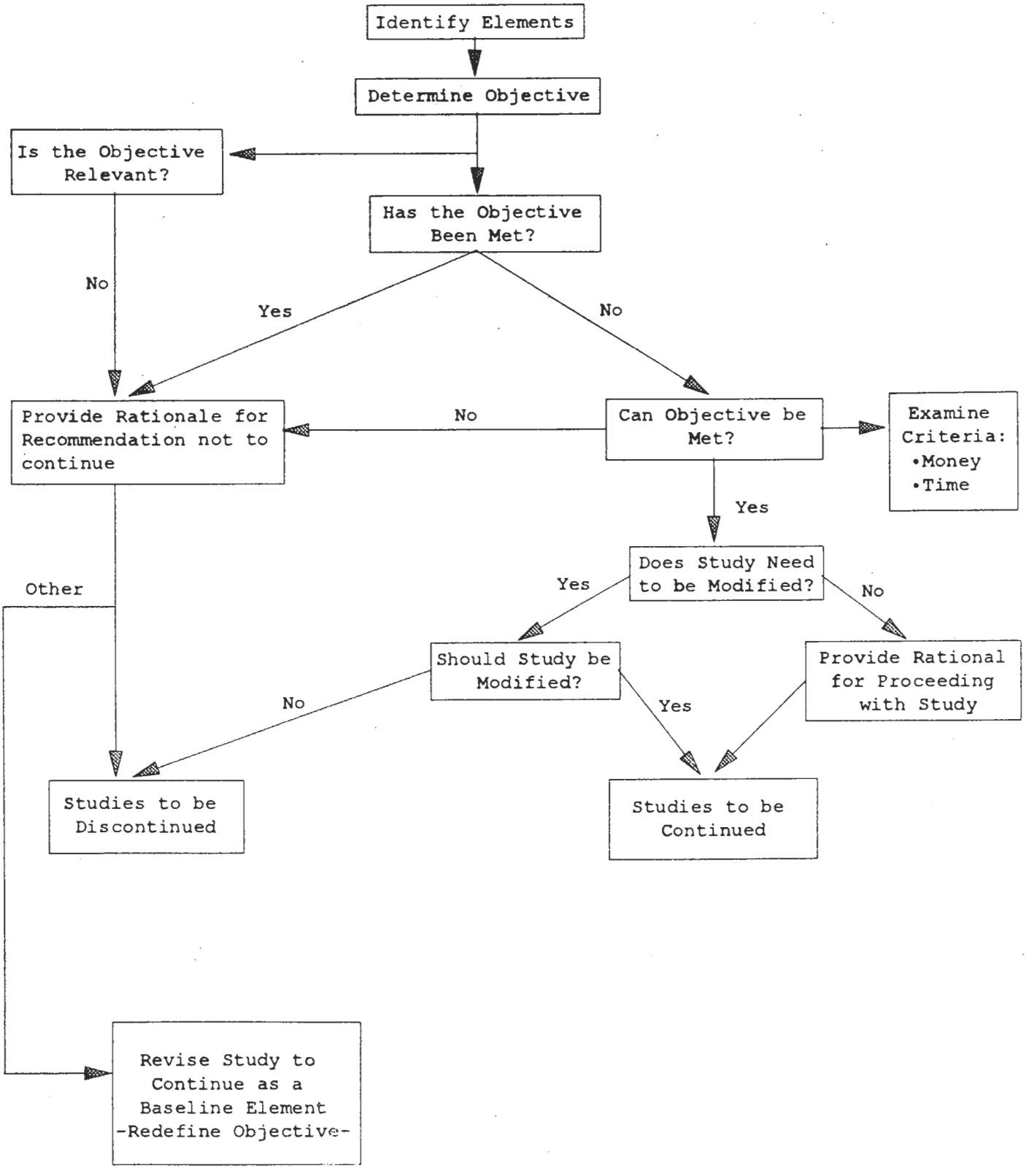
14. An outcome of the IESP Program Review will be the delineation of certain "facts" which should be recognized and/or accepted as findings of the IESP.

15. A criteria to evaluate a program element should be how well it evaluates management/mitigation actions.

16. The program should not do monitoring just for the sake of monitoring. There should be a clear purpose.

As part of the assumption development process, the Team developed a format to be used while reviewing program elements. This format (Figure 1) was used by the Team as it reviewed the element fact sheets, element workplans, or interviewed the project leaders. As can be seen, this format is similar to "dichotomous key" and provided a basis to evaluate the elements with key emphasis being placed on the relevance of or the ability to meet the element objectives.

Figure 1. Format Used to Review Elements of IESP.



SECTION 3

KEY MANAGEMENT ISSUES THAT INFLUENCE IESP

A major reason for the proposed revision of IESP is to ensure that it can better address member agency management needs relative to the Endangered Species Act, State Water Resources Control Board Water Rights Decisions, the Central Valley Project Improvement Act, and the activities associated with the San Francisco Estuary Project, and the Bay Delta Oversight Council. This section of the report is meant to briefly describe basic needs under these management issues as they relate to IESP. These needs should guide program element review and revision for both monitoring and short and long term studies.

Endangered Species Act

Currently, winter-run chinook salmon and delta smelt are the only fish species listed under this act in the Estuary. Longfin smelt and splittail have recently been proposed and others may follow. The needs of managing these species basically fall into monitoring their seasonal and annual abundance, and gaining basic life history information to better understand the factors controlling their abundance. Such information is needed to develop management actions to restore these populations and enable their removal from listed status.

Our present IESP programs on both winter-run and Delta smelt are quite comprehensive but both are in need of regular evaluation to assure their effectiveness. Ongoing discussions by the winter-run loss and monitoring group and the Delta smelt conferencing process and Delta systems group are providing forums for such program evaluations. Reference to the Act itself, specifics of biological assessments, conferencing reports, biological opinions and other documents also are needed to better guide our program development of endangered/threatened species.

Water Rights Decision 1630 (December 1992 Draft)(At this time, the majority of IESP activities are being conducted under D-1485.)

While this is a draft decision at this time and has not been adopted, this discussion assumes most, if not all of the issues within the Decision that are relevant to the IESP, should be addressed. Such issues primarily fall into compliance, real time monitoring activities, and the assessment of the success of implementing D-1630.

The D-1630 monitoring and reporting program is discussed on pages 62-65 of D-1630. The Decision asks for a monitoring program which will be a revision of the D-1485 monitoring program. The new proposed program is due November 1993 and shall include: 1) a baseline program of physical and chemical parameters sufficient to establish compliance with the Decision ("water quality monitoring"); 2) an updated summary of all relevant biological surveys that describe trends in estuarine resources and recommendations for needed biological surveys ("fishery monitoring"); and 3) a program to manage the Estuary on a real time basis (including equipment, locations and coordination needs).

Compliance monitoring, real time monitoring and baseline monitoring stations are listed in Section A, B and C respectively of Table III of D-1630.

The assessment needs under D-1630 are diverse and appear to fall under a variety of issues. These include: 1) the basic monitoring to assess biological trends which should reflect the effects of implementing the protective measures under D-1630 (pages 74-82) and the potential need to modify the Decision (pages 68-69). An annual workshop in November would be held to consider possible needs for change, 2) the need to evaluate the Board's long term goals (pages 69-70) such as achieving self-sustaining fishery populations, and 3) Evaluation of measures to achieve long term goals (pages 70-71). This area covers a broad range of issues relevant to the IESP to include screening, transport flows, diversion points (peripheral canal assessment?) and hatchery programs.

CVP Improvement Act

This Act is meant to implement specific management actions to improve fish and wildlife in the Central Valley and fisheries in the Trinity River. While the emphasis is on action, not further study, there are a variety of resource, planning, monitoring assessment and investigations that are relevant to the IESP. While the Department of Interior, under joint leadership of the Fish and Wildlife Service and Bureau of Reclamation, has responsibility to implement the Act, it is evident that both agencies will need assistance by other Federal and State agencies, hence the link with the IESP. A review of Section 3406 of the Act, which pertains to fish, wildlife and habitat restorations, emphasizes two primary activities that appear most directly related to the IESP. These are: 1) Section 3406(b)(1) - Development within 3 years, of a program to double natural production of anadromous fishes in the Central Valley by the year 2002, and 2) Section 3406(b)(16)

-Establishment of a cooperative State/Federal comprehensive monitoring program to assess the results of implementing the actions under this Act to restore fish and wildlife.

There are a variety of restoration actions that relate directly to the Estuary and also encompass present or potential IESP activities. These are included under Section 3406-b: (b-2), Define use of 800,000 AF of CVP yield to restore fish, wildlife and habitat; b-4, Develop program to mitigate fish impacts at Tracy Pumping Plant; b-5, Develop program to mitigate fishery impacts at Contra Costa Canal Pumping Plant; b-8, Use short pulse flows to increase migrating anadromous fish; b-14, Develop program to modify operation and/or provide new control structures at Delta cross channel and Georgiana Slough when striped bass egg, larvae and juveniles approach those two intakes; b-15, Construct/operate a barrier at the Head of Old River to increase survival of salmon smolts; b-18, Develop measures to restore striped bass fishery; b-21, Develop measures to avoid losses of juvenile anadromous fish due to unscreened diversions.

Other subsections refer to issues that also relate to the IESP such as Section 3406(e) - Supporting investigations (5 year time period): e(1) - Evaluate measures to maintain suitable temperatures for anadromous fish in the Delta; e(5) - Evaluate measures to modify operations and/or provide new control structure at the cross channel and Georgiana Slough to assist anadromous fish migration (in addition to striped bass under 3406-b-14).

Section 3406-g deals with Ecosystem/operations model development to evaluate the effects of water facility operations in the Sacramento and San Joaquin (and Trinity) water sheds. IESP expertise would likely be used in this effort.

San Francisco Estuary Project

Growing public concern for the health of the Bay and Delta led the U.S. EPA to establish the San Francisco Estuary Project (SFEP) in 1987. SFEP, part of the U.S. EPA's National Estuary Program, is a five-year cooperative effort to promote more effective management of the San Francisco Bay-Delta Estuary and to restore and maintain the Estuary's water quality and natural resources. The project is jointly sponsored by the U.S. EPA and the State of California. It is financed by federal appropriations under the Clean Water Act and matching funds from the state and local entities. The project has brought together over one hundred representatives from the private and public sectors from all twelve Bay-Delta counties (including many IESP

member agencies). After five years, the SFEP has reached its goal of developing a Comprehensive Conservation and Management Plan (CCMP) for the Estuary.

The CCMP presents a blueprint to restore and maintain the chemical, physical, and biological integrity of the Bay and Delta. This blueprint has been adopted by the Project and forwarded to the Governor and the administrator of the U.S. EPA. Formal implementation of the plan may commence after concurrence by the Governor and approval by the U.S. EPA administrator.

The efforts associated with this plan focus on five critical areas of environmental concern. All of these are of interest to IESP. They include:

1. Decline of biological resources
2. Pollutants
3. Freshwater diversions and altered flow regimes
4. Dredging and waterway modification
5. Intensified land use

The CCMP, if approved, would establish the San Francisco Estuarine Institute (SFEI) and would develop and implement a Regional Monitoring strategy, which would integrate and expand upon existing efforts and will eventually be part of a comprehensive Regional Monitoring Program (RMP). It is this integration and expansion of "existing efforts" which relates to IESP. It is incumbent upon IESP to be responsive to the needs of the RMP and be available to cooperatively work with them.

Bay-Delta Oversight Council

The Governor of California recently created the Bay-Delta Oversight Council (BDOC). This body is responsible for assisting and advising the state administration in designing its comprehensive program to resolve the many problems now affecting the Estuary. The mission of this group is to design a long-term solution to the conflicts of the delta. As such, it will evaluate alternative solutions with full public participation and environmental assessments.

By executive order, all state agencies and departments shall fully cooperate with BDOC; therefore, it seems apparent that IESP staff will have to make pertinent information available to BDOC.

Agency Regulatory Issues

Some of the member agencies have units that are responsible for carrying out activities associated with regulatory and permitting authorities. For example, the Corps of Engineers has permitting authority under the Clean Water Act (Section 404), as well as other authorities. IESP agencies also have responsibilities under CEQA and NEPA that sometimes require project sponsors to carry out monitoring or special studies associated with proposed water projects in the Estuary. All of these types of activities have increased greatly in recent years, and have stretched the resources of non-IESP agency staff members. Deadlines associated with these type activities are extremely short, and coordination time with technical experts within IESP is limited, however sorely needed. There is a need for IESP to play a greater role in these regulatory type activities.

While the above overview of management issues is not comprehensive, hopefully it will provide sufficient information with which to guide our program revision process, so that these management needs are properly addressed.

SECTION 4

PROBLEM IDENTIFICATION

During the review process, the Team interviewed the project leaders and staff of the 31 IESP elements that are currently being carried out. Additionally, the Team met with representatives from the DWR planning unit (Ed Huntley, Karl Winkler, George Barnes, and Dave Anderson), USBR's management team (Susan Hoffman, Gary Sackett, John Renning, Frank Michny, and others) and USFWS (Rick Morat, Dale Pierce, Jim McKevitt, and Cay Goude). Finally, the Team talked to Dave Schuster, Chuck Hanson, B. J. Miller and George Baumly, all representative/consultants of the water user community (those who "pay the bills"). In all of these interviews, meetings, and conversations, the Team asked about problems with IESP, both structurally and functionally.

These responses were recorded and reviewed collectively by the Team members after the fact finding phase of the review process and, along with other input, were used to guide the development of recommendations for program or element revision. The remainder of this section provides a summary of significant issues that categorizes many of the specific comments that the Team received. This list provides a condensed focal point to guide the process of program review and revision. More specific comments provided by the DWR/USBR managers and water contractor consultants and the IESP element project leaders are provided in Appendix 1.

Summary of Significant IESP Items/Issues That are in Need of Review/Revision.

1. IESP's mission needs clarification - its focus became less clear in 1982 when the P.C. was defeated.

2. IESP could be more responsive to management needs of its member agencies and/or those who fund the work.

   - current focus is on program management rather than problem management

   - current focus is on project related impacts to the exclusion of other factors

   - program needs more emphasis on solution identification, rather than problem identification

3. Data and data analyses (reports) need to be available in a more timely manner and communication internally and externally could be improved.

   - usable data is not available for all to obtain from one central source
   - project output does not receive sufficient internal IESP review (results in surprises, or perceived surprises).
   - reports do not keep up with fast paced management needs of Agency managers

4. There is a need to have better communication/ coordination with agency permitting units in the regulatory agencies.

   - Endangered species process
   - Corps permits
   - Dredging permits.
   - Planning Activities

5. IESP Activities need to be more anticipatory in nature.

   - we learn too late that species are in trouble
   - need more lead time, before a species needs to be listed

6. The Program could benefit from improved technical, budgetary, and management accountability as well as improved staff morale.

   - Technical oversight needs improvement
   - Budget planning and accountability is weak
   - Inadequate time and effort is spent on IESP Program Management
   - Staff suffers from lack of incentives and low morale.

SECTION 5

PROGRAMMATIC SOLUTIONS

The previous section of this report (Section 4), described the process of problem identification carried out by the Review Team and listed a summary of significant items or issues that were determined to be in need of serious review and revision. For the most part, these items were programmatic, rather than specific to individual elements of the program. After the Team identified, evaluated, and summarized these programmatic issues, they developed solutions that would respond to these identified issues. This section lists the proposed solutions for those programmatic issues. Programmatic solutions are categorized according to their relationship to the significant issues identified in Section 4. Problems with specific program elements, corresponding recommendations, and justifications are provided in Section 7 of this report. Note that all solutions are listed in continuous numerical order to simplify review.

Programmatic Solutions

ISSUE 1 IESP's Mission Needs Clarification--Its Focus Became Less Clear in 1982 When the Peripheral Canal was Defeated

Solutions

1. IESP managers (Coordinator level and above) should confirm that the IESP take a proactive role in finding solutions to the Estuary's fishery and water quality problems and as such adopt the following as IESP's Mission:

    - Provide information on the factors that affect ecological resources in the Sacramento-San Joaquin Estuary that allows for more efficient management of the estuary.

2. IESP managers should also reaffirm the existing goals established in 1986 as listed below:

    - To provide for the collection and analysis of data needed to understand factors in the Sacramento-San Joaquin estuary controlling the distribution and abundance of selected fish and wildlife resources and make the data readily available to other agencies and the public.

- To comply with permit terms requiring ecological monitoring in the estuary.

- To identify impacts of human activities on the fish and wildlife resources.

- To interpret information produced by the program and from other sources and, to the extent possible, recommend measures to avoid and/or offset adverse impacts of water project operation and other human activities on these resources. To seek consensus for such recommendations, but to report differing recommendations when consensus is not achieved.

- To provide an organizational structure and program resources to assist in planning, coordination, and integration of estuarine studies by other units of cooperating agencies or by other agencies.

ISSUE 2 IESP Could be More Responsive to Management Needs of its Member Agencies and/or Those Who Fund the Work

Solutions

3. In order to carry out the IESP mission and the above goals, IESP needs a new program/management structure. Section 6 describes this recommended structure in detail.

4. Once per year in the early fall bring together mid/high level managers from IESP agencies not involved directly in IESP for a meeting/workshop to discuss agency needs and IESP programs. Send out draft workplans before the meeting. Have them develop their formal needs before the meeting.

5. Study Manager should contact key individuals of this management group quarterly to solicit additional agency needs.

6. Work teams will be established, as appropriate, to address new problems/issues in the Estuary as they arise. They will include people from several agencies. The teams will be integrated across agencies and functions, as appropriate (see Section 6).

7. As part of the annual review process make an assessment of the influence of non-project factors on the estuary and make recommendations of future direction in the

program. Give this as a first assignment to the Technical Steering Committee.

ISSUE 3 Data and Data Analyses (Reports) Need to be Available in a More Timely Manner and Other Internal and External Communication Needs to be Improved.

Solutions

8. Complete implementation of recently approved IESP data management program.

9. IESP project planning will include specific time and resource allocation for data analysis.

10. IESP projects will not be considered complete until planned analysis has been completed and reported. Interim reports may be appropriate for some projects.

11. The Technical Steering Committee (described in Section 6), should include biometrical/statistical/modeling expertise.

12. Require IESP project principal investigators to have their sampling and analytical plans peer reviewed.

13. Project workplans will include testable hypotheses when appropriate and projected due dates for interim and final reports will be written into the workplan.

14. The Study Manager, with the assistance of the Management Team, shall be responsible for making the work teams accountable to their project plans.

15. IESP encourages publication of study findings. An assessment will be made of whether the work will be publishable, and if so, build publication into the workplan.

16. Work jointly with AHI to organize the annual State of the Estuary meeting.

17. Develop a proposal to establish a computer network link between IESP agencies (e.g. E-Mail, transferring drafts, bulletin board).

18. Greater emphasis should be placed on coordinating with the Agency Deputy Director level.

19. Prepare and distribute a directory and organizational chart of IESP staff and their functions (by agency and by IESP organizational structure).

ISSUE 4 There is a Need to Have Better Communication/Coordination With Agency Permitting Units in the Regulatory Agencies.

Solutions

20. Conduct periodic workshops between regulators and IESP staff to better understand regulatory needs and the available information to meet those needs.

21. Establish an ad hoc committee (of one or more) to assure continuous interaction between regulators and IESP staff.

22. Regulatory agencies should require that estuarine monitoring programs associated with water project development be reviewed by appropriate IESP staff before implementation or finalizing agreements to assure the technical quality of monitoring programs.

ISSUE 5 IESP Activities Need to be More Anticipatory in Nature.

Solutions

23. Complete and implement revised D-1485 water quality compliance monitoring program, subject to SWRCB approval.

24. Develop an estuary-wide ecological monitoring program to monitor trends in the system. As part of this activity, a revision of fishery monitoring efforts similar to what was done for water quality programs to develop a system-wide monitoring network (emphasize potential listed species) should be done.

25. IESP should implement MOU with AHI/SFEI.

ISSUE 6 The Program Could Benefit from Improved Technical, Budgetary, and Management Accountability as well as Improved Staff Morale.

Solutions

26. The role of the Coordinators shall be defined as follows:

- The Coordinators shall have the authority and responsibility to make program policy decisions.
- The Coordinators have the authority to commit resources to the program.
- The Coordinators shall provide policy and budgetary guidelines to the Management Team.
- The Coordinators shall have review and revision authority over all activities of the Management Team.
- The Coordinators will appoint the members of the Management Team and approve representatives on the Technical Steering Committee.
- The Coordinators have the authority and responsibility to resolve issues not agreed on by the Management Team.

27. The role of the Study Manager shall be defined as follows:

- The Study Manager will provide direct supervision over the Fish and Game Technical Staff and oversight of the technical staff in other agencies.
- The Study Manager will serve as staff support for the Coordinators and chair the Management Team.
- The Study Manager will be responsible for accountability enhancement.
- The Study Manager will be responsible for implementing the broad policy direction provided by the Coordinators and the more specific input of the three oversight groups.

28. The Coordinators delegate at least the following list of responsibilities to the Management Team:

General

In exercising the authority delegated below, the Management Team is directed, without restricting

that authority to bring the following matters to the attention of the Coordinators:

a. matters of a unique or unusual nature,

b. program performance that significantly deviates from adopted schedule or budgetary agreements,

c. matters involving significant policy questions,

d. highly controversial matters,

e. any matters which, in the judgement of the Study Manager, should be brought to the attention of the Coordinators.

Specific

a. The Management Team shall make all program management decisions within the policy and budgetary guidelines provided by the Coordinators. These decisions will be made by consensus. If consensus cannot be reached, such decisions will be elevated to the Coordinators.

b. The Management Team shall provide a record of their decisions to the Coordinators after each Management Team Meeting.

c. The Management Team will originate policy proposals for IESP and present such proposals to the Coordinators for their approval.

d. More specifically, the Management Team has the following responsibilities:

    1. Budgets - The Management Team shall develop program budgets within the general guidelines provided by the Coordinators. The Management Team can redirect or transfer funds between projects/agencies up to a maximum of $100,000 per year for the whole program. The Management Team shall be responsible for, with assistance from the Budget Support Group, reviewing and tracking project budgets on a regular basis throughout the year.

2. Workplans - The Management Team shall oversee the development of annual project workplans by the Project Work Teams, subject to approval by the Coordinators. The Management Team can change the tasks of individual project workplans after Coordinator approval as long as these changes are within the general guidance established by the Coordinators.

3. Personnel - The Management Team shall be responsible for appointing and/or replacing representatives (subject to individual supervisor approval) on the Budget Support Group, the Agency Staff Advisory Group, the Data Management Committee, and the Project Work Teams.

4. Reports - The Management Team shall review and approve IESP technical reports, professional publications, and annual reports. The Management Team will provide quarterly program progress reports to the Coordinators.

5. Advisory Groups - The Management Team has authority to establish additional technical advisory groups as deemed necessary by the Team.

6. Agreements/MOUs - The Management Team may develop interagency agreements or MOUs with outside IESP entities in order to facilitate completion or coordination of technical aspects of the program. Agreements/MOUs with policy implications will be approved by the Coordinators.

7. Data Management - The Management Team will be responsible for oversight and administration of IESP data management. The Technical Information Specialist will carry out his/her responsibility under the direction of the Data Management Committee.

8. Field Program Coordination - The Management Team will have authority to resolve conflicts regarding completion of field sampling program activities. Specifically, the team will resolve

scheduling conflicts related to boat operations and staff/crew conflicts.

9. Public Outreach - The Management Team will be responsible for implementation of the Public Outreach Plan adopted by the Coordinators in 1992. They will be responsible for developing and implementing such a plan each year.

10. IESP Workshop - The Management Team will be responsible for planning and carrying out the Annual IESP Workshop.

29. Establish Budget Support Group (see Section 6).

30. Propose a budget system that is based on project work teams.

31. Emphasis should be placed on project reports that are scheduled as part of overall project planning and come out at appropriate times. (See #13, above).

32. Project progress will be reported quarterly by the Management Team to the Coordinators.

33. The annual report will be a compilation of significant technical information findings prepared by the Study Manager. It should contain an assessment of how well the program accomplished its projected goals.

SECTION 6

STRUCTURAL SOLUTIONS AND FUNCTIONAL DESCRIPTION

The review team felt that some of the IESP's problems were the result of its present structure and the roles various parties play within that structure. For example, we concluded from our discussions and interviews that, in general, there was too little cross-agency involvement at the project element level. This involvement presently is intended to occur through the IESP's standing technical committees, but is not occurring because the committees have too broad a scope and therefore the representatives from the various agencies on those committees can not realistically have detailed enough involvement in each project. This and other concerns led to the concept of "Project Work Teams" described below. The figure on the following page displays the new structure for the IESP and the following text explains the roles of the various components of the structure.

Functional Roles

DIRECTORS:

The **DIRECTORS** (or their Deputies) are the administrators of state agency members of the IESP and regional administrative heads of the member federal agencies. The primary role of the DIRECTORS in the IESP is to convey agency policy relevant to the IESP to their respective COORDINATOR (see below). The DIRECTORS also meet formally once each year with IESP management to be apprised of IESP activities, to communicate their respective agencies needs relative to the IESP, and seek a multi-agency consensus on the future direction and focus of the IESP.

COORDINATORS:

The **COORDINATOR** group is comprised of a single representative from each of the IESP agencies. The coordinators should be agency representatives at a level sufficient to represent policy positions and commit resources of their respective agencies. The COORDINATORS provide broad oversight to the IESP, including policy direction and budget and workplan approval. The coordinators will normally meet 4 times per year (see Programmatic Solution Number 27).

NEW IESP STRUCTURE

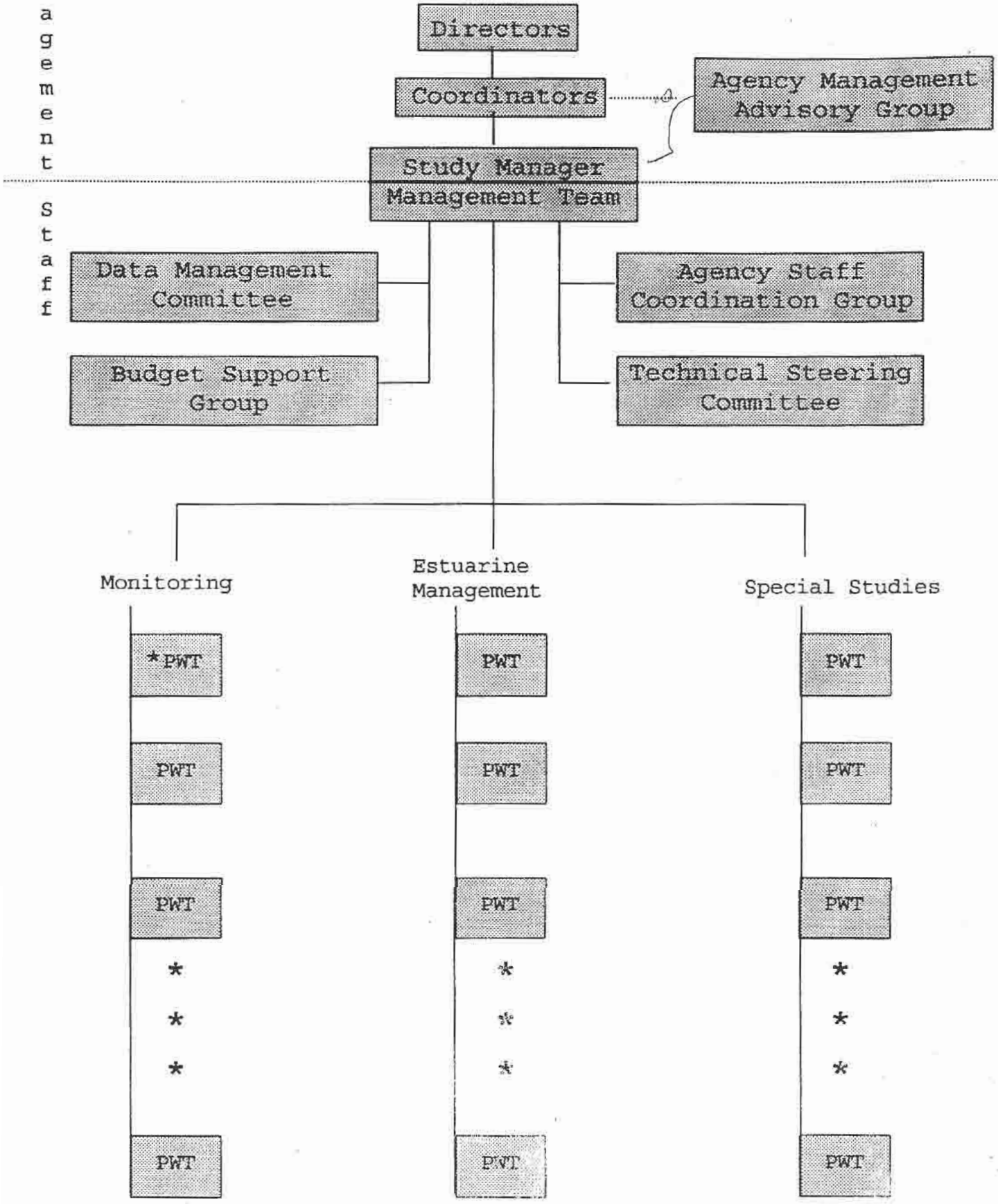


Figure 2

*PWT= Project Work Team

AGENCY MANAGEMENT ADVISORY GROUP:

The **AGENCY MANAGEMENT ADVISORY GROUP** consists of management level personnel in non-IESP planning functions. The purpose of the group is to advise the Coordinators as needed on major shifts in planning needs or priorities. The intent is for this group to supplement direction provided by the Directors.

STUDY MANAGER:

The **STUDY MANAGER** is responsible for implementing the broad policy direction provided by the COORDINATORS and the more specific input of the three oversight groups (see below). The STUDY MANAGER is the chairman of MANAGEMENT TEAM (see below) which is accountable for completion of projects and reports within the budget, technical, and policy guidance provided. The Study Manager will provide direct supervision over the Fish and Game Technical Staff and oversight of the technical staff in other agencies, as well as the overall IESP.

TECHNICAL STEERING COMMITTEE:

This group consists of 5 to 10 non-IESP scientists selected by the COORDINATORS in consultation with the MANAGEMENT TEAM. The group will meet once or twice each year to develop and refine a concept of how water issues with which IESP is involved relate to the natural resources of the delta and bay, to identify areas of important scientific uncertainty, and to recommend modifications of the program. IESP managers will brief the group on the status of IESP-related water issues, and IESP scientists will brief the group on the finding of the PROJECT WORK TEAMS. Based on these briefings the group will incorporate the findings of the PROJECT WORK TEAMS into this larger context, and will recommend work team revisions.

BUDGET SUPPORT GROUP:

The primary function of the **BUDGET SUPPORT GROUP** is to monitor the IESP budget. The group consists of 4 to 5 members including the **STUDY MANAGER** and administrative officers from the major funding agencies. This is an active working group which will meet frequently at times both in response to the normal budget development process and to produce tracking documents.

AGENCY STAFF COORDINATION GROUP:

The **AGENCY STAFF COORDINATION GROUP** consists of agency staff not otherwise associated with IESP work (e.g. planning

engineers from USBR's and DWR's Division of Planning and staff of the regulatory entities within DFG and USFWS). The group will meet twice per year with the STUDY MANAGER and MANAGEMENT TEAM to advise them on information needs related to such things as EIRs/EISs and monitoring programs. At these meetings working level relationships could be established as needed between IESP and non-IESP staff for specific projects, a model being the Winter-run Monitoring/Salvage Committee. IESP will provide proposed study plans to this group to solicit their feedback on proposed programs.

MANAGEMENT TEAM:

The **MANAGEMENT TEAM** is a group of approximately 10 people, led by the STUDY MANAGER, which includes representatives from all PROJECT WORK TEAMS (see below). The MANAGEMENT TEAM can be kept to approximately 10 people because many individuals will be members of more than one PROJECT WORK TEAM and therefore can represent more than one team on the MANAGEMENT TEAM. At least one representative will come from the MONITORING COMPONENT, 4-6 from the ESTUARINE MANAGEMENT COMPONENT, and 1 from the SPECIAL STUDIES COMPONENT (see below). The primary purpose of the MANAGEMENT TEAM is to translate management information needs, conveyed by the STUDY MANAGER, into actions to meet those needs. The primary purposes of this group are to review and coordinate the activities of the PROJECT WORK TEAMS. The MANAGEMENT TEAM establishes PROJECT WORK TEAMS as needed. This group assures that completed staff work is being handed up to management. The group will, in essence, replace the existing four IESP standing committees and will review and compile budgets and workplans generated by the PROJECT WORK TEAMS. The group will meet at least quarterly and has been delegated various authorities (see Programmatic Solution Number 28).

PROJECT WORK TEAMS:

PROJECT WORK TEAMS are established by the MANAGEMENT TEAM to implement one or more IESP elements. The teams are small (typically 3 to 6 people), working level groups consisting of members from agencies having a specific interest in the products of the team. PROJECT WORK TEAMS are intended to be "issue specific" groups which are established in response to a specific information need and their dissolution is planned for as part of their initiation. Although the bulk of the work (field sampling, sample and data processing and analysis, report writing, etc.) associated with IESP elements supervised by each PROJECT WORK TEAM may be conducted by the staff of one agency, the interagency PROJECT WORK TEAMS will be actively

and closely involved in element planning and the preparation and review of element products. The PROJECT WORK TEAMS are the source of proposed element workplans and budgets. Typically, individual IESP staff people will be assigned to more than one project work team. Each PROJECT WORK TEAM will have a representative on the **MANAGEMENT TEAM**.

IESP WORK COMPONENTS:

Each IESP element (and therefore each project work team) will be assigned to one of three general **IESP WORK COMPONENTS** including: 1) ESTUARINE MANAGEMENT COMPONENT, 2) MONITORING COMPONENT, and 3) SPECIAL STUDIES COMPONENT. The assignment of elements and PROJECT WORK TEAMS to the IESP work component has little functional importance since all elements are managed by the **MANAGEMENT TEAM**, but this general categorization of elements provides IESP management and the management of individual IESP agencies with a good sense of how IESP resources are being directed.

1. The most important IESP work component is the **ESTUARINE MANAGEMENT COMPONENT**, which includes activities specifically designed to develop and/or evaluate management measures to reduce fishery resource impacts while protecting water project reliability. Studies receiving the highest priority to be included in this component should be studies associated with threatened and endangered species. Monitoring conducted under this component would be relatively short-term (under 5 years) and specifically designed to assess the status of an endangered or threatened species or associated with some proposed management plan to better manage the Estuary.

   Current program elements that appear to fall into this component include: salmon smolt survival, San Joaquin River smolt survival, and distribution and abundance of juvenile salmon in the lower Sac River and delta, Delta smelt and winter-run salmon, Montezuma Slough monitoring, North Delta Demonstration Project, almost all the fish facilities elements, Delta Agriculture Diversion and North Bay Aqueduct studies.

2. The **MONITORING COMPONENT** (MC) includes either routine sampling and reporting elements which are being conducted in order to comply with water project permit requirements or elements designed to provide all interested parties with basic information about the year to year health and condition of the estuary. A major goal of the IESP revision effort is to coordinate and consolidate monitoring activities so that they are done as efficiently as possible.

The following existing IESP elements will be integrated into a single comprehensive monitoring program: Neomysis-Zooplankton study, D-1485 Compliance Monitoring, salmon fry and smolt abundance studies, adult striped bass, striped bass egg and larval, striped bass summer abundance, south delta striped bass egg and larva, Fall mid-water survey, striped bass egg and larval management-real time monitoring, sturgeon tagging and spawning, and year class strength, marine and estuarine distribution and abundance, and shrimp abundance.

3. The **SPECIAL STUDIES COMPONENT** includes elements that are designed to further our basic understanding of the estuary, such as entrapment zone or species life history research of shallow water fish and shrimp and vertical sampling of fish. This will provide information suggesting measures which can be further developed and evaluated as part of the Estuarine Monitoring Component (EMC). This component will administer the Research Enhancement Program and other research carried out by IESP.

PROGRAM PLANNING AND BUDGETS

Major annual program planning events in the new IESP structure would include:

1. Initial development of the next year's study plans and budget would occur in the late summer. Plans would be prepared in an abbreviated form comparable to the current "fact sheets". Detailed work plans would be prepared and retained by the program managers upon final approval.

2. In the fall the Agency Staff Coordination Group meeting would occur. They would review the study plans and provide feedback on how these plans meet their needs.

3. An annual Directors (or upper management) briefing to be held in the late winter or early spring. The briefing should primarily be informational, describing major results of the previous years work and recommended program plans. Decisions on the upcoming program and budget would be worked out with agency management prior to the Director's briefing.

4. The budget process begins with resource needs identified by the PROJECT WORK TEAMS in their element work plans. The MANAGEMENT TEAM reviews

the work plans and compiles a budget including identifying the necessary interagency fund transfers. The STUDY MANAGER, TECHNICAL STEERING COMMITTEE and BUDGET SUPPORT GROUP review the budget and modify it as necessary.

5. The IESP annual workshop would continue to be held in January or February for IESP staff and management. However, the AGENCY MANAGEMENT ADVISORY GROUP would be extended official invitations to attend the workshop.

SECTION 7

IESP ELEMENT OBSERVATIONS, RECOMMENDATIONS, AND JUSTIFICATIONS

The most time consuming activity that the Review Team carried out was an in-depth review of each element of the IESP. As mentioned in previous sections of this report, the relevance and attainability of objectives of each element in the program were carefully reviewed. In some cases objectives were revised or clarified with the concurrence of the project leaders. This was found to be necessary, since some Fact Sheets did not reflect the objectives accurately.

During the review of the Element Fact Sheets and the interviews, the Team noted "observations" that they felt were relevant to the review process. In some cases these were also based on personal knowledge of the team members. As a result of this process (i.e. review of objectives and notation of other element related issues), certain recommendations specific to each element, or in some cases, the greater IESP, emerged. These recommendations were recorded and, to the extent possible, justifications for those recommendations were provided. In some, but not all cases, these justifications were based on the observations. Further, not all observations resulted in the development of a recommendation.

It was the intent of the Team that these element recommendations were to be consistent with the overall programmatic recommendations discussed earlier in this report.

The remainder of this section lists the current objectives (as revised in some cases), the Team's observations, recommendations, and justifications for those recommendations for each program element. Note that in some cases (i.e. Salmon Program and Delta Outflow/San Francisco Bay Study) all of the individual elements have been combined.

Program Element: D-1485 Compliance Monitoring

Objectives:

1. Determine compliance with water quality standards established by Decision 1485.

2. Determine if objectives of the Delta Water Quality Control Plan are being met.

3. Determine potential impacts on the estuary by water project operations.

Observations:

1. This element has already been revised by a subgroup of the Fishery/Water Quality Committee. This revision is adequate and the resulting program covers the estuary.

2. There is a need for a field crew to carry out the work described in the revised program.

Recommendations:

1. The Plan as Revised by the Subgroup of the Fishery/Water Quality Committee Should be Implemented.

Justifications:

1. Such a revision has been called for by the SWRCB, D-1630 Compliance Program.

2. The subgroup review has statistically verified that this revised program would provide necessary data with reduced effort.

2. This Element Should be Clearly Delineated as a "Compliance Monitoring" Element. Any Special Study Aspects of this Element Should be Separated Out and Incorporated into Other Existing Elements.

Justifications:

1. To provide efficient use of staff.

2. To provide clear direction to staff (i.e. clear mission).

Program Element: Neomysis-Zooplankton Study

Objectives:

1. Determine the abundance and distribution of Neomysis and zooplankton in the upper estuary.

2. Determine the factors that influence abundance and distribution of Neomysis and zooplankton.

3. Detect introduced species.

Observations:

1. Objective #1 is being met since the monitoring is being carried out.

2. Objective #2 has been met for selected factors.

3. Further work on factors that influence species composition or abundance is not compatible with IESP purposes (i.e. no more work should be done on temperature relationships, two layered flow interactions, phytoplankton effects, vertical migration of copepods).

4. The specifics of the baseline program are being considered in the revision of the Water Quality program.

5. This element has been revised during the revision of the D-1485 compliance monitoring element.

6. There are parts of this element that overlap with parts of the striped bass egg and larval program.

7. The project leader of this element has recommended that his program shift to implementation of AB-3207. This bill was passed by the California legislature in 1992 and addresses exotic introductions through ballast water control.

8. Neomysis/zooplankton monitoring was not included in the draft D-1630 requirements.

9. The reduced effort required by the revised version of this element will result in personnel and resource savings that can be used elsewhere in the program.

Recommendations:

3. This Element Should be Maintained at the Reduced Level Recommended by the Subgroup of the Fishery/Water Quality Program.

Justification:

1. A statistical analysis demonstrated that trends in zooplankton could be shown with a much reduced effort.

4. Any Additional Cause/Effect Studies on Zooplankton Should be Carried Out as a Special Study, if Justified.

Justification:

1. Cause/effect type studies should be part of the element if current management of the system could affect zooplankton.

5. This Element Should be Coordinated With the Striped Bass Egg and Larval Element and the Overlap Should be Eliminated.

Justification:

1. Efficiency.

6. Ballast Water Studies are an Appropriate Activity for IESP. IESP Should Review Monitoring Data Collected as a Result of Implementation of AB-3207.

Justification:

1. It is in IESP's interest to monitor management or control of exotic species or ballast water.

Program Element: Food Chain Group

Objectives:

1. To detect significant and important changes that have occurred at the various levels of the food chain through a systematic examination of existing data.

2. To investigate the underlying causes of the identified changes by developing and evaluating hypotheses

relevant to the changes and to relationships among other elements of the food chain.

3. To design and promote the implementation of applied research projects (special studies) to test the above hypotheses, and to acquire information on aspects of the food chain not available through routine monitoring programs.

4. Through the processes associated with the above activities, provide a forum for critical scientific discussion and peer review of food chain investigation results conducted by agency and outside scientists.

5. To provide up-to-date information on changes within the food chain to Interagency management and others for use in establishing management objectives and recommendations.

Observations:

1. This group utilizes, in part, non-agency experts to provide feedback and guidance to IESP efforts. This type of model has merit in the IESP and should serve as a model for other teams/committees in the program.

2. The Food Chain Group did not receive specific and sufficient direction from the Fishery/Water Quality Committee resulting in lessened integration of the groups action with the overall IESP program.

3. The Food Chain Group has provided academic rigor to some IESP programs.

4. The Food Chain Group has accomplished the original charge that was given to it.

5. The group has published a number of useful reports.

6. This type of group has demonstrated the value of using non-agency expertise to review IESP program activities.

Recommendations:

7. **The Food Chain Group Should be Configured as a Project Work Team Under the Special Studies Component.**

Justification:

1. The Food Chain Group has competed its original charge (i.e. investigation of the Food Chain).

8. **IESP Should Use Existing Food Chain Group Personnel to Design New Monitoring Efforts Resulting From Program Revision. The 1993 Work Activities Will be Determined by Brown, Arthur, and Herrgesell.**

Justification:

1. Additional help is needed to carry out data evaluations in a short time and these experts are already under contract to IESP.

Program Element: Distribution, Abundance, and Survival of Juvenile Salmonids in the Lower Sacramento River and Delta. (Includes all salmon elements.)

Objectives:

1. Determine the abundance and distribution of fall-run juvenile salmon.

2. Determine if the estuary is important for fry rearing.

3. Determine factors (including flow and distribution of flow) that affect fry survival and distribution in the estuary.

4. Monitor the relative abundance and temporal distribution of fall-run salmon smolts at Sacramento and Chipps Island.

5. Provide abundance information on other species at these two stations in the spring.

6. Provide ancillary information for other elements of the salmon program.

7. Determine how survival is influenced by various factors in the delta (including water project related factors) and evaluate the effectiveness of mitigation measures designed to improve Sacramento River smolt survival.

8. Obtain information on timing of migration of winter-run in order to establish timing of migration needs.

9. Determine vulnerability of winter-run fish to project impacts.

10. Determine distribution patterns so needed mitigation measures can be developed.

Observations:

1. Abundance and distribution patterns have been described for the past 14 years. Therefore, objective #1 has been met.

2. It has been determined that during wet years the estuary is important for fry rearing.

3. Some factors affecting fry survival and distribution have been determined, but not much more can be learned with current levels of resources.

4. Objective #4 is being met by the continuous monitoring.

5. Objectives 5 and 6 relate to smolt survival elements.

6. Objective 7 is relevant.

7. It has not been totally determined how survival is influenced by various factors in the delta.

8. Parts of this program are classified as a "special studies", while others are baseline studies.

9. As a whole, this type of element is not likely to fit into a routine sampling effort because it tends to be limited by site and gear specificity.

10. However, there is potential to combine some aspects of this element with other baseline monitoring efforts.

11. It may be desirable to combine all of the salmon elements into two general elements: 1) monitoring, and 2) management.

12. There is a compatible element being carried out by DFG's Inland Fisheries Division that is not part of IESP (in San Joaquin River).

13. Because of the desire to sample year-round at Chipps Island, there is a need for more vessel support resources in this element.

14. There is a need to focus more effort on analysis of non-salmonid data collected by this element.

15. Coded wire tag techniques used by this element, have been good methods to assess specific management questions.

16. The element is being successful in accomplishing its objectives.

17. Some element objectives have been achieved and therefore the program has been re-focused.

18. This element receives regular input from the winter-run loss monitoring group and is very responsive to this input. Such a model incorporating regulator, operator, and biological communications and guidance into the element on a real time basis, could have benefits to the IESP as a whole.

Recommendations:

9. Integrate DFG Inland Fisheries Division Activities at Mossdale into IESP.

Justifications:

1. Efficiency.

2. Ensure better coordination and support of San Joaquin monitoring.

10. **Integrate Parts of this Element into (a) an Overall Estuarine-Wide Monitoring Activity, and (b) a Monitoring Program to Meet the Requirements of the Biological Opinion for Winter-Run Salmon and Other Juvenile Salmonids.**

Justifications:

1. Efficiency.

2. Portions of the seining efforts could be included in an effort to monitor other species in the estuary.

11. **The Management Model Used by this Element (i.e. Biologists, Project Operators, and Regulators Meeting Regularly and Making Collective Program Management Decisions Under the Winter-Run Monitoring/Loss Group) is Very Efficient and should be Expanded to Other IESP Elements (Project Work Team).**

Justification:

1. This model is especially effective because of the "real time" feedback between groups.

Program Element: Adult Striped Bass Population Parameters

Objectives:

1. Determine abundance, distribution, and mortality of adult striped bass.

2. Determine factors influencing the abundance, distribution, and mortality of striped bass.

3. Evaluate the contribution of hatchery reared fish to the population in the estuary.

Observations:

1. Some of the support money for this effort from Sport Fish Restoration Act funds has been scheduled to be cut starting in 1993-94 and all

will be cut by 94-95. It is to be made up by money from PL 102-575.

2. Project biologists believe that yearly monitoring estimates are necessary. You can't reduce the effort (this is true because of the current low population).

3. Project leaders agreed that bass sport fishery mortality estimates do not need to be developed on an annual basis, but that it does not cost much.

4. More time needs to be spent on data interpretation and analysis.

5. Striped bass reports and data interpretations are developed by DFG staff and after review by other agencies, the reports often require major revision or debate due to differing interpretation of data.

6. Objectives are being met in that the monitoring has continued.

7. The relationship between water projects and adult striped bass has been determined.

Recommendations:

12. The Coordinators Need to Review the Importance of Striped Bass as a Motivator Which Drives IESP Programs and Water Management Activities.

Justifications:

1. Other species have received more attention recently because of their endangered status.

2. In some IESP constituent groups, the overall interest in striped bass has declined along with the bass population.

3. There is an increased interest in non-game species and multi-species habitat protection, as opposed to single, game species protection.

4. There is a reasonable understanding regarding what affects bass abundance. Therefore, it may be time to reduce

studies and start more management activities.

13. **The Adult Bass Monitoring Element Should be Continued Until Another Decision is Made (see #15).**

Justifications:

1. Existing studies are needed given the current depleted status of the population.

2. Continuation of these activities will provide a data base that can be used to assess the impact of future management actions.

3. The element is needed so that past hatchery plants of striped bass can be evaluated.

Program Element: Striped Bass Egg and Larva Survey

Objectives:

1. Determine the abundance of striped bass eggs and larvae.

2. Determine when and where spawning occurs.

3. Determine what factors affect spawning.

4. Determine what factors affect spawning success.

5. Determine the growth rates and mortality rates of 6-14 mm striped bass.

6. Determine the environmental factors that affect the abundance, growth, and mortality of larval striped bass.

7. Monitor the abundance of other species in the estuary.

Observations:

1. The abundance of striped bass eggs and larvae has been determined.

2. Spawning locations and times are known.

3. The factors affecting spawning are known.

4. The factors affecting spawning success are known.

5. The major objectives of this program element have been met.

6. This element could be dropped, reduced, or combined with other system-wide monitoring efforts.

7. This element has not been carried out each year in the recent past.

8. Project leaders questioned the need for this element and suggested that it be stopped for a year or two, beginning in 1994.

9. The project leader emphasized the need for additional analysis of existing data.

10. The project leader noted that the program could use a full time biometrition.

11. The zooplankton component of this element will be covered by the neomysis/zooplankton element if the egg and larval program is discontinued.

Recommendations:

14. A Single, Coordinated Egg and Larval Sampling Element Responsive to Current Management Needs Should be Considered. The Value of Existing Efforts Should be Considered.

Justifications:

1. Most of the element objectives have been achieved.

2. This element is very costly to carry out. The cost/benefit ratio is too high.

3. The project leader recommended stopping the element.

4. Project biologists need time to do data analysis. Stopping the field activities would allow this.

15. All Egg and Larval Data Currently Generated Should be Analyzed to Determine if the Element Could be Improved or Redesigned for Future Implementation. Such Revision Should Include Efforts on Other Species, in Addition to Striped Bass.

Justification:

1. The data collected from this element has not been adequate to achieve objectives set for it.

Program Element: Delta Egg and Larval Entrainment Study

Objectives:

1. Determine fish egg and larvae (less than 21 mm total length) entrainment at the State and Federal facility with special emphasis on determining annual losses of striped bass to be used for calculating yearling equivalents.

2. Determine Delta smelt losses at the facilities.

Observations:

1. Throughout IESP, egg and larval sampling is fractionated (i.e. it is carried out by several different groups).

2. The methodology used by this element to estimate entrainment of larval fishes is not "state of the art" and could be improved.

Recommendations:

16. A Single, Coordinated Egg and Larval Sampling Element Responsive to Current Management Needs Should be Considered. The Value of Existing Efforts Should be Considered.

Justifications:

1. The egg and larval sampling efforts need to become more efficient. The existing practice of different agencies collecting their data should be avoided.

2. There is uncertainty as to the value of the egg and larval data, as it is currently collected.

17. All Egg and Larval Data Currently Generated Should be Analyzed to Determine if the Element Could be Improved or Designed for Future Implementation. Such Revision Should Include Efforts on Other Species, in Addition to Striped Bass.

Justifications:

1. Existing elements are not using the best methods to estimate entrainment.

2. Current methods do not allow accurate assessment of spatial variations in abundance, temporal and tidal variations and operational variability.

3. Current methods suffer from gear efficiency problems.

Program Element: Striped Bass Egg and Larval Management Program

Objectives:

1. To evaluate if there are structural and operational changes that could be used to transport striped bass and eggs and larvae out of the Delta to the downstream nursery area.

Sub-objectives:

1. Develop methods to determine (within 24 hours) when striped bass spawning occurs.

2. Use models to determine various operational and structural changes that could be used to transport spawning peaks out of the Delta to downstream areas.

3. Evaluate the effect of promising alternatives on water projects yield.

4. Field test the best of the promising alternatives and verify benefits of the findings.

Observations:

1. The first sub-objective has been met (we have methods to determine when spawning occurs).

2. Sub-objective 2 has been partially met (we have some methods, but we don't know if they are valid).

3. Sub-objectives 3 and 4 have not been met.

4. All sub-objectives are relevant.

5. Additionally special studies are needed to verify if using models (#2) is a valid approach (Refer to Chuck Hansen model.

6. The objectives for this element are specifically geared for "real time" monitoring, and as such, it is effective.

7. D-1630 requires real time monitoring as carried out by this element.

Recommendations:

18. A Single, Coordinated Egg and Larval Sampling Element Responsive to Current Management Needs Should be Considered. The Value of Existing Efforts Should be Considered.

Justification

1. PL 102-575 calls for this type of monitoring activity.

19. All Egg and Larval Data Currently Generated Should be Analyzed to Determine if the Element Could be Improved or Designed for Future Implementation. Such Revision Should Include

Efforts on Other Species, in Addition to Striped Bass.

Justification:

1. Present methodology may be made more efficient using information learned at the Tracy facilities.

Program Element: Striped Bass Summer Abundance Survey

Objectives:

1. Determine the index of abundance of young (38 mm) striped bass during their first summer of life.

2. Determine what factors cause variations in the annual abundance index.

3. (INHERENT OBJECTIVE) Determine the distribution of young striped bass.

4. Determine which spawning cohorts contribute to the 38 mm SB index.

5. Measure growth mortality at those life stages (25 mm to 38 mm).

Observations:

1. Objectives 1 and 3 have been met, however no time limit has been placed on these objectives.

2. This is a baseline effort.

3. Objectives 1 and 3 are relevant and should be continued.

4. Objective 2 has been met for selected factors.

5. Over the years, this has been an important, cost effective program.

6. Completion of this element provides an effective means of assessing the effectiveness of requirements in D-1630 and PL 102-575.

7. This element could possibly be refined to improve precision of data, but since the data base is a

long one and has been effective in monitoring trends of young bass it may not be prudent to revise it.

8. The project leader reported that there may be a time when the otolith work currently being done should be stopped. At the very least, it need not be done every year; especially not on those years when the egg and larval surveys are not done.

9. A complete re-evaluation of the existing data is needed to adequately investigate growth and mortality of juvenile bass. In fact, some, of the data needs to be analyzed for the first time.

10. The element has made little use of data collected in other program elements (i.e. Delta Outflow/San Francisco Bay Study).

Recommendations:

20. The Spatial Scope of this Element Should be Evaluated for Expansion to Include Downstream Sampling During Wet Years.

Justification:

1. This is necessary to obtain a better index during high flow years.

21. Notwithstanding the Above, the Element Should be Continued, Until the New Program is Implemented.

Justifications:

1. It has been effective.

2. Provides a good index which represents the population status.

3. It is of relatively low cost.

23. The Otolith Work in this Element Should be Terminated, However, a Summary Report of Findings Should be Completed.

Justifications:

1. Value of the data is questionable.

2. The work is expensive.

Program Element: Fall Midwater Trawl Survey

Objectives:

1. Determine the index of abundance of young-of-the-year striped bass, Delta smelt, and other estuarine fishes in the fall and winter.

2. Develop estimates of fall growth and mortality.

Observations:

1. Objective #1 is being met with the monitoring program being carried out.

2. This is a baseline element.

3. This type of objective is relevant, but it should be combined with a larger systematic effort.

4. Project leaders were adamant that the study design of this element should not be revised.

5. This element is relatively economical to carry out.

6. Ancillary data from this element includes estimates of non-bass fish species occurrence and abundance in the sample area.

7. Effective analysis of all of the data from this element has been hindered by variable conditions in the field (i.e. variations in water clarity has affected sample gear efficiencies).

Recommendations:

23. This Element Should be Integrated into the Estuary-Wide Fish Monitoring Program.

Justification:

1. There is some overlap in areas sampled by this element and the Delta Outflow Study.

24. Existing Element Data Should be Analyzed to Determine the Minimum Number of Stations Needed and Best Methodology Available to Obtain Valid, Long-Term Trends.

Justifications:

1. Efficiency.

2. Such an analysis is needed to develop an estuary-wide sample program.

Program Element: Sturgeon Tagging

Objectives:

1. Determine white sturgeon abundance

2. Determine white sturgeon mortality rates.

3. (Unstated objective) Determine factors affecting mortality rates.

4. Determine white sturgeon migration rates and distribution.

Observations:

1. Objective 1 is a baseline monitoring program.

2. The element is meeting its objectives.

3. This is a valid element.

4. Current funding (Sport Fish Restoration Act) could be out in 1993-94.

5. Major study objectives are focused on adult abundance and mortality and, as such, are geared toward regulatory action through sportfish regulations.

6. The efforts expended in this element are significant because the sturgeon is a native fish and not much is known about its needs.

7. This element could potentially collect information on other species in the system (i.e. sharks, flounder, etc.).

Recommendation:

25. Consideration Should be Given to Continue this Element so that this Important Native Species is Monitored.

Justifications:

1. This is a native and endemic species and it is important to monitor its abundance.

2. Evidence shows that the water projects may be impacting this species.

Program Element: Monitoring of Sturgeon Year Class Strength

Objectives:

1. Determine methods to effectively sample juvenile sturgeon.

2. Determine factors that influence sturgeon year class strength.

Observations:

1. This element is relevant - limited evidence shows the relationship between this fish and flow or flow patterns.

2. This element could be combined with other program trawling surveys.

3. This program requires more personnel and resources in order to develop valid young-of-the-year estimates.

4. Some of the element methods are difficult to carry out and they need further development (i.e. using lamprey for bait).

5. This element does not receive adequate IESP review.

Recommendation:

26. Establish a Project Work Team to Develop Better Sample Methodology so that more Sturgeon can be Collected.

Justification:

1. IESP needs to provide more assistance and involvement so that the project staff can get the studies completed as needed.

Program Element: Sturgeon Spawning Survey

Objectives:

1. Determine location of spawning in the Sacramento River.
2. Determine conditions necessary for spawning.
3. Determine factors that affect spawning migration rates or patterns.

Observations:

1. The project leader noted that substantially more personnel assistance is needed.
2. The likelihood of successfully accomplishing element objectives is limited without carrying out considerably more effort.
3. Work on this important species has been limited over the years and more work is needed on it.
4. At this stage, this element could not be included in an ongoing monitoring program.
5. Efforts put in this element have so far not been substantial enough.
6. Flows and spawning activity are related. Therefore, there is a project related tie to sturgeon.

Recommendation:

27. **This Study Should be Considered for Augmentation and Included as a Special Study in IESP. New Methods Need to be Developed so that it can be Converted to an Effective Monitoring Program.**

Justifications:

1. The importance of this species warrants more work.

2. The species may be impacted by water projects.

3. The existing element activities have been limited by personnel shortages.

Program Element: Delta Smelt Study

Objectives:

1. Determine adult population abundance and distribution to define spawning season and requirements.

2. Determine juvenile abundance and distribution.

3. Determine larval abundance and distribution.

4. Determine dietary requirements of Delta smelt.

5. Determine cohorts through growth and survival rate studies.

6. Complete toxicity and starvation studies.

7. Estimate adult and larval losses at the State and Federal water projects and agricultural diversions in the Delta.

8. Complete electrophoretic investigations of Delta smelt and related osmerid species.

9. Model Delta smelt population dynamics and persistence.

10. Determine environmental tolerances of delta smelt, (salinity, temperature, flow, etc.).

11. Develop culture techniques.

Observations:

1. Objectives 1-3 and 7 are baseline objectives.

2. Objectives 4-6 and 8-9 are special studies.

3. Objectives 1-3 are biologically relevant.

4. The relevance of objectives 4-9 has been elevated through the listing process.

5. The objectives of this element may need to be expanded based on the recent "listing" by USFWS.

6. Most of the objectives of this element are required by mandates of the Endangered Species Act.

7. The egg and larval activities associated with this element need to be evaluated. There is uncertainty whether the results are worth the extensive effort required to obtain them.

8. Some objectives of this element could be integrated into other estuarine-wide elements.

9. The element needs more boat/vessel support.

10. This, and other endangered species elements, need to receive greater IESP technical input and review.

Recommendations:

28. Continue the Existing Activities, Adjust as Required by the Recent Findings and Biological Opinions, and Integrate With Other Elements When Possible.

Justifications:

1. This is a mandated program by Endangered Species Act.

2. There is a need for more information with which to base management decisions.

29. The Present Egg and Larval Sampling and Data Processing Activities Shall be Evaluated in Order to Determine Their Effectiveness. Revise the Egg and Larval Sampling as Necessary.

Justifications:

1. The project leader noted that current efforts are time and resource intensive and are likely not necessary every year.

2. Some regions may not need to be sampled.

30. Establish a Work Team to Direct the Element Similar to the One Established for the Winter-Run Studies, Consistent with the Biological Opinion.

Justification:

1. There is a major need for better communication on Delta smelt knowledge between IESP agency staff and USFWS ESA staff (Sacramento) to ensure well founded management decisions.

Program Element: All Delta Outflow/San Francisco Bay Elements

Objectives:

Vertical Distribution of Larval and Juveniles

1. Determine if larvae and small juveniles of several estuary dependent species exhibit depth distributions that suggest that they use currents to facilitate movement to a nursery area or to remain in a nursery area. Target species include longfin smelt, starry flounder, Pacific herring, and Crangon franciscorum.

2. Determine what physical factors, including tide, lunar cycle, day/night, and salinity affect the depth distribution of these species.

3. Determine how changes in freshwater outflow may affect currents and subsequently the movements of migrations of these species.

Shallow Water Habitats

4. Quantify the use of shallow water habitats as nursery area by selected species of estuary dependent species. Determine what factors, including depth, substrate type, vegetation, salinity, and temperature affect the use of shallow water habitats as nursery areas. Target species include starry flounder, Crangon franciscorum, and Pacific herring.

5. Continue to develop gear and sampling techniques to quantitatively sample a variety of shallow water habitats (1993).

6. Determine how changes in freshwater outflow affects the location, size, and quality of shallow water nursery areas.

Monitoring of Estuarine Species

7. Monitor the abundance and distribution of fish, shrimp, and Cancer crabs in the Estuary, specifically the area downstream of the freshwater portion of the Delta.

8. Determine the factors that influence the abundance and distribution of these species and which species are potentially affected by changes in the amount and timing of freshwater outflow to the Bay.

9. For those species that have a relationship between abundance and outflow, identify the outflow related mechanisms and develop mechanistic based life history models. Quantify the impacts that water development projects have on these species and mechanisms.

Observations:

1. We agree that outflows are a significant factor affecting some species in the Bay (i.e. longfin smelt, starry flounder, etc.).

2. Project impacts on fishery resources need to be defined (i.e. unimpaired flows versus existing flows, etc.).

3. Data from this study has value beyond IESP management needs. There is a need to understand what is going on biologically in the downstream portions of the Estuary.

4. No standards were set in D-1630 specifically for protection of the downstream portions of the estuary.

5. There is overlap in some of the upper sample sites of this study with the Fall Midwater Trawl element.

6. A tremendous amount of information has been gathered in this study (and is available in electronic form) and much has been learned about Bay fish and invertebrates and their relationship to freshwater flows but much of it has not been documented in written form.

7. This element has shown that the Bay system is very complex, and that organisms respond differently to variable flows.

8. The coordination/exchanges between this study and the hydrodynamic elements has been minimal.

9. If it is determined that mechanistic studies are warranted, it is relevant to study shrimp in the Bay because it is truly a Bay species and it has the potential to assist in describing important flow related mechanisms. (Other management activities such as USCOE dredging etc., may be evaluated better by using shrimp data.)

10. Flow over large time periods have been correlated with specific indices. The focus of these periods should be narrowed.

Recommendations:

31. Delay Special Studies Elements and Complete the Fish Bulletin Describing the Data Collected so Far. If Time Allows, Use Staff to Assist in Restructuring IESP Estuarine-Wide Monitoring Program.

Justifications:

1. The potential of understanding mechanistic influences on many juvenile fishes is low, given the amount of effort available.

2. There is a greater need to understand and describe existing data so that we know what additional we need to study.

3. The staff could provide valuable assistance in overall program revision.

4. The Fish Bulletin needs to be completed at the expense of more field work.

32. Integrate Sampling in that Portion of the Bay Below the Bay Bridge (South Bay) into the Estuary-Wide Monitoring Program. Seek Alternative Funding Sources to Fund this Work.

Justifications:

1. The influence of freshwater flows in that area are less and more difficult to determine. Therefore, not an IESP interest.

2. Sampling in this area represents a significant investment of resources and time.

33. The Portions of this Element Carried Out Upstream of the Golden Gate Bridge and the Bay Bridge Shall be Integrated with Other Delta Fishery Elements into One Estuary-Wide Monitoring Element. To the Extent Feasible, it Should be Integrated with the Physical/Chemical Monitoring Element, as Well (i.e. Old D-1485).

Justification:

1. It is important to monitor fishery trends in this portion of the system and it is crucial to combine these efforts into one program that covers the system. Combination will lead to more efficient efforts and more meaningful and compatible data.

34. IESP Should Recommend that the RWQCB Mandate that the South Bay Dischargers Develop and Carry Out a Baseline Biological Sampling Program in South Bay (Including Fisheries) or Alternatively, Support IESP to do it.

Justification:

1. The dischargers may have a greater influence on South Bay conditions than the water projects.

Program Element: Hydrodynamics (both elements)

Objectives:

1. Collect flow information to develop models of the estuary.

2. Apply model to answer specific IESP management questions.

Observations:

1. The Bay 3-D model potentially can provide important information to understand circulation patterns and transport in the Bay, but its relevance to fishery data interpretation may be limited due to differences in resolution between biological and hydrodynamic data.

2. The project leader maintains he can have a completed 3-D model of the entire Bay by December 31, 1993.

3. All project leaders agreed that a new public domain model is needed and should be a top priority of agency modelers.

4. Agency modelers are not adequately coordinated (between themselves).

5. The hydrodynamics committee has been ineffective. Meetings have been non-productive.

6. Modeling of transport processes is a good tool to screen management options in the Estuary.

7. Hydrodynamic information is critical to predict fishery (primarily larvae) responses to management options.

8. Transport modeling tells us where the water goes in the system. This is important to know for management purposes.

9. Fisheries questions in need of hydrodynamic model answers need to be reassessed.

Recommendations:

35. Continue 3-D Model Development Through December, 1993, and in 1994 Validate the Model and Begin Application to Fishery Related Questions.

Justification:

1. The model is needed to answer questions now.

36. The Delta Element of the Hydrodynamics Program Should be Continued as Planned. These aspects Should be Emphasized and Receive Highest Priority:

a. **Completion of a Public Domain Salt, Hydrodynamics, and Partial Tracking Transport Model.**

b. **Cooperation of Individual Agency Modeling Staff Personnel with IESP Modelers to Complete the Delta Transport Model within Three Years.**

c. **The development of a particle transport element in the Transport model.**

Justifications:

1. These models are needed to assist with current fishery issues related to bass declines and endangered species concerns.

2. The present models are not verified and verification is needed.

37. The "Unanswered Technical Questions" Developed by the Committee Should be Reassessed, by the Management Team or by an Appropriate Project Work Team, as to Their Current Relevance.

Justifications:

1. Other program changes are making this necessary.

2. Original input into this process was not thorough and ineffective, at best.

38. USGS Hydrodynamic Data Should be Provided to IESP for Use in a More Timely Manner (i.e. Within 3-6 Months of Collection).

Justifications:

1. Current turnaround time is too long.

2. There is a need for this data by IESP and other parties.

39. The Hydrodynamics Committee, as Currently Structured, Should be Eliminated and Integrated into a Biology/Hydrodynamic Project Work Team, as Required, Working on Special Focused Problems.

Justifications:

1. The current committee structure has not worked efficiently.

2. Refer to discussions of revised IESP structure (Section 6).

Program Element: Montezuma Slough Control Structure Monitoring Program

Objectives:

1. Determine if MSCS increases predation on juvenile anadromous fish.

2. Determine if MSCS influences upstream migration of adults.

Observations:

1. Objectives are relevant, but are not sure they can be answered with current program.

2. There is a need to have better cooperation and communication between IESP scientific staff and the staff of regulatory agencies in regards to the design and implementation of water project related fishery monitoring and predation. The goal should be to determine if required questions can be answered.

3. Study coordination as described above for this element has begun and must be of high priority.

4. There is a question as to whether it is reasonably possible to properly assess the degree to which the structure causes undesirable or undue predation losses and delays in upstream migration. Criteria to determine degrees of desirability need to be developed.

5. Any monitoring of the effects of a structure needs to have appropriate reference sites.

6. These are endangered species issues related to the structure.

7. This program is a short term management study.

Recommendations:

40. The Proposed Revision of this Monitoring Program as Currently Being Carried out by Several Agencies Should be Continued.

Justification:

1. The current program, as carried out up to now, can not answer the questions asked of it.

Program Element: North Delta Demonstration Fish Protective Facilities Program

Objectives:

1. Determine a means of screening fish from the Sacramento River at a diversion point at Hood.

2. Complete fish stamina testing.

3. Evaluate existing and proposed fish facilities.

Observations:

1. There is a major need for information to be developed regarding fish facilities associated with the North Delta diversion.

2. The planning assumptions for North Delta Fish Protective Facilities have changed since 1982.

3. More money and people are needed to seriously carry out the complete program.

4. The element needs a mission.

5. No one understands how the North Delta facilities work fits into the current political climate.

6. We do not know what we are designing fish protective facilities for (i.e. what diversions are we doing this for?).

7. The IESP should make a recommendation as to technical reasons why the Peripheral Canal is required.

Recommendations:

41. A Biological Study Plan Needs to be Developed to Guide the North Delta Fish Protection Facility Development.

Justification:

1. Currently one does not exist.

42. The North Delta Fish Facilities Team Should be Ready to Advise the BDOC Process on the Relative Merits of Project Proposals.

Justification:

1. This group has the needed expertise.

Program Element: Clifton Court Forebay Predation Study

Objectives:

1. Determine cause and rate of fish losses in CCF due to predation. How do factors interact to influence predation?

2. Evaluate practicability and effectiveness of predation removal.

Observations:

1. Objectives are relevant.

2. Objective 1 has been partially met, however, more work is needed at other temperatures, exports, etc., conditions.

3. Objective 2 has been partially met, however, more work is needed at other temperatures, exports, etc., conditions.

4. Predation is a real problem in CCF.

5. Project staff say they need more boats.

6. The element is effective, as currently being carried out.

7. The overall potential improvement of fisheries resources obtainable through maximizing efficiency of Tracy Fish Collection Facility and Skinner is not great.

Recommendations:

43. A Predator Removal Program Needs to be Designed for the Fall of 1993.

Justification:

1. This needs to be done, since preliminary programs have shown it to be potentially effective.

44. Make a Quarterly Assessment of the Rate of Re-Invasion of Predators After Control.

Justification:

1. Currently this is not known, and without it, we do not know how often to repeat removal.

45. Establish the Relative Importance of the Various Predators to the Observed Loss Rates.

Justification:

1. This is a basic assumption that needs to be solidified.

Program Element: John E. Skinner Fish Facility Evaluation

Objectives:

1. Determine the fish salvage efficiency of the new secondary system.

2. Determine best methods to remove predatory fish from the secondary bypass system.

3. Assess flows and operational salvage facilities.

Observations:

1. Funding for this element does not show up in the IESP budget, and the element is not officially recognized as an IESP element.

2. Element staff is currently spending about 25 percent of its time working with the USBR staff on the Tracy fish facilities element.

3. There is a shortage of staff working on this element. Another position is needed.

4. This has been a successful program, in part, due to management needs placed on it by the winter-run salmon listing.

5. There are two separate IESP groups doing work at the Federal and State facilities. This has resulted in inconsistency.

Recommendations:

46. The Salvage Sampling in this Element Should be Fully Integrated into the IESP, as well as the Proposed Overall IESP Monitoring Program.

Justifications:

1. The staff on this element is already working together with other IESP staff on common projects (i.e. USBR Tracy studies).

2. Support for this effort is from one agency (DWR), but there are several single agency funded elements that are included in IESP (i.e. USBR Tracy Studies, Sturgeon Programs, etc.). Therefore, the precedent exists for such inclusion.

3. On a program-wide basis, better coordination is needed between the staff's on the salvage and management units in IESP.

4. The broad fishery expertise is within IESP and element integration could enhance the salvage program evaluation efforts.

5. This element should be part of the overall IESP monitoring program.

47. Establish One Facility Salvage and Salvage Sampling Team to Work at Both TFCF and Skinner (i.e. Merge the Existing State and Federal Efforts into One).

Justifications:

1. Improve efficiency.

2. Provide consistency of salvage sampling.

3. Would ensure proper data recording.

4. To lessen vulnerability to criticism.

48. The Engineering and Salvage Evaluation of These Facilities Shall be Reviewed and Implemented by a Project Work Team. Engineers Should be Formally Assigned to this Group to Fix Problems at the Facilities.

Justifications:

1. Such evaluation is required by PL 102-575 and D-1630.

2. The facilities are similar in design and it is more efficient to use one team.

Program Element: Tracy Fish Collection Facility/Delta Mendota Canal Investigation for Increasing Salvage Efficiencies and Assessing Fishery Opportunities

Objectives:

1. Determine means whereby direct fish losses can be reduced.

2. Define life stages and time periods that are most critical to improving salvage operations.

Observations:

1. This element is being carried out through USBR's Denver office, yet it is part of IESP's overall program.

2. The program currently does not get sufficient review and input from all IESP member agencies.

3. The element title includes reference to "assessing fishery opportunities", however, this is not currently a part of the objective.

4. The project objective may be overly optimistic. The objective may be unrealistic and too numerous.

5. Any possible improvements in salvage operations at the State or Federal facilities will only result in limited improvements in the fishery problems in the estuary. In other words, there is only so much that can be fixed at the screens and it is

likely that these things will not result in major improvements.

6. The Tracy Investigations are part of PL 102-575.

Recommendation:

49. The Same Recommendations and Justifications as Applied to the John E. Skinner Fish Facility Evaluation Apply to this Element.

Program Element: Delta Agricultural Diversion Evaluation

Objectives:

1. Determine estimates of the rate of losses of various species and life stages of fish to Delta agricultural diversions.

2. Determine factors that influence the loss rate estimates for any diversions.

Observations:

1. There is a need for a baseline monitoring program to document abundance and distribution of fish species in the south delta near the areas where agricultural diversions occur.

2. The methods currently used by this element need to be improved so that sampling of entrained juveniles is more efficient.

3. Staff of this element is working with other outside IESP programs with similar objectives (i.e. Paul Raquel-DFG Screening Program).

4. More time is needed to complete the analysis of 1992 pilot study data.

5. Because of variation of physical characteristics in the delta, different sampling gear and methods are required to sample each diversion of interest.

6. PL 102-575 stipulates that measures must be developed to avoid losses of juvenile anadromous fish due to unscreened diversions. Given this fact, efforts as carried out in this element need

to be greatly expanded, such that this mandate can be met.

Recommendations:

50. To the Extent Possible an Estuary-Wide Fishery Monitoring Program Should Include the Geographical Scope of this Element.

Justification:

1. Fish distribution information is needed so that correct sampling gear can be selected for specific sample sites.

51. A Laboratory Screen Mortality Evaluation Should be Added to this Element.

Justification:

1. Some evidence shows small screens keep small fish out of the islands, but we don't know if they are being impinged, and therefore, lost on the delta side of the levee.

Program Element: North Bay Aqueduct Monitoring Program

Objectives:

1. Determine if pumping has increased the numbers of larval fish in Barker and Lindsey sloughs.

2. (AN IMPROVED OBJECTIVE) What is an estimate of entrainment of larvae caused by this facility?

3. Will pumping enhance predator populations in Barker and Lindsey sloughs?

Observations:

1. It appears that this program element has not asked the proper question. The question is, "What is the rate of entrainment...?"

2. The element should be revised to reflect the proper question of interest.

3. It is not possible to really determine predation rates.

4. The Delta smelt sampling should be emphasized. It was part of the Delta Smelt Biological Opinion.

5. The study is relevant.

6. Predatory species composition appears to have changed. This should be listed as a finding.

7. Consider using an automatic E & L sampler on this element.

8. The element staff was not clear about the objectives of this element and was not sure if the ones that existed were still relevant. The objectives are vague.

9. There is a need to combine some of the egg and larval sampling with DFG's sampling effort.

Recommendation:

52. A Project Work Team Should be Established to Revise this Element and Follow its Progress Throughout Implementation.

Justifications:

1. To be sure that results are meaningful.

2. To provide better input to the regulatory staff in regulatory agencies.

Program Element: South Delta Project Facilities Evaluation

Objective:

1. Determine impacts of TBP on fishery resources in the South Delta.

Observations:

1. There is a need for a resident fish study in the area where barriers are proposed for construction.

2. There is some question as to whether this effort can "determine the effects of the temporary barriers".

3. It is potentially possible to use a combination of hydrodynamic models and field observations to evaluate impacts of project barriers.

Recommendation:

53. A Project Work Team Should be Established to Revise this Element and Follow its Progress Throughout Implementation.

Justifications:

1. This is needed to ensure that results are meaningful.

2. This is needed to provide better input into the regulatory staff in regulatory agencies.

Program Element: Clifton Court Forebay Temperature Study

Objective:

1. Determine whether water temperature increases due to residence in CCF.

Observation:

1. This is a limited, one year study element and does not need major review at this time.

(No Recommendations)

SECTION 8

APPENDIX 1

APPENDIX 1

Comments from Managers and Water User Groups and Problems with IESP from the Perspective of Element Project Leaders.

Comments from Managers and Water Users

1. IESP activities should be expanded to include evaluation of other factors affecting conditions in the Estuary in addition to Project (SWP and CVP) related outflow/export effects. The relative importance of these factors should be determined and when reported should include realistic expectations of solving problems.

2. IESP activities should be relevant and or applicable to planning and management needs of member agencies (i.e. CEQA, HEP, etc.). Efforts should be focused to aid in accomplishing project related goals (i.e. South Delta project, Los Banos Grande, etc.). Be responsive to those who "pay the bills".

3. Communication/coordination between agency staffs, both regulatory (permitting) and planning, and IESP staffs must be improved (established). Specifically, engineers and biologists must communicate more.

4. Non-IESP managers need to be plugged into the IESP management process.

5. The Directors of IESP must play a greater role in the Program and should provide program direction.

6. Priority of IESP activities should be set by those who fund the efforts and/or regulatory mandates (i.e. D-1630, PL 102-575, etc.). Member agencies should be clients.

7. IESP data should be easily available to everyone.

8. If other factors are causing species to be listed, we need to know what those are so we can deal with them.

9. We need more species life history data.

10. IESP should develop a "PC working paper" (15 pages). The technical staff could provide specific criteria needed to solve estuary problems that would lead to a P.C.

11. Other groups in addition to the SWP and CVP must provide support funding.

12. IESP does not currently have a mission.

13. IESP needs to keep their collective fingers on the pulse of the system so that we can know a species is in trouble before it is listed (we need long-term community studies).

14. IESP management structure should be responsive to new user groups created by 1630, ESA, 102-575, etc.

15. Any changes proposed in IESP need to be perceived as big changes.

16. IESP is very weak in data analysis and this must be resolved. We are good on data collection but weak on analysis. We need to know variability in our data.

17. There must be a distinction between policy roles and technical roles in IESP. IESP should be better scientists and not be water managers.

Problems with IESP from the Perspective of Element Project Leaders.

1. Food Chain Committee has gone off on a tangent and lost touch with the big picture. It needs to be more accountable. Maybe should be a separate committee.

2. Lack of communication between staff level people. They operate in isolation.

3. Levels below the Coordinators need to know the big picture.

4. Too many diverse groups and self-interests. Too many agencies.

5. Too complex.

6. Conflicts between objectives (not all agencies care about the fish). Different agency missions.

7. Needs more university scientist input.

8. Need to have less meetings.

9. It is too rigid and can't respond to changing needs (i.e. 20 year old monitor programs).

10. Need ad hoc groups to solve specific problems.

11. Needs to have a mandate for data analysis. Need to focus more time on data analysis.

12. Water project agencies may have too much influence on what is done in IESP. They control funding and therefore priorities.

13. Water projects are part of IESP, yet they seldom agree with the fisheries experts on interpretation and this causes confusion.

14. Agencies are not unified on issues when they go the SWRCB hearings.

15. Lacks a central data base.

16. Data analyses are re-done by water agencies.

17. Need directory showing who does what and phone numbers.

18. There is overlap between agency efforts (i.e. Egg and Larval Studies). Better coordination is needed.

19. There are pay inequities between Agency staff members leading to morale problems.

20. IESP needs a full-time biometrition.

21. There is a lack of an overall monitoring plan.

22. Not enough emphasis on producing substantive reports.

23. IESP objectives get sidetracked because all programs are not overseen by one individual with authority to keep program managers on track. Study Manager has no real authority.

24. Staff redirection is a problem.

25. Needs committee to keep track of long-term trend monitoring.

26. Fact sheets have not been distributed--Communication.

27. What is the vision of IESP for the next 5 years? Where are we headed?

28. IESP has no expressed goals.

29. Technical subcommittees are not helpful.

30. Some IESP objectives are not achievable.

31. There is a general lack of technical review and oversight.

32. Agency requirements take too much time from IESP activities.

33. There is an inability to react quickly to new challenges in a non-threatening manner.

34. Program needs a technical oversight committee.

35. Ad hoc teams to oversee specific problems/surveys/studies are needed.

36. IESP has program oriented committees instead of problem oriented committees.

37. The Coordinators are only providing management. They are not leading. They do not provide enough technical oversight.

38. Hydrodynamic Committee meetings have been weak, with no follow-up (like the Food Chain Group has done).

39. Need better coordination with DWR and better data exchange.

40. Make better use of resources.

41. There is competitiveness between agencies (for positions, jobs, territory, etc.).

42. More people should be involved in all aspects of the studies.

43. Some sampling methods, gear, and thinking is 30 years old--These need to be updated.

44. More "real-time" communication between staff levels is needed.

45. Each committee needs a clear set of objectives.

46. There is too little time to commit to IESP Activities.

47. Hydrodynamics committee seems like a satellite far removed from the rest of the IESP program elements. They are always asked "what are you guys doing".

48. IESP should take a stronger role in telling the Corps what needs to be done, i.e., be more involved in regulatory process.

49. Fish Facilities programs need to define their mission.

50. IESP is becoming so large that it becomes more susceptible as a source to take money from to carry out agency programs. Susceptible to "hits".